Biological Assessment of

Quincy Wastewater Treatment Plant

Gadsden County

NPDES # FL0029033

Sampled April 22-27, 2012

August 2012

Biology Section

Bureau of Laboratories

Division of Environmental Assessment and Restoration

Quality Manual No. 870346G

NELAC Certification No. E31780

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EPA End Sheet

Facility Overview

The Quincy Wastewater Treatment Plant is a Municipal Domestic Wastewater Treatment Plant. The effluent is discharged into Quincy Creek, a Class III Freshwater (see map Appendix A). The design flow of the wastewater system is 1.5 million gallons per day (MGD) monthly average daily flow (MADF). The annual average flow for April 2011 to March 2012 was 0.78 MGD. The flow measured during this survey was 0.42 MGD (FDEP Northwest District Office sampling staff).

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

See the Facility Summary (Appendix B) for a description of the facility, summary of permit limits, and administrative order (#AO058NW), consent order (08-0145), and discharge monitoring report (DMR) information.

Methods

The purpose of this investigation was to determine the discharge's effects on the biota of the receiving waters. Chemical and biological comparisons were made between a Control Site (located in Quincy Creek approximately 1.5 km northwest of the point of discharge) and a Test Site (located in Quincy Creek approximately 1.2 km south of the point of discharge). The large distance between both the Control and Test Sites was necessary because upstream of the facility, Quincy Creek becomes a wetland and is inaccessible other than at the point of discharge, which is located underground within the wetland. The surface water pooling above the ground at the point of discharge was sampled as Outfall Pond. The wetland continues downstream of the facility. The purpose of the instream portion of this inspection was to assess any impact to Quincy Creek at the point it reforms below the wetland (Test Site). Effluent samples for analyses were taken as grab and composite samples from monitoring location EFF-01, after dechlorination.

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

The following were involved in this investigation: Michelle Fish (FDEP Office, Tallahassee), Nathan Mulkey and Rick Abad (FDEP Northwest District Office, Pensacola), and FDEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee.

Results

Organic Constituents (See Table 1 and Appendix F)

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

Metals (See Table 2 and Appendix F)

- Effluent metals were detected at levels that complied with Class III Freshwater Quality Criteria (62-302.530, F.A.C.) and effluent permit limits.
- All metals for the Outfall Pond were either undetected or detected at levels that complied with Class III Freshwater Quality Criteria (62-302.530, F.A.C.).
- Control Site iron (1,610 µg/L) and Test Site iron (2,110 µg/L) exceeded Class III Freshwater Quality Criteria (62-302.530(38), F.A.C.).
- All other metals for the Control and Test Site were either undetected or detected at levels that complied with Class III Freshwater Quality Criteria (62-302.530, F. A. C.).
- No metals were detected in the field blank.

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

- Tests were performed April 24 through May 2, 2012.
- The effluent sample was not toxic to the water flea, *Ceriodaphnia dubia,* during the acute definitive bioassays and therefore, complied with effluent permit limits.
- Due to problems with reproduction in the *C. dubia* culture, a chronic screening bioassay was run in addition to the acute definitive bioassay to ensure that some toxicity data was generated during the analyses for this facility. The effluent sample was not toxic to *C. dubia* during the chronic screening bioassay. These results are not listed in Table 1 because it is not listed as a permitted test for the facility.
- The effluent sample IC25 for the fish, *Pimephales promelas*, during the 7-day chronic definitive bioassay was > 100% and therefore, complied with effluent permit limits.

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

- The Habitat Assessment score for the Control Site (129) was in the Optimal category while the Test Site (113) was in the Suboptimal category. The Control Site had better substrate diversity and availability but less riparian zone vegetation quality for both banks. The Control Site was located near a bridge and had an abundance of aquatic vegetation present while the Test Site was located in a more secluded, wooded area, which had little to no aquatic vegetation. Habitat smothering was observed at both sites.
- The Outfall Pond dissolved oxygen (4.1 mg/L) was below the minimum limit for Class III Freshwater Quality Criteria (62-302.530(30), F.A.C.). The Outfall Pond is located within a wetland before Quincy Creek reforms into a stream. Dissolved oxygen (mg/L) of the effluent, Control Site, and Test Site complied with Class III Freshwater Quality Criteria (62-302.530, F.A.C.) and effluent permit limits.
- The pH (Standard Units), and specific conductance (µmhos/cm) of the effluent, Outfall Pond, Control Site, and Test Site complied with Class III Freshwater Quality Criteria (62-302.530, F.A.C.) and effluent permit limit. Effluent conductivity is 2 times higher than the Outfall Pond conductivity, over 4 times higher than the Test Site conductivity and 7 times higher than the Control Site conductivity. The Test Site conductivity is 1.5 times higher than the Control Site. The effluent may be contributing to the higher Test Site conductivity.
- Total residual chlorine (TRC) of the effluent was undetected in the bioassay sample as measured in the FDEP laboratory. The sample was held beyond the normal holding time for this measurement (Q qualifier).
- Chlorophyll *a* (corrected) was undetected in the Outfall Pond sample and was detected at low levels between the laboratory method detection limit (MDL) and the laboratory practical quantitation limit (PQL) in the effluent, Control, and Test Site samples.
- Total suspended solids (TSS; mg/L) were undetected in the effluent and were detected between the MDL and PQL in the Outfall Pond sample. Effluent TSS complied with permit limits. Control and Test Site TSS were approximately 2 times higher than Outfall Pond TSS.
- Turbidity (NTU) of the effluent, Outfall Pond, Control Site, and Test Site complied with Class III Freshwater Quality Criteria (62-302.530, F.A.C.). Turbidity was detected in the field blank at a low level.
- Carbonaceous Biochemical Oxygen Demand (CBOD; mg/L) of the effluent complied with permit limits.
- Sulfate (mg/L) was detected in the effluent, Outfall Pond, Control Site, and Test Site samples. The effluent and Outfall Pond sulfate were higher than both the Control Site and Test Site sulfate, and Test Site sulfate was almost 5 times higher than that of the Control Site. The effluent may be contributing to the Test Site sulfate when compared to the Control Site.

Microbiology (See Table 1 and Appendix F)

- Fecal coliforms were not detected in the effluent and were detected at both the Control and Test Sites at levels which complied with Class III Freshwater Quality Criterion (62-302.530(6), F.A.C.).

Nutrients (See Table 1 and Appendix F)

- Effluent nutrient levels complied with permit limits.
- Effluent and Outfall Pond ortho-phosphate values were similar and both were approximately 1.5 times higher than the Control and Test Site values. The effluent and Outfall Pond nitrate+ nitrite values were the same and were approximately 7 times higher than in both the Control and Test Site samples. Although effluent nutrient measurements were higher than those of the Control Site, there was no detectable nutrient enrichment from the effluent at the Test Site.
- No nutrients were detected in the field blank.

Algal Growth Potential (See Table 3 and Appendix F)

- Raschke and Shultz (1987) determined that AGP values above 5.0 mg dry weight/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The AGP value of the effluent sample using the freshwater species, *Pseudokirchneriella subcapitata,* was approximately 12 times greater than the problem threshold value. The analytical chemistry suggests that the effluent is co-limited by both nitrogen and phosphorus.
- The AGP value for the Outfall Pond was approximately 11 times greater than the problem threshold value. The analytical chemistry suggests that the Outfall Pond is co-limited by both nitrogen and phosphorus.
- The AGP values for the Control and Test Sites were approximately 2.5 times greater than the problem threshold value. The analytical chemistry suggests that both study sites are nitrogen limited.
- The high AGP values of the effluent and Outfall Pond and the slightly elevated Test Site AGP value indicate that there is the potential for nutrient enrichment from the effluent at the Test Site beyond what may be occurring in Quincy Creek from other sources, as indicated by the AGP value of the Control Site.

Bioassessment

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

- Periphyton communities at both the Control and Test Sites were very similar and consisted mostly of diatoms. The diatom community at the Control Site was dominated by *Achnanthes biasolettiana*. The diatom community at the Test Site was co-dominated by *Navicula* sp. and *Nupela vitiosa*. Both sites had similar percentages of blue-green algae and green algae. Differences in the dominant diatom could be related to differences in shading at the Control Site versus the Test Site and/or differences in the substrates where periphyton was sampled. There were no adverse affects apparent on the periphyton community in Quincy Creek from the effluent.

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

- Qualitative macroinvertebrate data from dipnet samples indicated that the macroinvertebrate communities were different at the Control and Test Sites. The Test Site scored 52 A on the Stream Condition Index (SCI), and the Control Site scored 57 A, placing both sites in Category 2 (see Appendix C for an explanation of SCI Categories). Both sites had similar numbers of Ephemeroptera, Trichoptera, sensitive, and clinger taxa. The Test Site had a lower percentage of suspension feeders and Tanytarsini individuals, both of which tend to decline with human disturbance (see Appendix C for an explanation of how these SCI metrics typically respond to human disturbance). Both sites had a similar number of very tolerant individuals. The Control Site was dominated by *Ancylidae*, a gastropod. The Test Site was dominated by *Hyalella azteca*, an amphipod which according to Smith "[have a] broad tolerance for a number of environmental variables". Overall, there were no negative effects on macroinvertebrates at the Test Site that were attributable to the effluent. Any adverse effects on the macroinvertebrate community were more likely attributable to low habitat availability.

Conclusion

Control and Test Site iron exceeded the Class III Freshwater Quality Criteria (62-302.530(38), F.A.C.). Dissolved oxygen of the Outfall Pond was below the minimum limit for Class III Freshwater Quality Criteria (62-302.530(30), F.A.C.). The Outfall Pond is located within a wetland before Quincy Creek reforms into a stream. The high AGP values at the effluent and Outfall Pond and the slightly elevated AGP value at the Test Site indicated the potential for nutrient enrichment due to the effluent beyond what may be occurring in Quincy Creek from other sources. The periphyton communities at both the Control and Test Sites were similar and did not appear to be adversely affected by the effluent. The qualitative macroinvertebrate samples indicate that the communities at the Control and Test Site were different. Despite the differences in community composition between the Control and Test Sites, the SCI scores were similar at both sites. Any adverse effects on the macroinvertebrate community at the Test Site were more likely attributable to the low habitat availability and/or the different types of habitat available than to the effluent.

Literature Cited

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

Quincy WWTP	Class III Criteria	Effluent Limits	Effluent	Outfall Pond	Control Site	Test Site	Field Blank
Organic Constituents (µg/L)							
None Detected	-	-	None Detected		-	-	None Detected
Nutrients (mg/L)							
Total Organic Carbon	-	-	3.8 I	4.0 I	4.4 I	5.1	1.0 U
Ortho-phosphate	-	-	0.063	0.061	0.038	0.045	0.004 U
Total Phosphorus	-	≤ 2.0 p	0.087	0.11	0.096	0.13	0.004 U
Total Ammonia	-	-	0.028	0.043	0.038	0.044	0.01 U
Un-ionized Ammonia	≤ 0.02 s	-	≤ 0.02 c	≤ 0.02 c	≤ 0.02 c	≤ 0.02 c	≤ 0.02 c
Nitrate and Nitrite	-	-	1	1	0.16	0.15	0.004 U
Total Kjeldahl Nitrogen	-	-	0.62	0.62	0.32	0.38	0.08 U
Organic Nitrogen	-	-	0.592 c	0.577 c	0.282 c	0.336 c	0.035 c
Total Nitrogen	-	≤ 6.0 p	1.62 c	1.62 c	0.48 c	0.53 c	0.042 c
General Physical and Chemical Parameters							
Habitat Assessment	-	-	-	-	129	113	-
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 5.0	7.9	4.1	8.1	8.7	-
pH (SU)	6.0 - 8.5	6.0 - 8.5	7.4	7.4	6.4	6.3	-
Conductivity (µmhos/cm)	≤ 1,275	-	471	233	66	99	-
Temperature (°C)	-	-	21.7	19.4	18.1	16.7	-
Sample Depth (m)	-	-	0.15	0.15	0.2	0.1	-
Alkalinity (mg CaCO3/L)	≥ 20	-	124	120	23	32	0.65 U
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01	< 0.03 QU£	-	-	-	-
Chlorophyll *a* (µg/L) - Corrected	-	-	1.3 I	0.62 U	0.66 I	1.2 I	-
Phaeophytin (µg/L)	-	-	0.4 U	0.45 U	0.4 U	0.88 I	-
Total Suspended Solids (mg/L)	-	≤ 10.0 p	2 U	4 I	10	10	-
Turbidity (NTU)	< 29 t	-	0.6	2 A	9.6	15	0.3
Color (pt-Co)	-	-	3.4 I	5.5 I	56	59 A	2.5 U
CBOD, 5 day (mg/L), N - inhibited	-	≤ 10.0 p	0.61 I	1.3 I	1.2 I	1.1 I	-
Chloride (mg/L)	-	-	50	50	5.5	9.1	0.2 U
Fluoride (mg/L)	≤ 10.0	-	0.45	0.44	0.09 I	0.13	0.035 U
Sulfate (mg/L)	-	-	29	27	0.62	3	0.2 U
Flow (MGD)	-	1.5	0.42	-	-	-	-
Hardness (mg $CaCO_3$)	-	Report	113 c	113 c	25.6 c	35.4 c	0.352 c
Toxicity (96 Hour Acute Definitive, LC50, % effluent)							
Bioassay - Water flea (*Ceriodaphnia dubia*) *survival*	-	100	> 100**	-	-	-	-
Toxicity (Chronic Definitive, IC25, % effluent)							
Bioassay - Fish *(Pimephales promelas) survival and growth*	-	≥ 100	> 100†	-	-	-	-
Microbiology (Number of colony forming units/100ml)							
Fecal Coliforms	≤ 400 s #	800 s	2 U	-	280	180 B	-

Value exceeds the Class III Water Quality Criteria or permit limits

c - Value is calculated
p - 16 hour flow proportioned composite
s - Single sample
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
B - Results based on colony counts outside the acceptance range
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit
- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)
£ - measurement taken in the FDEP laboratory
**- Insufficient mortality to calculate the LC50
†- Insufficient inhibition of growth or reproduction to calculate the IC25

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

Quincy WWTP	Effluent Class III Criteria	Effluent Limits	Effluent	Outfall Pond Class III Criteria	Outfall Pond	Control Site Class III Criteria	Control Site	Test Site Class III Criteria	Test Site
Metals (µg/L unless otherwise noted)									
Aluminum	-	-	11 I	-	42	-	416	-	615
Arsenic	≤ 50	-	0.25 U	≤ 50	0.34 I	≤ 50	0.66 I	≤ 50	0.77 I
Cadmium	≤ 0.300 b	-	0.05 U	≤ 0.300 b	0.05 U	≤ 0.100 b	0.05 U	≤ 0.130 b	0.05 U
Calcium (mg/L)	-	-	35.6	-	35.5	-	6.32	-	9.45
Chromium-III	≤ 95.3 b	-	0.3 U	≤ 95.0 b	0.3 U	≤ 28.2 b	0.69 I	≤ 36.8 b	0.88 I
Copper	≤ 10.4 b	≤ 10.4 b	2.82	≤ 10.3 b	2.72	≤ 2.91 b	0.57 I	≤ 3.84 b	0.71 I
Iron	≤ 1,000	-	74 I	≤ 1,000	300	≤ 1,000	1610	≤ 1,000	2110
Lead	≤ 3.72 b	-	0.2 U	≤ 3.70 b	0.25 I	≤ 0.560 b	0.49 I	≤ 0.850 b	0.66 I
Magnesium (mg/L)	-	-	5.86	-	5.84	-	2.38	-	2.86
Nickel	≤ 57.9 b	-	1.01	≤ 57.7 b	1 I	≤ 16.5 b	0.25 U	≤ 21.7 b	0.37 I
Selenium	≤ 5.0	-	0.2 U	≤ 5.0	0.2 U	≤ 5.0	0.2 U	≤ 5.0	0.2 U
Silver	≤ 0.07	-	0.025 U	≤ 0.07	0.025 U	≤ 0.07	0.025 U	≤ 0.07	0.025 U
Sodium (mg/L)	-	-	50.7	-	50.5	-	3.4	-	7.1
Zinc	≤ 133 b	≤ 133 b	40	≤ 133 b	45	≤ 37.7 b	5 U	≤ 49.7 b	5 U

See Table 1 for calculated hardness.

Value exceeds the Class III Water Quality Criteria or permit limits

b - Value is calculated based on hardness

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

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

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

Quincy WWTP							
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	60.3	39.1 ± 7.8	27.1 ± 5.4	61.6 ± 12.3	37.4 ± 7.5	16.3	18.6
Outfall Pond	56.0	39.6 ± 7.9	26.2 ± 5.2	61.6 ± 12.3	47.3 ± 9.5	17.1	14.7
Control Site	11.1	7.5 ± 1.5		18.2 ± 3.6		5.2	5.0
Test Site	13.0	7.4 ± 1.5		20.1 ± 4.0		4.3	4.1

Table 4. Periphyton Composition - Qualitative.

Quincy WWTP	Control Site	Test Site
Number of Wet Taxa	9	10
Number of Wet Algal Units Identified	300	301
Percent Dominant Wet Taxon	79.7	81.4
Dominant Wet Taxon Name	Bacillariophyta (Diatoms)	Bacillariophyta (Diatoms)
Number of Diatom Taxa	51	58
Number of Diatom Algal Units Identified	500	501
Percent Dominant Diatom Taxon	29.6	11.0/ 11.0
Dominant Diatom Taxon Name	*Achnanthes biasolettiana*	*Navicula* sp. / *Nupela vitiosa*
Percentage Composition for Wet Algae		
Blue-green algae	18.0	16.6
Green algae	2.3	2.0
Diatoms	79.7	81.4

Table 5. Macroinvertebrate Dipnet Samples - Qualitative.

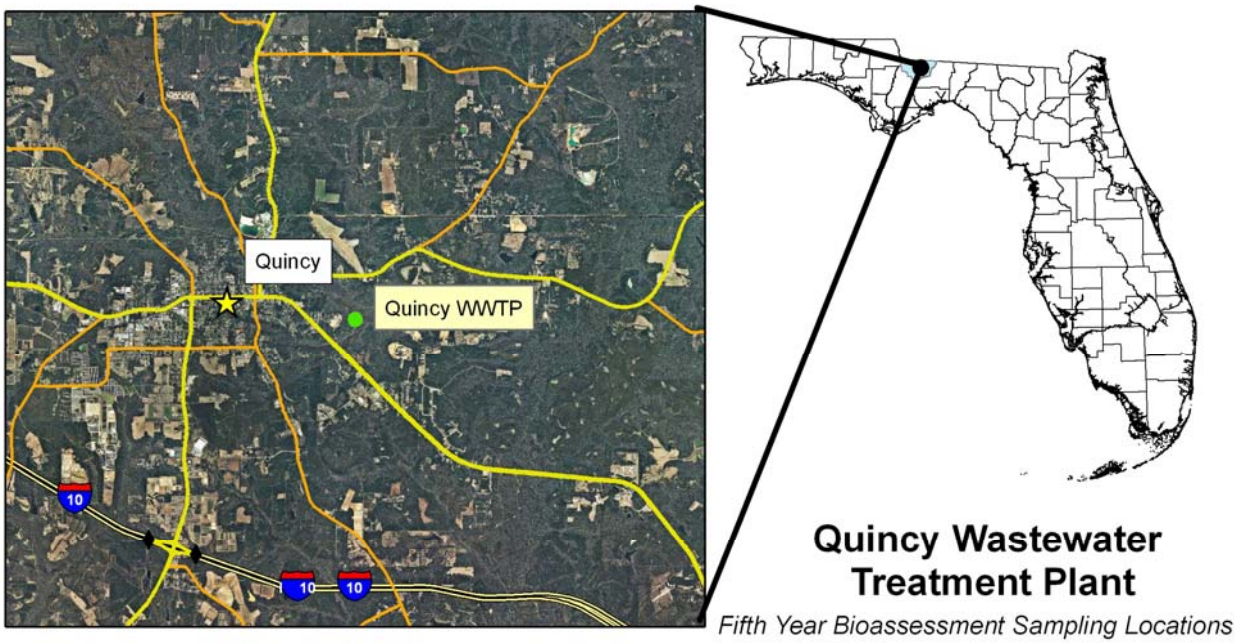
Quincy WWTP	Control Site		Test Site	
Summary Statistics				
Stream Condition Index 2007 (value)	57 A		52 A	
Stream Condition Index 2007 (category) *	2		2	
Stream Condition Index Metrics	Rep 1	Rep 2	Rep 1	Rep 2
Number of Total Taxa	39	40	38	36
Number of Ephemeroptera Taxa	3	5	2	4
Number of Trichoptera Taxa	2	3	3	3
Number of Clinger Taxa	8	7	7	7
Number of Long-lived Taxa	2	1	3	4
Number of Sensitive Taxa	8	8	6	8
Percent of Dominant Taxon	35.4	21.1	25.7	20.9
Percent Suspension Feeders and Filterers	13.2	23.0	5.4	6.0
Percent of Tanytarsini Individuals	13.9	18.4	4.7	1.3
Percent of Very Tolerant Individuals	5.6	4.6	5.4	5.1
Total Number of Individuals	144	152	148	158
Community Composition: Percent of total				
Dominant Taxon Name	*Ancylidae* (Gastropoda)	*Ancylidae* (Gastropoda)	*Hyalella azteca* (Amphipoda)	*Hyalella azteca* (Amphipoda)
Acariformes	2.1	2.6	1.4	2.5
Amphipoda	0.7	0.7	27.0	22.2
Bivalvia	0.7	0.7	0.7	3.2
Coleoptera	3.5	2.6	17.6	22.2
Decapoda	0.7	0.0	4.05	3.8
Diptera	36.8	42.1	17.6	11.4
Ephemeroptera	14.6	18.4	17.6	15.2
Gastropoda	35.4	22.4	1.4	1.3
Isopoda	0.0	0.0	2.0	5.1
Odonata	0.0	0.0	4.7	3.2
Oligochaeta	4.2	1.3	4.1	5.1
Plecoptera	0.0	0.0	0.0	0.6
Trichoptera	1.4	8.6	2.0	4.4
Other	0.0	0.7	0.0	0.0
Functional Feeding Groups: Percent of total				
Browser-Grazers	0.0	0.0	1.0	2.9
Burrowing Deposit Feeders	2.8	1.3	3.4	5.1
Piercers	0.7	1.3	0.7	0.0
Predators	7.3	8.6	13.5	13.3
Scavengers	0.4	0.3	3.0	4.8
Scrapers	44.4	32.6	18.9	28.2
Shredders	8.7	8.2	13.5	11.7
Surface Deposit Feeders	21.2	24.0	39.2	28.2
Suspension Feeders	13.2	23.0	5.4	6.0
Unknown	1.4	0.7	0.7	0.0

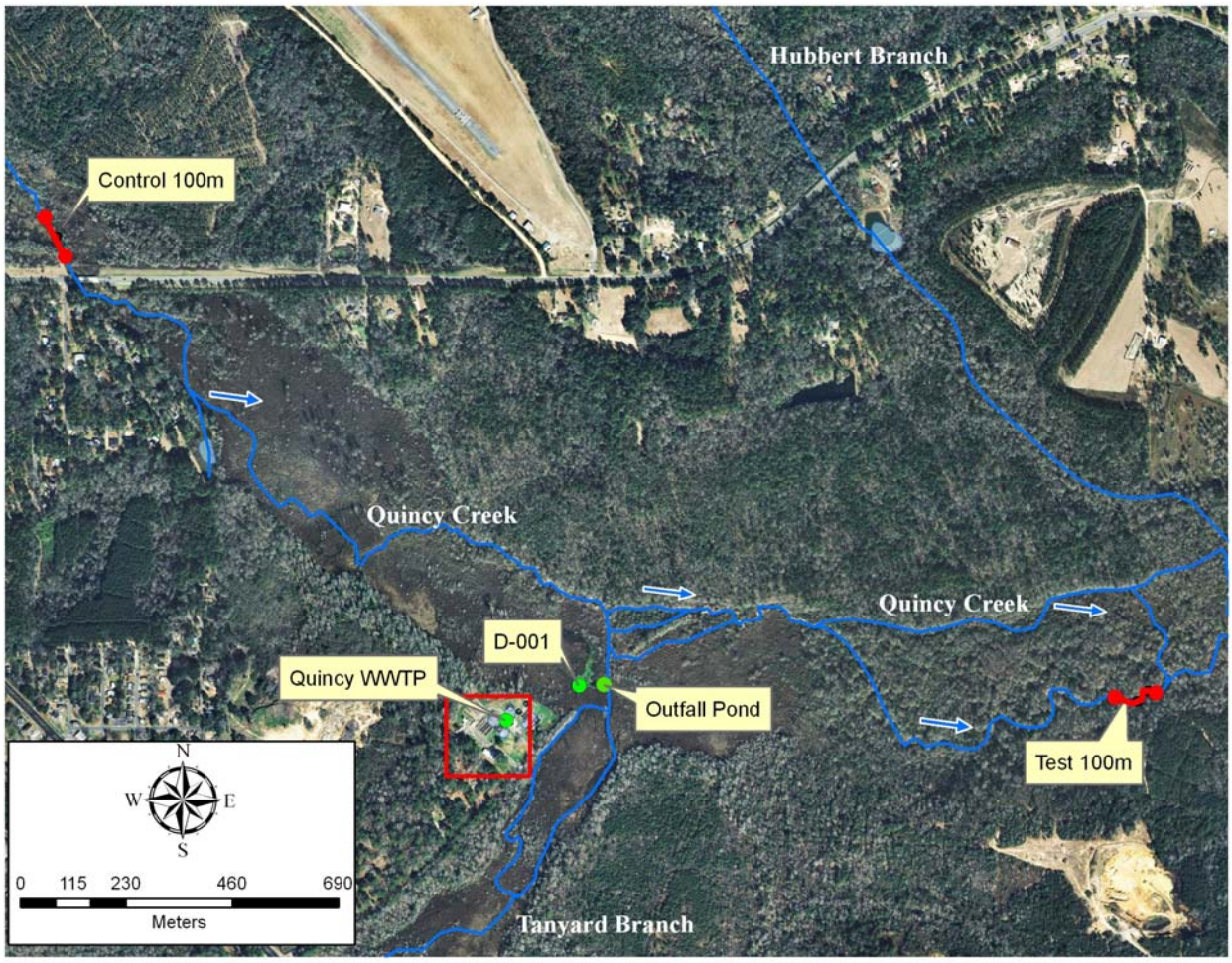
A - Value reported is the mean of two determinations

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

Appendix A

Map of Facility





Appendix B

Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Kim Allen	**Contact Number:** 595-0553
Facility Name (as it appears on permit): Quincy WWTF	**Former Names:**
NPDES Permit Number: FL0029033	**Permit Expiration Date:** 8/19/13
Physical Address: 300 North GF and A Drive	
District: NWD	**County:** Gadsden
Function of Facility: Municipal WWTF	
Facility Type: DW	**Permitted Capacity (MGD):** 1.5 mgd monthly average daily flow
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): .782 mgd monthly average daily flow (4/1/11 to 3/31/12)	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): .042 mgd monthly average daily flow to in plant reuse (4/1/12 to 3/31/12)	
Description of type of Discharge: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**	

Description of Permitted Outfall(s):

Discharge Location (D-001) is approximately 20 feet in length and discharges at a depth of approximately 1 foot. The point of discharge is located approximately at latitude 30 o 35' 04" N, longitude 84 o 33' 16" W.

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

An existing 1.5 MGD monthly average daily flow (MADF) permitted capacity, biological nutrient removal treatment facility providing Class III Reliability. The treatment system is a four-stage Bardenpho type activated sludge process, advanced wastewater treatment (AWT) plant producing reclaimed water that meets 5,5,3,1 mg/L $CBOD_5$, TSS, Total Nitrogen and Total Phosphorus annual average requirements. Pretreatment includes bar screening and grit removal followed by flow equalization. The biological treatment and nutrient removal process includes fermentation followed by a four-stage Bardenpho nitrogen removal process (anoxic tank 1, aeration tank, anoxic tank 2, reaeration tank) and primary clarification; return waste activated sludge is reintroduced at the fermentation tank. Primary clarification is followed by secondary clarification by filtration, basic disinfection by chlorination, dechlorination and reaeration prior to discharge to Quincy Creek.

Residuals treatment includes aerobic digestion, lime stabilization and dewatering on drying beds; residuals processing and handling produces Class B biosolids. Residuals are land-applied at agricultural sites in Gadsden County; residuals may also be disposed of at a Class I or II solid waste landfill or transferred to a Residuals Management Facility (RMF). Screenings and grit are landfilled.

PART I: Continued

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

A. Surface Water Discharges

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

			Effluent Limitations				Monitoring Requirements			
Parameter	**Units**	**Max/Min**	**Annual Average**	**Monthly Average**	**Weekly Average**	**Single Sample**	**Monitoring Frequency**	**Sample Type**	**Monitoring Location Site Number**	**Notes**
Flow D-001 (Flow to Quincy Creek)	MGD	Maximum	-	1.5	-	-	Continuous	Recording flow meters and totalizers	FLW-01	See Cond.I.A.6
Flow R-001 (Flow to On-Site Reuse)	MGD	Maximum	-	Report	-	-	Daily	Meter	FLW-02	
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	5.0	6.25	7.5	10.0	Weekly	16-hour flow proportioned composite	EFF-01	
Solids, Total Suspended	MG/L	Maximum	5.0	6.25	7.5	10.0	Weekly	16-hour flow proportioned composite	EFF-01	
Nitrogen, Total (as N)	MG/L	Maximum	3.0	3.75	4.5	6.0	Weekly	16-hour flow proportioned composite	EFF-01	
Phosphorus, Total (as P)	MG/L	Maximum	1.0	1.25	1.5	2.0	Weekly	16-hour flow proportioned composite	EFF-01	
Coliform, Fecal	#/100ML	Maximum	See Permit Condition I.A.7.				Weekly	Grab	EFF-01	
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	0.5	Continuous	Meter	EFA-01	See Cond.I.A.5, 8
Total Residual Chlorine (For Dechlorination)	MG/L	Maximum	-	-	-	0.01	Daily	Grab	EFD-01	
pH	SU	Range	-	-	-	6.0 to 8.5	Continuous	Meter	EFF-01	See Cond.I.A.5
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	5.0	Daily	Grab	EFF-01	
Copper, Total Recoverable	UG/L	Maximum	-	-	-	See Cond. I.A.3	Monthly	16-hour flow proportioned composite	EFF-01	
Zinc, Total Recoverable	UG/L	Maximum	-	-	-	See Cond. I.A.4	Monthly	16-hour flow proportioned composite	EFF-01	
Hardness, Total (as CaCO3)	MG/L	Maximum	-	-	-	Report	Monthly	16-hour flow proportioned composite	EFF-01	
Whole Effluent Toxicity (Chronic)	See Permit Condition I.A.9								EFF-01	

PART I: Continued

Receiving Waters:	Classification (indicate whether fresh or marine):
Quincy Creek	Classs III Fresh

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

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

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

b. Monitoring Frequency
(1) Routine toxicity tests shall be conducted quarterly commencing on the next scheduled testing date as required by the current permit and lasting for the duration of the current permit.

c. Sampling Requirements
(1) For each routine test or additional follow-up test conducted, a total of three samples of final effluent shall be collected and used in accordance with the sampling protocol discussed in EPA-821-R-02-013, Section 8.
(2) The first sample shall be used to initiate the test. The remaining two samples shall be collected according to the protocol and used as renewal solutions on Day 3 (48 hours) and Day 5 (96 hours) of the test.
(3) Samples for routine and additional follow-up tests shall not be collected on the same day.

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

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

Administrative Order AO058NW was issued August 20, 2008 that gave an interim limit of "Report Only" for Copper through August 2011.

Consent Order 08-0145 was issued 8/14/08for numerous effluent limit exceedences from February 2004 to June 2007 for total residual chlorine (for disinfection and dechlorination), total phosphorus, and total nitrogen. It also required the facility to sample for whole effluent toxicity quarterly and to submit a plan for correction if the facility had 3 failures in a 12 month period. The facility submitted the plan and it was approved 1/20/10.

The CO was amended on7/27/2011 to provide an interim limit of "Report" for the effluent limit for WET until April 1, 2012, or upon termination of the Toxicity Plan.

Facility Mixing Zone Details (if applicable):

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

Monitoring Date	Parameter Description	Data	Limit	Statistical Base	Units
10/31/2011	CHLORINE, TOTAL RESIDUAL	0.48	0.5	MINIMUM	mg/L
12/31/2011	CHLORINE, TOTAL RESIDUAL	0.54	0.01	MAXIMUM	mg/L

Describe previous FYI and WQBEL study:

The previous FYI3 was performed in July 2007 (report date November 2007) and the previousd FYI was performed in November 1995 (report date May 1996).

A Level I WQBEL was performed for the permit renewal.

Describe previous or current Enforcement Actions (including WLs):

Consent Order 08-0145 was issued 8/14/08for numerous effluent limit exceedences from February 2004 to June 2007 for total residual chlorine (for disinfection and dechlorination), total phosphorus, and total nitrogen. It also required the facility to sample for whole effluent toxicity quarterly and to submit a plan for correction if the facility had 3 failures in a 12 month period. The facility submitted the plan and it was approved 1/20/10.

The CO was amended on7/27/2011 to provide an interim limit of "Report" for the effluent limit for WET until April 1, 2012, or upon termination of the Toxicity Plan.

Describe any violations or problems noted in previous inspection:

No problems were noted in the 10/19/10 inspection.

Discuss whether DMR trends within previous five years are improving or declining:
Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):

PART II: Sampling Event Information

Date(s) sample collected: 4/23/12	**Sampler(s):** Nathan Mulkey, Rick Abad
Temperature (Deg C): 21.73	**pH (SU):** 7.39
Dissolved Oxygen (mg/L): 7.89	**Conductivity (umhos/cm):** 471
Total Residual Chlorine (mg/L):	**Total Residual Chlorine - after Disinfection (mg/L):**
Method of Chlorination:	**Method of De-chlorination:**
Flow During Sample Collection for each outfall(MGD): 0.42	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day):	
Describe Discharge during Sampling Event: ☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	

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

Appendix C

Explanation of Measurements

(1) Quality Assurance and Quality Control

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

(2) Chemical Analyses of the Effluent

The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following FDEP SOPs. The results from these analyses were compared with Water Quality Criteria (62-302 F.A.C.) and facility permit limits. Exceedances of Water Quality Criteria may constitute violations of specific provisions of Chapter 62-302 (F.A.C.) and/ or facility permit limits.

(3) Toxicity Bioassays

Greater than 50% mortality in an acute toxicity test may constitute an exceedance of 62-302.500(1)a and/or a violation of facility permit limits. An inhibition concentration greater than 25% in a chronic test may constitute exceedances of 62-302.530(20), 62-302.530(61) and/or a violation of facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

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

(5) Habitat Assessment

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

(6) Algal Growth Potential (AGP)

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

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

evidence of growth inhibition related to toxic compounds present in the water sample tested and may constitute an exceedance of 62-302.530(61) F.A.C.

(7) Algal Periphyton Assemblages

Qualitative periphyton are sampled by taking subsamples of algae from natural substrates throughout the sample reach. Periphyton were subsampled and identified to the lowest practical level, usually species. Wet taxa and diatoms are identified separately. In the wet taxa analysis, soft algae are identified to the lowest practical level, and diatoms are identified only to order level (diatom). In the diatom analysis, diatoms are identified to the lowest practical level.

Chlorophyll *a* Content: Chlorophyll *a* content is an estimate of algal biomass. High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be constitute exceedances of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

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

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

(8) Benthic Macroinvertebrate Assemblages

Qualitative collections are made using 20 dipnet sweeps (QA Rule SOP FS7420). Benthic macroinvertebrates were sorted and identified to the lowest practical taxonomic level, usually species.

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

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

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

Functional Feeding Groups: Environmental degradation may differentially affect groups of invertebrates based on how the group feeds (e.g. predators, deposit feeders, etc.). In Florida, pollution may be responsible for reducing the numbers of filter feeders and shredders (Fore et. al. 2007). Changes in the proportions of functional feeding groups related to a facility's effluent may constitute exceedances of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

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

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

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

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

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

Appendix D

Chain of Custody

Florida Department of Environmental Protection

Event ID *

Request Number: RQ-2012-04-23-26
FYI Quincy WWTP Sampling Inspection

Central Laboratory Sample Submittal Form

Requester: Michelle Fish
Field Report Prepared By: N. Mulkey
Collected By: Rick Ward / Nathan Mulkey
Send Final Report To: Toni Edwards
Sampling Agency: FDEP

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

Lab ID *	Location	Collection (comp begin or grab)	Composite end	Bottle Group(s)**
	Quincy WWTP	☐ Comp ☑ Grab Eastern Date 4/23/12 Time 1135 Central	Eastern Date Time Central	A
	Field ID: Effluent EFF-01	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L): 7.89	Storet Station Number:
	Matrix (include type e.g. Salt, Fresh, etc): Fresh	Temp (C): 21.73	pH: 7.39	Sample Depth ☑ m ☐ ft: .15
		Salinity (PPTh) ☑ Sp Conductance (umho/cm): 471	NPDES Number:	
	Latitude: 30.58398 ☑ dd ☐ dms	Longitude: 84.55304 ☑ dd ☐ dms	Comments: Flow: 0.42 MGD	

Lab ID *	Location	Collection (comp begin or grab)	Composite end	Bottle Group(s)**
	Quincy Creek	☐ Comp ☑ Grab Eastern Date 4/23/12 Time 1300 Central	Eastern Date Time Central	B
	Field ID: Outfall Pond	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L): 4.12	Storet Station Number:
	Matrix (include type e.g. Salt, Fresh, etc): Fresh	Temp (C): 21.35	pH: 7.38	Sample Depth ☑ m ☐ ft: .15
		Salinity (PPTh) ☑ Sp Conductance (umho/cm): 233	NPDES Number:	
	Latitude: 30.58458 ☑ dd ☐ dms	Longitude: 84.55169 ☑ dd ☐ dms	Comments:	

Lab ID *	Location	Collection (comp begin or grab)	Composite end	Bottle Group(s)**
	Quincy WWTP	☐ Comp ☐ Grab Eastern Date 4/23/12 Time 1200 Central	Eastern Date Time Central	D
	Field ID: Field Blank	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number:
	Matrix (include type e.g. Salt, Fresh, etc):	Temp (C):	pH:	Sample Depth ☐ m ☐ ft:
		Salinity (PPTh) ☐ Sp Conductance (umho/cm):	NPDES Number:	
	Latitude: ☐ dd ☐ dms	Longitude: ☐ dd ☐ dms	Comments:	

Lab ID *	Location	Collection (comp begin or grab)	Composite end	Bottle Group(s)**
	Quincy WWTP	☑ Comp ☐ Grab Eastern Date 4/22/12 Time 1200 Central	Eastern Date 4/23/12 Time 1200 Central	A
	Field ID: TOX 1	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number:
	Matrix (include type e.g. Salt, Fresh, etc):	Temp (C):	pH:	Sample Depth ☐ m ☐ ft:
		Salinity (PPTh) ☐ Sp Conductance (umho/cm):	NPDES Number:	
	Latitude: ☐ dd ☐ dms	Longitude: ☐ dd ☐ dms	Comments:	

Relinquished By:	Date/Time	Shipping Method	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	4/23/12	HAND					[signature]	4/23/12 1528

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

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Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2012-04-23-26
FYI Quincy WWTP Sampling Inspection

Requester: Michelle Fish
Field Report Prepared By: Blake Spencer
Collected By: Blake Spencer, Pam Flores, Harris Walters
Send Final Report To: Toni Edwards
Sampling Agency: FDEP-BLABS-Biology

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

Lab ID *	Location / Field ID / Matrix / Temp (C) / pH / Latitude / Longitude	Collection (comp begin or grab) / Eastern / Date / Time / Central	Tot Res Chlorine (mg/L) / Diss Oxygen (mg/L)	Sample Depth / Salinity (PPTh) / Sp Conductance (umho/cm)	Composite end / Eastern / Date / Time / Central	Storet Station Number / NPDES Number	Bottle Group(s)**	Comments
	Location: Quincy WWTP Field ID: Test Site - Quincy Creek @ Roberts Sand Co. Matrix: Fresh Temp (C): 16.72 pH: 6.31 Latitude: 30.58447259 dd Longitude: -84.53918404 dd	Comp ☐ Grab ☒ Date 4/23/12 Time 1030 Eastern Central	Tot Res Chlorine (mg/L): Diss Oxygen (mg/L): 8.66	Sample Depth: .1 m ☒ ft ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) ☒: 99	Composite end Date Time Eastern Central	Storet Station Number: NPDES Number:	B, C	NO MI-FW-QNAC; ADD MI-FW-QLDC priority 12
	Location: Quincy WWTP Field ID: Control Site - Quincy Creek @ Hwy 12 Matrix: Fresh Temp (C): 19.14 pH: 6.43 Latitude: 30.59297597 dd (30.58447259 dms) Longitude: -84.56394766 dd	Comp ☐ Grab ☒ Date 4/23/12 Time 1430 Eastern Central	Tot Res Chlorine (mg/L): Diss Oxygen (mg/L): 8.14	Sample Depth: .2 m ☒ ft ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) ☒: 66	Composite end Date Time Eastern Central	Storet Station Number: NPDES Number:	B, C	NO MI-FW-QNAC; Add MT-FW-QLN Priority 12
	Location: Field ID: Matrix: Temp (C): pH: Latitude: dd dms Longitude: dd dms	Comp ☐ Grab ☐ Date Time Eastern Central	Tot Res Chlorine (mg/L): Diss Oxygen (mg/L):	Sample Depth: m ☐ ft ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) ☐	Composite end Date Time Eastern Central	Storet Station Number: NPDES Number:		Comments:
	Location: Field ID: Matrix: Temp (C): pH: Latitude: dd dms Longitude: dd dms	Comp ☐ Grab ☐ Date Time Eastern Central	Tot Res Chlorine (mg/L): Diss Oxygen (mg/L):	Sample Depth: m ☐ ft ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) ☐	Composite end Date Time Eastern Central	Storet Station Number: NPDES Number:		Comments:

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
							CNC	4/23/12

* Shaded Areas for Lab use only.

last revised October 1, 2003

** Please see reverse side for Bottle Group information.

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Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: RQ-2012-04-23-26
FYI Quincy WWTP Sampling Inspection

Event ID *

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

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

Field Report Prepared By:
Send Final Report To: Toni Edwards

Lab ID *	Location / Field ID / Matrix / Temp (C) / pH / Latitude / Longitude	Comp / Grab; Collection (comp begin or grab) Eastern Central Date Time; Composite end Eastern Central Date Time; Bottle Group(s)**	Tot Res Chlorine (mg/L); Diss Oxygen (mg/L); Storet Station Number	Sample Depth m / ft; Salinity (PPTh); Sp Conductance (umho/cm); NPDES Number	Comments
	Location: City of Quincy WWTP Field ID: Tox 2 Matrix (include type e.g. Salt, Fresh, etc): Temp (C): pH: Latitude ☐ dd ☐ dms: Longitude ☐ dd ☐ dms:	☒ Comp ☐ Grab Collection (comp begin or grab) Eastern Central Date 4/24/12 Time 1435 Composite end Eastern Central Date 4/25/12 Time 1335 Bottle Group(s)**: A	Tot Res Chlorine (mg/L): Diss Oxygen (mg/L): Storet Station Number:	Sample Depth ☐ m ☐ ft: ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm): NPDES Number:	Comments:
Lab ID *	Location / Field ID / Matrix / Temp (C) / pH / Latitude / Longitude	☐ Comp ☐ Grab; Collection (comp begin or grab) Eastern Central Date Time; Composite end Eastern Central Date Time; Bottle Group(s)**	Tot Res Chlorine (mg/L); Diss Oxygen (mg/L); Storet Station Number	Sample Depth ☐ m ☐ ft; ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm); NPDES Number	Comments
Lab ID *	Location / Field ID / Matrix / Temp (C) / pH / Latitude / Longitude	☐ Comp ☐ Grab; Collection (comp begin or grab) Eastern Central Date Time; Composite end Eastern Central Date Time; Bottle Group(s)**	Tot Res Chlorine (mg/L); Diss Oxygen (mg/L); Storet Station Number	Sample Depth ☐ m ☐ ft; ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm); NPDES Number	Comments
Lab ID *	Location / Field ID / Matrix / Temp (C) / pH / Latitude / Longitude	☐ Comp ☐ Grab; Collection (comp begin or grab) Eastern Central Date Time; Composite end Eastern Central Date Time; Bottle Group(s)**	Tot Res Chlorine (mg/L); Diss Oxygen (mg/L); Storet Station Number	Sample Depth ☐ m ☐ ft; ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm); NPDES Number	Comments

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
							CME	4/25/12

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Page 1 of 4 1600

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2012-04-23-26
FYI Quincy WWTP Sampling Inspection

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

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

Field Report Prepared By:
Send Final Report To: Toni Edwards

Lab ID *	Location / Field ID / Matrix / Temp (C) / pH / Latitude / Longitude	Comp / Grab; Collection (comp begin or grab) Eastern/Central Date Time; Composite end Eastern/Central Date Time; Tot Res Chlorine (mg/L); Diss Oxygen (mg/L); Storet Station Number; Sample Depth m/ft; Salinity (PPTh); Sp Conductance (umho/cm); NPDES Number; Comments	Bottle Group(s)**
	City of Quincy WWTP Tox 3	☒ Comp ☐ Grab; Collection Date 4/26/12 Time 9:00A Eastern Central; Composite end Date 4/27/12 Time 9:04A Eastern Central	A

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	4/27 1145						CM	4/27/12 1149A

Comments: 3 Bioassay Rec'd in Tox by J.D. 12:09 4.27.12

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Appendix E

Physical/Chemical and Habitat Assessment field sheets

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

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

ELFS

SAMPLE ID : Quincy Control ORG ID :

COUNTY : Gadsden STORET # :

DATE : 4/23/12 TIME : 2:30

Latitude : 30.57287597 (degrees) (minutes) (seconds)

Longitude : -84.56394768 (degrees) (minutes) (seconds)

SITE NAME : Quincy Creek SAMPLE COMPLETE ? Y

FIELD ID/NAME : Control Site RECEIVING BODY OF WATER :

RIPARIAN ZONE / STREAM FEATURES

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

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
100%							

Local Watershed Erosion (select one) : [X] None [ ] Slight [ ] Moderate [ ] Heavy

Local Watershed NPS Pollution : [X] No evidence [ ] Slight [ ] Moderate [ ] Heavy

Width of Riparian Vegetation (m) on Each Buffer Side

Left Bank : 7 | 8m Right Bank : 7 | 8m

High Water Mark: 0.12 (m) + 0.2 (present depth) = 0.32 (above bed)

(above present water level)

Artificially Impounded [ ] Yes [X] No

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

4 m wide

0.2 m/s m/s m/s

.3 m deep m deep m deep

Artificially Channelized : [X] No [ ] Some recovery [ ] Mostly recovered, more sinuous [ ] Recent, severe

Canopy Cover % : [X] Open [ ] Heavily Shaded [X] Lightly Shaded (11-45%) [ ] Moderate Shaded (46-80%)

SEDIMENT / SUBSTRATE

Sediment Oils [X] Absent [ ] Slight [ ] Moderate [ ] Profuse

Sediment Odors [X] Normal [ ] Sewage [ ] Petroleum [ ] Chemical [ ] Anaerobic [ ] Other (Specify) :

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

SUBSTRATE TYPE

Assessment Tool: [X] SCI [ ] BioRecon [ ] LCI [ ] LVI

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)	10%	IIII	III
Undercut Banks / Roots	10%	IIII	I
Leaf Packs or Mat	50%	IIII	III
Aquatic Vegetation	30%	IIII	III
Rock or Shell Rubble..			
Sand	5%	IIII	
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top :	0.2	18.14	6.43	8.14	66	0.03	
Mid-Depth :							[ ] VOB
Bottom :							

Water Surface Oils : [X] None [ ] Sheen [ ] Globs [ ] Slick

Water Odors : [X] Normal [ ] Sewage [ ] Petroleum [ ] Chemical [ ] Other (Specify) :

Water Sample Taken ? [X] Yes [ ] No

Algae Sample Taken ? [X] Yes [ ] No

SYSTEM TYPE [X] Stream [ ] Lake [ ] Wetland [ ] Estuary [ ] Other (Specify) :

Clarity [ ] Clear [ ] Slightly Turbid [X] Turbid [ ] Opaque

Color [ ] Tannic [ ] Green (Algae) [X] Clear [ ] Other (Specify) :

WEATHER CONDITIONS / NOTES :

ABUNDANCE

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

[X] The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved ? [ ] Yes [X] pH<2 [ ] No Algae samples preserved ? [ ] Yes [ ] No

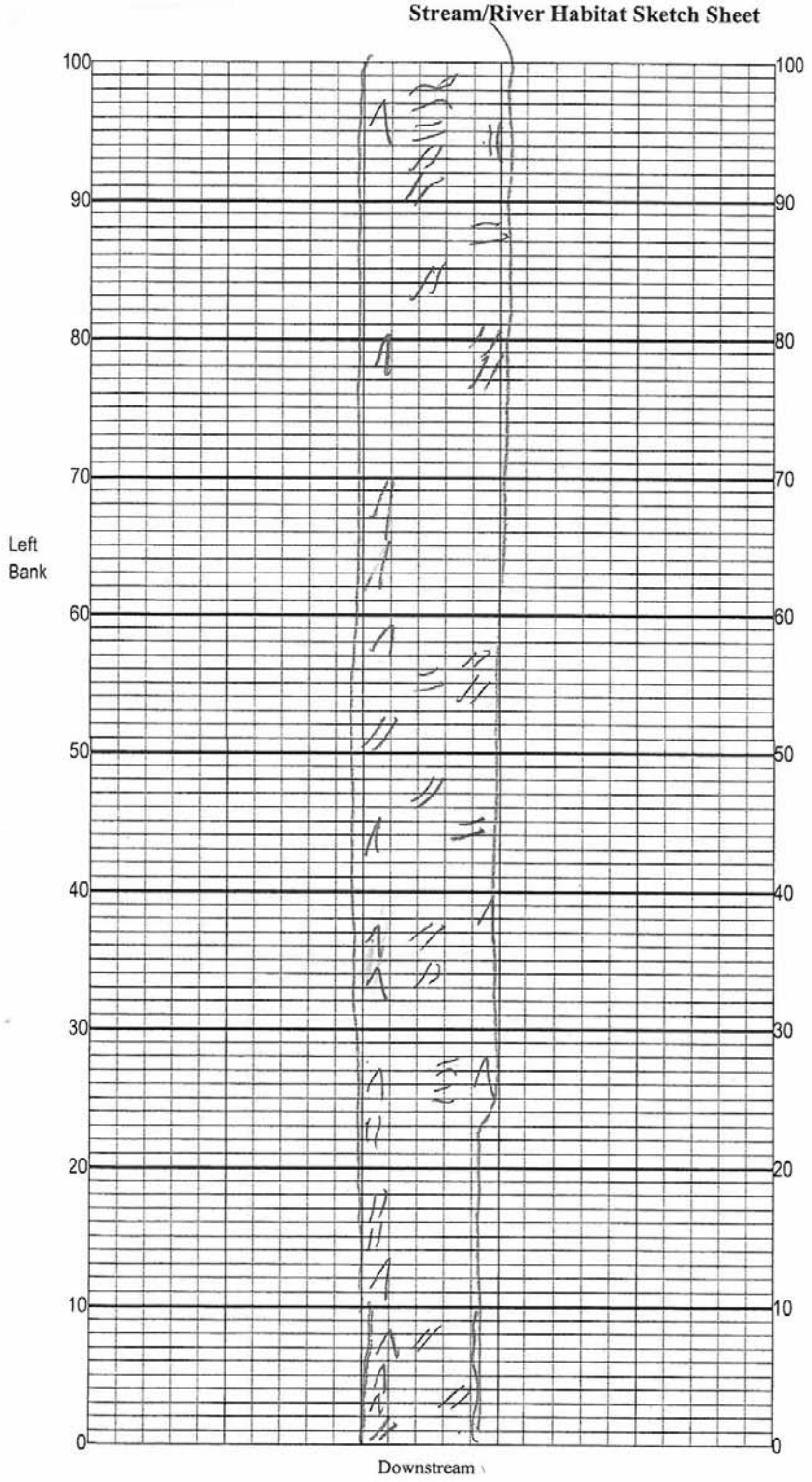
SAMPLING TEAM : Blake Spencer, Pam Flores, Harris Walters & Jen Weser

SIGNATURE :

DATE : 4/23/12

Revision Date: September 5, 2008

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



Location: Quincy Creek-Control Site

Date: 4/23/12

Sampler: Blake Spencer

100 m: Lattitude	30.59320088
Longitude	-84.56439941
0 m: Lattitude	30.59293369
Longitude	-84.56392301

Substrates: Code key, draw proportionate habitat abundance. %

- Snags ____
- Roots/undercut banks ____
- Leaf Packs (or mats) ____
- Aquatic Macrophytes ____
- _____ ____
- _____ ____
- Pools total # observed = ____ # range expected = ____

Average width 2.5 m
Average depth .2 m

Velocity measured at 30 meter mark.

WQ & chemistry taken at 5 meter mark.

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

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

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

Plants observed / other notes:

16
230 | 4010
230
1800

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

Revision Date: June 2, 2011

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

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION

STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (MM/DD/YY):	RECEIVING BODY OF WATER:

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Gadsden	Quincy WWTP	Quincy Creek @ Hwy 12

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 17	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 (17) 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 13	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 (13) 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity 15	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 13 Primary Score 58	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 (13) 12 11	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). 10 9 8 7 6	Pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 20	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. (20) 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth. 5 4 3 2 1
Bank Stability Right Bank 10 Left Bank 10	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 9	Width of vegetation greater than 18 m 10 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 6 Left Bank 6 Secondary Score 71	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

129 **TOTAL SCORE**

Date: 4/23/12	Analyst: Blake Spencer	Signature:

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

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

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SAMPLE ID : Quincy - Test Site ORG ID : _____
COUNTY : Gadsden STORET # : _____
DATE : 4/23/12 TIME : 1030

Latitude : 30.58452463 (degrees) (minutes) (seconds)
Longitude : -84.53987047 (degrees) (minutes) (seconds)

SITE NAME : Quincy WWTP SAMPLE COMPLETE ? Y
FIELD ID/NAME : TC# Site Quincy Creek @ Robert St. RECEIVING BODY OF WATER : _____

RIPARIAN ZONE / STREAM FEATURES

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

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
100%							

Local Watershed Erosion (select one) : [X] None [ ] Slight [ ] Moderate [ ] Heavy
Local Watershed NPS Pollution : [X] No evidence [ ] Slight [ ] Moderate [ ] Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
Left Bank : >18m Right Bank : >18m

High Water Mark: .1 (m) + .3 (above present water level) = .4m (present depth) (above bed)

Artificially Impounded [ ] Yes [X] No

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

.2 m/s	.2 m/s	.2 m/s
.3 m deep	.3 m deep	.3 m deep

Artificially Channelized : [X] No [ ] Some recovery [ ] Mostly recovered, more sinuous [ ] Recent, severe

Canopy Cover % : [ ] Open [ ] Lightly Shaded (11-45%) [ ] Heavily Shaded [X] Moderate Shaded (46-80%)

SEDIMENT / SUBSTRATE

Sediment Oils [X] Absent [ ] Slight [ ] Moderate [ ] Profuse

Sediment Odors [X] Normal [ ] Sewage [ ] Petroleum [ ] Chemical [ ] Anaerobic [ ] Other (Specify) :

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

SUBSTRATE TYPE
Assessment Tool: [X] SCI [ ] BioRecon [ ] LCI [ ] LVI

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)	3%	IIII	III
Undercut Banks / Roots	2%	II	III
Leaf Packs or Mat	0%	I	
Aquatic Vegetation			
Rock or Shell Rubble..			
Sand.....		III	
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top :	.1m	16.72	6.31	8.66	99		
Mid-Depth :							[ ] VOB
Bottom :							

Water Surface Oils : [X] None [ ] Sheen [ ] Globs [ ] Slick

Water Odors : [X] Normal [ ] Sewage [ ] Petroleum [ ] Chemical [ ] Other (Specify) :

Water Sample Taken ? [X] Yes [ ] No
Algae Sample Taken ? [X] Yes [ ] No

SYSTEM TYPE [X] Stream [ ] Lake [ ] Wetland [ ] Estuary [ ] Other (Specify) :

Clarity [ ] Clear [ ] Slightly Turbid [X] Turbid [ ] Opaque

Color [ ] Tannic [ ] Green (Algae) [X] Clear [ ] Other (Specify) :

WEATHER CONDITIONS / NOTES :

ABUNDANCE

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

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

SAMPLING TEAM : Blake Spencer, Harris Walters, Pam Flores & Jon Wagner

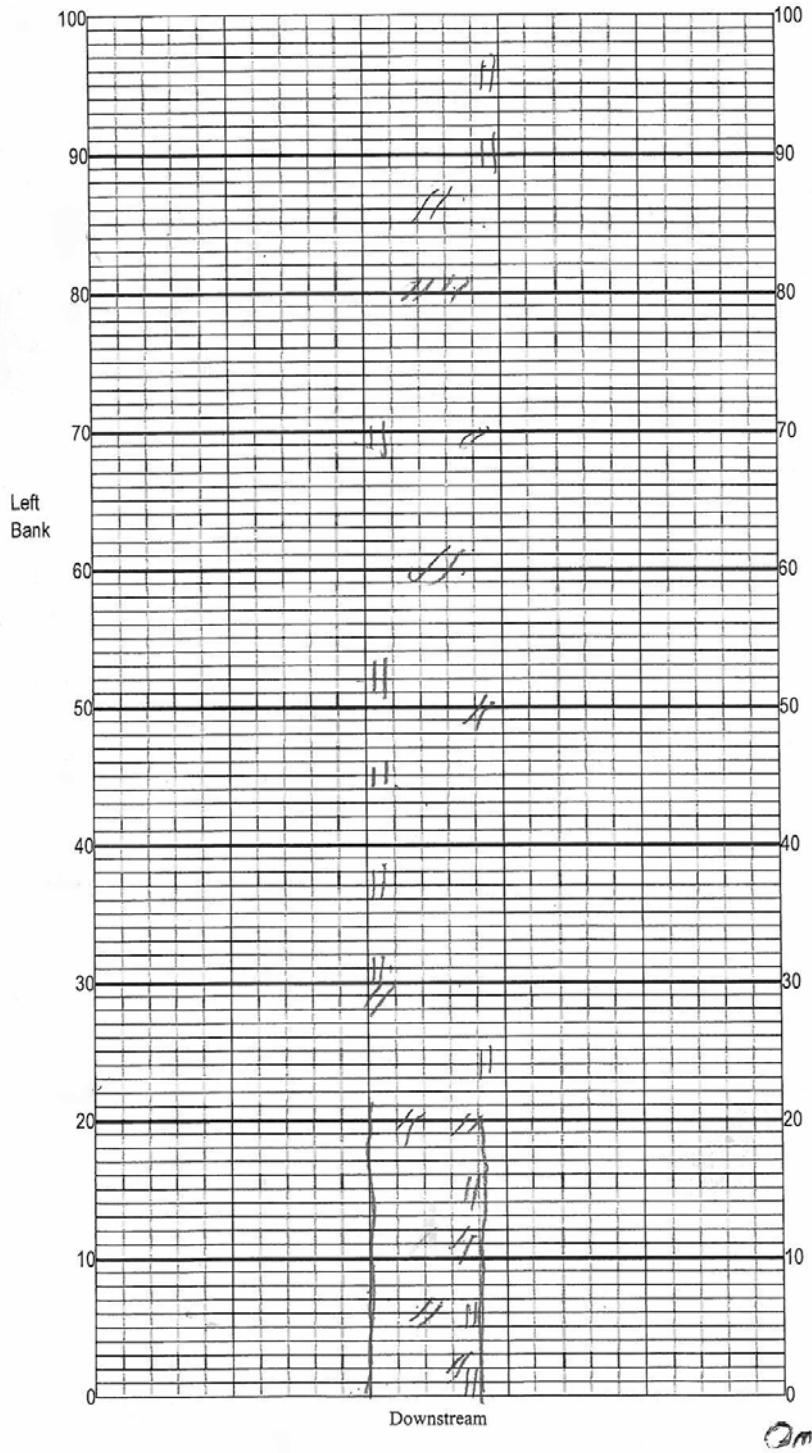
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DATE : 4/23/12

Revision Date: September 5, 2008

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

lat:
long



Substrates: Code key, draw proportionate habitat abundance.

- Snags
- Roots/undercut banks
- Leaf Packs (or mats)
- Aquatic 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 vegetation is altered or eliminated.

450

0m = 30.58444259 -84.53918404

100m = 30.58439254 -84.54011143

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

Revision Date: September 10, 2008

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

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION

STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (MM/DD/YY): 4/23/12	RECEIVING BODY OF WATER:
REMARKS:	COUNTY: Gadsden	LOCATION: Quincy WWTP Test Site.	FIELD ID/NAME: Quincy Creek @ Roberts Sand Co.

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), 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 4	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 15	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec (15) 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering 12 Primary Score 37	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 (12) 11	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). 10 9 8 7 6	Pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 20	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. (20) 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth. 5 4 3 2 1
Bank Stability Right Bank 9 Left Bank 8	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 (9)	Only meets 2 of the 3 requirements for optimal bank stability. (8) 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 10	Width of vegetation greater than 18 m (10) 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 10 Left Bank 9 Secondary Score 76	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

113 **TOTAL SCORE**

Date: 4/23/12	Analyst: Blake Spencer	Signature:

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

Appendix F
Chemical analysis of effluent and receiving water

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
4/23/2012 12:35	Effluent	AGP/LN	Algal Growth Potential	60.3		mg DryWt/L	0.3	0.9
4/23/2012 12:35	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
4/23/2012 12:35	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.61	I	mg/L	0.2	2
4/23/2012 12:35	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.3	I	ug/L	0.55	1.7
4/23/2012 12:35	Effluent	Microbiology	Fecal Coliforms-Membrane Filter	2	U	cfu/100 mL	2	2
4/23/2012 12:35	Effluent	Metals	Sodium	50.7		mg/L	0.5	2
4/23/2012 12:35	Effluent	Metals	Chromium	0.3	U	ug/L	0.3	1.2
4/23/2012 12:35	Effluent	Metals	Magnesium	5.86		mg/L	0.04	0.16
4/23/2012 12:35	Effluent	Metals	Lead	0.2	U	ug/L	0.2	0.8
4/23/2012 12:35	Effluent	Metals	Iron	74	I	ug/L	30	120
4/23/2012 12:35	Effluent	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
4/23/2012 12:35	Effluent	Metals	Calcium	35.6		mg/L	0.075	0.3
4/23/2012 12:35	Effluent	Metals	Selenium	0.2	U	ug/L	0.2	0.8
4/23/2012 12:35	Effluent	Metals	Copper	2.82		ug/L	0.5	1
4/23/2012 12:35	Effluent	Metals	Aluminum	11	I	ug/L	5	20
4/23/2012 12:35	Effluent	Metals	Arsenic	0.25	U	ug/L	0.25	1
4/23/2012 12:35	Effluent	Metals	Zinc	40		ug/L	5	20
4/23/2012 12:35	Effluent	Metals	Nickel	1.01		ug/L	0.25	1
4/23/2012 12:35	Effluent	Metals	Silver	0.025	U	ug/L	0.025	0.1
4/23/2012 12:35	Effluent	Nutrients	Organic Carbon	3.8	I	mg C/L	1	5
4/23/2012 12:35	Effluent	Nutrients	Color (true)	3.4	I	PCU	2.5	6
4/23/2012 12:35	Effluent	Nutrients	Turbidity	0.6		NTU	0.1	0.1
4/23/2012 12:35	Effluent	Nutrients	Alkalinity	124		mg CaCO3/L	0.65	2.5
4/23/2012 12:35	Effluent	Nutrients	Total-P	0.087		mg P/L	0.005	0.05
4/23/2012 12:35	Effluent	Nutrients	Fluoride	0.45		mg F/L	0.035	0.1
4/23/2012 12:35	Effluent	Nutrients	Sulfate	29		mg SO4/L	0.4	1
4/23/2012 12:35	Effluent	Nutrients	Ammonia-N	0.028		mg N/L	0.01	0.02
4/23/2012 12:35	Effluent	Nutrients	O-Phosphate-P	0.063		mg P/L	0.004	0.01
4/23/2012 12:35	Effluent	Nutrients	TSS	2	U	mg/L	2	10
4/23/2012 12:35	Effluent	Nutrients	Kjeldahl Nitrogen	0.62		mg N/L	0.08	0.2
4/23/2012 12:35	Effluent	Nutrients	Chloride	50		mg Cl/L	0.4	1
4/23/2012 12:35	Effluent	Nutrients	NO2NO3-N	1		mg N/L	0.02	0.05
4/23/2012 12:35	Effluent	Pesticides	Hexazinone	0.12	U	ug/L	0.12	0.47
4/23/2012 12:35	Effluent	Pesticides	Metalaxyl	0.29	U	ug/L	0.29	1.2
4/23/2012 12:35	Effluent	Pesticides	Diazinon	0.059	U	ug/L	0.059	0.23
4/23/2012 12:35	Effluent	Pesticides	Simazine	0.059	U	ug/L	0.059	0.23
4/23/2012 12:35	Effluent	Pesticides	Prometryn	0.18	U	ug/L	0.18	0.7
4/23/2012 12:35	Effluent	Pesticides	Parathion Ethyl	0.18	U	ug/L	0.18	0.7

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
4/23/2012 12:35	Effluent	Pesticides	Metolachlor	0.59	U	ug/L	0.59	2.3
4/23/2012 12:35	Effluent	Pesticides	Fonofos	0.12	U	ug/L	0.12	0.47
4/23/2012 12:35	Effluent	Pesticides	Fenamiphos	0.23	U	ug/L	0.23	0.94
4/23/2012 12:35	Effluent	Pesticides	Ethion	0.059	U	ug/L	0.059	0.23
4/23/2012 12:35	Effluent	Pesticides	Chlorpyrifos Methyl	0.12	U	ug/L	0.12	0.47
4/23/2012 12:35	Effluent	Pesticides	Malathion	0.18	U	ug/L	0.18	0.7
4/23/2012 12:35	Effluent	Pesticides	Azinphos Methyl	0.23	U	ug/L	0.23	0.94
4/23/2012 12:35	Effluent	Pesticides	Phorate	0.059	U	ug/L	0.059	0.23
4/23/2012 12:35	Effluent	Pesticides	Chlorpyrifos Ethyl	0.059	U	ug/L	0.059	0.23
4/23/2012 12:35	Effluent	Pesticides	Parathion Methyl	0.12	U	ug/L	0.12	0.47
4/23/2012 12:35	Effluent	Pesticides	Mevinphos	0.23	U	ug/L	0.23	0.94
4/23/2012 12:35	Effluent	Pesticides	Alachlor	0.7	U	ug/L	0.7	2.8
4/23/2012 12:35	Effluent	Pesticides	Norflurazon	0.18	U	ug/L	0.18	0.7
4/23/2012 12:35	Effluent	Pesticides	Naled	0.94	U	ug/L	0.94	3.8
4/23/2012 12:35	Effluent	Pesticides	Bromacil	0.23	U	ug/L	0.23	0.94
4/23/2012 12:35	Effluent	Pesticides	Atrazine	0.059	U	ug/L	0.059	0.23
4/23/2012 12:35	Effluent	Pesticides	Ethoprop	0.12	U	ug/L	0.12	0.47
4/23/2012 12:35	Effluent	Pesticides	Butylate	0.23	U	ug/L	0.23	0.94
4/23/2012 12:35	Effluent	Pesticides	Ametryn	0.059	U	ug/L	0.059	0.23
4/23/2012 12:35	Effluent	Pesticides	Metribuzin	0.12	U	ug/L	0.12	0.47
4/23/2012 12:35	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	16	U	ug/L	16	65
4/23/2012 12:35	Effluent	Priority Organic Pollutants	2-Nitrophenol	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.2	U	ug/L	2.2	8.6
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Acenaphthene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	16	U	ug/L	16	65
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Hexachlorobenzene	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	11	U	ug/L	11	43
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Diethyl phthalate	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Pentachlorophenol	3.2	U	ug/L	3.2	13
4/23/2012 12:35	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	4-Nitrophenol	16	U	ug/L	16	65
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.2	U	ug/L	3.2	13
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Chrysene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Dimethyl phthalate	11	U	ug/L	11	43
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Nitrobenzene	2.2	U	ug/L	2.2	8.6
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Phenanthrene	0.22	U	ug/L	0.22	0.86

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
4/23/2012 12:35	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	5.4	U	ug/L	5.4	22
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.2	U	ug/L	3.2	13
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Hexachloroethane	3.2	U	ug/L	3.2	13
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Isophorone	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Naphthalene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Pyrene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.2	U	ug/L	3.2	13
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Benzidine	110	UJ	ug/L	110	430
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Phenol	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	2-Chlorophenol	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Anthracene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	5.4	U	ug/L	5.4	22
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Fluoranthene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	3.2	U	ug/L	3.2	13
4/23/2012 12:35	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.2	U	ug/L	2.2	8.6
4/23/2012 12:35	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.2	U	ug/L	3.2	13
4/23/2012 12:35	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	43	UJ	ug/L	43	170
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Acenaphthylene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Fluorene	0.22	U	ug/L	0.22	0.86
4/23/2012 12:35	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	1.1	U	ug/L	1.1	4.3
4/23/2012 12:35	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	2.2	U	ug/L	2.2	8.6
4/23/2012 12:35	Effluent	Field Parameter	Temperature	21.73		C		
4/23/2012 12:35	Effluent	Field Parameter	Sample Depth	0.15		m		
4/23/2012 12:35	Effluent	Field Parameter	Specific Conductance	471		umhos/cm		
4/23/2012 12:35	Effluent	Field Parameter	Dissolved Oxygen	7.89		mg/L		
4/23/2012 12:35	Effluent	Field Parameter	pH	7.39				
4/23/2012 12:00	Effluent	Toxicology	Bioassay-Acute-Def-FW-C.dubia, LC50	100	L	LC50		
4/23/2012 12:00	Effluent	Toxicology	Bioassay-Chronic-Scrn-FW-C.dubia, NOEC	100		NOEC		
4/23/2012 12:00	Effluent	Toxicology	Bioassay-Chronic-Scrn-FW-C.dubia, IC25	100	L	IC25		
4/23/2012 12:00	Effluent	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	12.5		NOEC		
4/23/2012 12:00	Effluent	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	100	L	IC25		
4/23/2012 14:30	Control Site	AGP/LN	Algal Growth Potential	11.1		mg DryWt/L	0.3	0.9

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
4/23/2012 14:30	Control Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.2	I	mg/L	0.2	2
4/23/2012 14:30	Control Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
4/23/2012 14:30	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.66	I	ug/L	0.55	1.7
4/23/2012 14:30	Control Site	Microbiology	Fecal Coliforms-Membrane Filter	280		cfu/100 mL	9	9
4/23/2012 14:30	Control Site	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
4/23/2012 14:30	Control Site	Metals	Zinc	5	U	ug/L	5	20
4/23/2012 14:30	Control Site	Metals	Aluminum	416		ug/L	5	20
4/23/2012 14:30	Control Site	Metals	Sodium	3.4		mg/L	0.5	2
4/23/2012 14:30	Control Site	Metals	Iron	1610		ug/L	30	120
4/23/2012 14:30	Control Site	Metals	Silver	0.025	U	ug/L	0.025	0.1
4/23/2012 14:30	Control Site	Metals	Chromium	0.69	I	ug/L	0.3	1.2
4/23/2012 14:30	Control Site	Metals	Selenium	0.2	U	ug/L	0.2	0.8
4/23/2012 14:30	Control Site	Metals	Nickel	0.25	U	ug/L	0.25	1
4/23/2012 14:30	Control Site	Metals	Lead	0.49	I	ug/L	0.2	0.8
4/23/2012 14:30	Control Site	Metals	Arsenic	0.66	I	ug/L	0.25	1
4/23/2012 14:30	Control Site	Metals	Magnesium	2.38		mg/L	0.04	0.16
4/23/2012 14:30	Control Site	Metals	Calcium	6.32		mg/L	0.075	0.3
4/23/2012 14:30	Control Site	Metals	Copper	0.57	I	ug/L	0.5	1
4/23/2012 14:30	Control Site	Nutrients	Chloride	5.5		mg Cl/L	0.2	0.5
4/23/2012 14:30	Control Site	Nutrients	O-Phosphate-P	0.038		mg P/L	0.004	0.01
4/23/2012 14:30	Control Site	Nutrients	Ammonia-N	0.038		mg N/L	0.01	0.02
4/23/2012 14:30	Control Site	Nutrients	Kjeldahl Nitrogen	0.32		mg N/L	0.08	0.2
4/23/2012 14:30	Control Site	Nutrients	Alkalinity	23		mg CaCO3/L	0.65	2.5
4/23/2012 14:30	Control Site	Nutrients	Turbidity	9.6		NTU	0.1	0.1
4/23/2012 14:30	Control Site	Nutrients	Color (true)	56		PCU	2.5	6
4/23/2012 14:30	Control Site	Nutrients	NO2NO3-N	0.16		mg N/L	0.004	0.01
4/23/2012 14:30	Control Site	Nutrients	Organic Carbon	4.4	I	mg C/L	1	5
4/23/2012 14:30	Control Site	Nutrients	Fluoride	0.09	I	mg F/L	0.035	0.1
4/23/2012 14:30	Control Site	Nutrients	Total-P	0.096		mg P/L	0.005	0.05
4/23/2012 14:30	Control Site	Nutrients	TSS	10		mg/L	2	10
4/23/2012 14:30	Control Site	Nutrients	Sulfate	0.62		mg SO4/L	0.2	0.5
4/23/2012 14:30	Control Site	Field Parameter	pH	6.43				
4/23/2012 14:30	Control Site	Field Parameter	Sample Depth	0.2		m		
4/23/2012 14:30	Control Site	Field Parameter	Dissolved Oxygen	8.14		mg/L		
4/23/2012 14:30	Control Site	Field Parameter	Specific Conductance	66		umhos/cm		
4/23/2012 14:30	Control Site	Field Parameter	Temperature	18.14		C		
4/23/2012 10:30	Test Site	AGP/LN	Algal Growth Potential	13		mg DryWt/L	0.3	0.9
4/23/2012 10:30	Test Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.88	I	ug/L	0.4	1.2
4/23/2012 10:30	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.2	I	ug/L	0.55	1.7
4/23/2012 10:30	Test Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.1	I	mg/L	0.2	2
4/23/2012 10:30	Test Site	Microbiology	Fecal Coliforms-Membrane Filter	180	B	cfu/100 mL	2	2
4/23/2012 10:30	Test Site	Metals	Iron	2110		ug/L	30	120

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
4/23/2012 10:30	Test Site	Metals	Sodium	7.1		mg/L	0.5	2
4/23/2012 10:30	Test Site	Metals	Arsenic	0.77	I	ug/L	0.25	1
4/23/2012 10:30	Test Site	Metals	Nickel	0.37	I	ug/L	0.25	1
4/23/2012 10:30	Test Site	Metals	Calcium	9.45		mg/L	0.075	0.3
4/23/2012 10:30	Test Site	Metals	Silver	0.025	U	ug/L	0.025	0.1
4/23/2012 10:30	Test Site	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
4/23/2012 10:30	Test Site	Metals	Zinc	5	U	ug/L	5	20
4/23/2012 10:30	Test Site	Metals	Lead	0.66	I	ug/L	0.2	0.8
4/23/2012 10:30	Test Site	Metals	Copper	0.71	I	ug/L	0.5	1
4/23/2012 10:30	Test Site	Metals	Selenium	0.2	U	ug/L	0.2	0.8
4/23/2012 10:30	Test Site	Metals	Magnesium	2.86		mg/L	0.04	0.16
4/23/2012 10:30	Test Site	Metals	Aluminum	615		ug/L	5	20
4/23/2012 10:30	Test Site	Metals	Chromium	0.88	I	ug/L	0.3	1.2
4/23/2012 10:30	Test Site	Nutrients	Ammonia-N	0.044		mg N/L	0.01	0.02
4/23/2012 10:30	Test Site	Nutrients	Alkalinity	32		mg CaCO3/L	0.65	2.5
4/23/2012 10:30	Test Site	Nutrients	NO2NO3-N	0.15		mg N/L	0.004	0.01
4/23/2012 10:30	Test Site	Nutrients	Turbidity	15		NTU	0.1	0.1
4/23/2012 10:30	Test Site	Nutrients	Sulfate	3		mg SO4/L	0.2	0.5
4/23/2012 10:30	Test Site	Nutrients	TSS	10		mg/L	2	10
4/23/2012 10:30	Test Site	Nutrients	Chloride	9.1		mg Cl/L	0.2	0.5
4/23/2012 10:30	Test Site	Nutrients	Color (true)	59	A	PCU	2.5	6
4/23/2012 10:30	Test Site	Nutrients	Organic Carbon	5.1		mg C/L	1	5
4/23/2012 10:30	Test Site	Nutrients	Kjeldahl Nitrogen	0.38		mg N/L	0.08	0.2
4/23/2012 10:30	Test Site	Nutrients	Total-P	0.13		mg P/L	0.005	0.05
4/23/2012 10:30	Test Site	Nutrients	Fluoride	0.13		mg F/L	0.035	0.1
4/23/2012 10:30	Test Site	Nutrients	O-Phosphate-P	0.045		mg P/L	0.004	0.01
4/23/2012 10:30	Test Site	Field Parameter	Specific Conductance	99		umhos/cm		
4/23/2012 10:30	Test Site	Field Parameter	Dissolved Oxygen	8.66		mg/L		
4/23/2012 10:30	Test Site	Field Parameter	Temperature	16.72		C		
4/23/2012 10:30	Test Site	Field Parameter	Temperature	16.72		C		
4/23/2012 10:30	Test Site	Field Parameter	pH	6.31				
4/23/2012 10:30	Test Site	Field Parameter	pH	6.31				
4/23/2012 10:30	Test Site	Field Parameter	Specific Conductance	99		umhos/cm		
4/23/2012 10:30	Test Site	Field Parameter	Sample Depth	0.1		m		
4/23/2012 10:30	Test Site	Field Parameter	Dissolved Oxygen	8.66		mg/L		
4/23/2012 10:30	Test Site	Field Parameter	Sample Depth	0.1		m		
4/23/2012 13:00	Field Blank	Metals	Sodium	0.5	U	mg/L	0.5	2
4/23/2012 13:00	Field Blank	Metals	Copper	0.5	U	ug/L	0.5	1
4/23/2012 13:00	Field Blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
4/23/2012 13:00	Field Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
4/23/2012 13:00	Field Blank	Metals	Zinc	5	U	ug/L	5	20
4/23/2012 13:00	Field Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
4/23/2012 13:00	Field Blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
4/23/2012 13:00	Field Blank	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
4/23/2012 13:00	Field Blank	Metals	Chromium	0.3	U	ug/L	0.3	1.2
4/23/2012 13:00	Field Blank	Metals	Iron	30	U	ug/L	30	120
4/23/2012 13:00	Field Blank	Metals	Aluminum	5	U	ug/L	5	20
4/23/2012 13:00	Field Blank	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
4/23/2012 13:00	Field Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
4/23/2012 13:00	Field Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
4/23/2012 13:00	Field Blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
4/23/2012 13:00	Field Blank	Nutrients	Sulfate	0.2	U	mg SO4/L	0.2	0.5
4/23/2012 13:00	Field Blank	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
4/23/2012 13:00	Field Blank	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
4/23/2012 13:00	Field Blank	Nutrients	Chloride	0.2	U	mg Cl/L	0.2	0.5
4/23/2012 13:00	Field Blank	Nutrients	Organic Carbon	1	U	mg C/L	1	5
4/23/2012 13:00	Field Blank	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
4/23/2012 13:00	Field Blank	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
4/23/2012 13:00	Field Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
4/23/2012 13:00	Field Blank	Nutrients	Color (true)	2.5	U	PCU	2.5	6
4/23/2012 13:00	Field Blank	Nutrients	Turbidity	0.3		NTU	0.1	0.1
4/23/2012 13:00	Field Blank	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
4/23/2012 13:00	Field Blank	Pesticides	Fenamiphos	0.22	U	ug/L	0.22	0.89
4/23/2012 13:00	Field Blank	Pesticides	Simazine	0.056	U	ug/L	0.056	0.22
4/23/2012 13:00	Field Blank	Pesticides	Butylate	0.22	U	ug/L	0.22	0.89
4/23/2012 13:00	Field Blank	Pesticides	Diazinon	0.056	U	ug/L	0.056	0.22
4/23/2012 13:00	Field Blank	Pesticides	Ethion	0.056	U	ug/L	0.056	0.22
4/23/2012 13:00	Field Blank	Pesticides	Phorate	0.056	U	ug/L	0.056	0.22
4/23/2012 13:00	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.056	U	ug/L	0.056	0.22
4/23/2012 13:00	Field Blank	Pesticides	Ethoprop	0.11	U	ug/L	0.11	0.45
4/23/2012 13:00	Field Blank	Pesticides	Metolachlor	0.56	U	ug/L	0.56	2.2
4/23/2012 13:00	Field Blank	Pesticides	Parathion Ethyl	0.17	U	ug/L	0.17	0.67
4/23/2012 13:00	Field Blank	Pesticides	Ametryn	0.056	U	ug/L	0.056	0.22
4/23/2012 13:00	Field Blank	Pesticides	Azinphos Methyl	0.22	U	ug/L	0.22	0.89
4/23/2012 13:00	Field Blank	Pesticides	Malathion	0.17	U	ug/L	0.17	0.67
4/23/2012 13:00	Field Blank	Pesticides	Metalaxyl	0.28	U	ug/L	0.28	1.1
4/23/2012 13:00	Field Blank	Pesticides	Parathion Methyl	0.11	U	ug/L	0.11	0.45
4/23/2012 13:00	Field Blank	Pesticides	Mevinphos	0.22	U	ug/L	0.22	0.89
4/23/2012 13:00	Field Blank	Pesticides	Prometryn	0.17	U	ug/L	0.17	0.67
4/23/2012 13:00	Field Blank	Pesticides	Metribuzin	0.11	U	ug/L	0.11	0.45
4/23/2012 13:00	Field Blank	Pesticides	Atrazine	0.056	U	ug/L	0.056	0.22
4/23/2012 13:00	Field Blank	Pesticides	Fonofos	0.11	U	ug/L	0.11	0.45
4/23/2012 13:00	Field Blank	Pesticides	Hexazinone	0.11	U	ug/L	0.11	0.45
4/23/2012 13:00	Field Blank	Pesticides	Norflurazon	0.17	U	ug/L	0.17	0.67

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
4/23/2012 13:00	Field Blank	Pesticides	Bromacil	0.22	U	ug/L	0.22	0.89
4/23/2012 13:00	Field Blank	Pesticides	Chlorpyrifos Methyl	0.11	U	ug/L	0.11	0.45
4/23/2012 13:00	Field Blank	Pesticides	Naled	0.89	U	ug/L	0.89	3.6
4/23/2012 13:00	Field Blank	Pesticides	Alachlor	0.67	U	ug/L	0.67	2.7
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	16	U	ug/L	16	65
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.2	U	ug/L	3.2	13
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.2	U	ug/L	3.2	13
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Nitrobenzene	2.2	U	ug/L	2.2	8.6
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Benzidine	110	U	ug/L	110	430
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.2	U	ug/L	3.2	13
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Diethyl phthalate	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Fluorene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.2	U	ug/L	3.2	13
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Naphthalene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	43	U	ug/L	43	170
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.2	U	ug/L	2.2	8.6
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	5.4	U	ug/L	5.4	22
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	3.2	U	ug/L	3.2	13
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Phenol	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	2-Chlorophenol	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	4-Nitrophenol	16	U	ug/L	16	65
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	5.4	U	ug/L	5.4	22
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.2	U	ug/L	2.2	8.6
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Pentachlorophenol	3.2	U	ug/L	3.2	13
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	2-Nitrophenol	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	16	U	ug/L	16	65

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Chrysene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Fluoranthene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	11	U	ug/L	11	43
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Anthracene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Hexachloroethane	3.2	U	ug/L	3.2	13
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Isophorone	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.2	U	ug/L	2.2	8.6
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Phenanthrene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Pyrene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1	U	ug/L	1.1	4.3
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Acenaphthene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.22	U	ug/L	0.22	0.86
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	11	U	ug/L	11	43
4/23/2012 13:00	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	1.1	U	ug/L	1.1	4.3
4/23/2012 14:00	Outfall Pond	AGP/LN	Algal Growth Potential	56		mg DryWt/L	0.3	0.9
4/23/2012 14:00	Outfall Pond	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.62	U	ug/L	0.62	1.9
4/23/2012 14:00	Outfall Pond	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.45	U	ug/L	0.45	1.4
4/23/2012 14:00	Outfall Pond	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.3	I	mg/L	0.2	2
4/23/2012 14:00	Outfall Pond	Metals	Lead	0.25	I	ug/L	0.2	0.8
4/23/2012 14:00	Outfall Pond	Metals	Copper	2.72		ug/L	0.5	1
4/23/2012 14:00	Outfall Pond	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
4/23/2012 14:00	Outfall Pond	Metals	Arsenic	0.34	I	ug/L	0.25	1
4/23/2012 14:00	Outfall Pond	Metals	Iron	300		ug/L	30	120
4/23/2012 14:00	Outfall Pond	Metals	Calcium	35.5		mg/L	0.075	0.3
4/23/2012 14:00	Outfall Pond	Metals	Nickel	1	I	ug/L	0.25	1
4/23/2012 14:00	Outfall Pond	Metals	Sodium	50.5		mg/L	0.5	2
4/23/2012 14:00	Outfall Pond	Metals	Aluminum	42		ug/L	5	20
4/23/2012 14:00	Outfall Pond	Metals	Zinc	45		ug/L	5	20
4/23/2012 14:00	Outfall Pond	Metals	Selenium	0.2	U	ug/L	0.2	0.8
4/23/2012 14:00	Outfall Pond	Metals	Chromium	0.3	U	ug/L	0.3	1.2
4/23/2012 14:00	Outfall Pond	Metals	Silver	0.025	U	ug/L	0.025	0.1
4/23/2012 14:00	Outfall Pond	Metals	Magnesium	5.84		mg/L	0.04	0.16
4/23/2012 14:00	Outfall Pond	Nutrients	Color (true)	5.5	I	PCU	2.5	6
4/23/2012 14:00	Outfall Pond	Nutrients	O-Phosphate-P	0.061		mg P/L	0.004	0.01
4/23/2012 14:00	Outfall Pond	Nutrients	TSS	4	I	mg/L	2	10
4/23/2012 14:00	Outfall Pond	Nutrients	Alkalinity	120		mg CaCO3/L	0.65	2.5
4/23/2012 14:00	Outfall Pond	Nutrients	Chloride	50		mg Cl/L	0.2	0.5
4/23/2012 14:00	Outfall Pond	Nutrients	Fluoride	0.44		mg F/L	0.035	0.1
4/23/2012 14:00	Outfall Pond	Nutrients	Sulfate	27		mg SO4/L	0.2	0.5
4/23/2012 14:00	Outfall Pond	Nutrients	NO2NO3-N	1		mg N/L	0.02	0.05
4/23/2012 14:00	Outfall Pond	Nutrients	Turbidity	2	A	NTU	0.1	0.1

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
4/23/2012 14:00	Outfall Pond	Nutrients	Organic Carbon	4	I	mg C/L	1	5
4/23/2012 14:00	Outfall Pond	Nutrients	Ammonia-N	0.043		mg N/L	0.01	0.02
4/23/2012 14:00	Outfall Pond	Nutrients	Total-P	0.11		mg P/L	0.005	0.05
4/23/2012 14:00	Outfall Pond	Nutrients	Kjeldahl Nitrogen	0.62		mg N/L	0.08	0.2
4/23/2012 14:00	Outfall Pond	Field Parameter	pH	7.38				
4/23/2012 14:00	Outfall Pond	Field Parameter	Temperature	19.35		C		
4/23/2012 14:00	Outfall Pond	Field Parameter	Sample Depth	0.15		m		
4/23/2012 14:00	Outfall Pond	Field Parameter	Specific Conductance	233		umhos/cm		
4/23/2012 14:00	Outfall Pond	Field Parameter	Dissolved Oxygen	4.12		mg/L		

Appendix G

Toxicological results

FDEP Biology Laboratory - Acute Bioassay Bench Sheets

Facility: Quincy NWTP

Address: 300 N&T and A Drive, Quincy

City: Quincy County: Gadsden

Contact/District: Nathan Mulkey/Northwest

NPDES Permit #: FL CC29033

LIMS Job #: TLH-2012-04-23-12 LIMS Sample #: 1423905

Lims Data Entry: 5-3-12-MF Data Entry Verification: 5.3.12 JD

Sample Collection: Date: 4-23-12 Time: 1300

Hold Time Start: Date: 4-23-12 Time: 1300

Comments:

Sample #2: lims # = 1424732
lims Job#: 2012-04-25-91

Initial sample handling:

Instructions: Check yes or no. If yes is checked, complete blanks

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

Aeration: ☑ yes ☐ no Initial DO: 9.4 mg/L Final DO: 8.6 mg/L Duration: 5 minutes Rate: ~ 100 bubbles/min

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

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

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

Sample Validation:

Instructions: Check yes or no. Fill in temperatures.

Temperature: Shipped ≤ 6°C ☑ Yes ☐ No — IF Hand Delivered: Cooling ☐ Yes ☐ No (received ____°C collected ____°C)

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

Investigators' Signatures:	Initials:
Marshall Faircloth	MF
Bruce Mendenhall	BM
James Daniels	JD
Adrienne Pennington	AP
REVIEWER: Leigh Miller	dm

Diluent/Control Batch#:	4-24-12								
Water Quality Parameters	SDMHW ~~20% DMW~~	Well Water	Moderately Hard Water	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Other: Sample 2	Original Sample	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	N/A	N/A	NOT measured		MF
Lab Total Residual Cl_2 (mg/L):	<0.03					<0.03	<0.03	AP/MF	JD
Alkalinity (mg/L as $CaCO_3$):	68					141	142	AP	JD
Hardness (mg/L as $CaCO_3$):	92					118	113	AP	JD
Total Ammonia (mg/L as N):	<0.017					<0.017	<0.017	MF	AP
Conductivity: ☑ µmhos ☐ mmhos	333					502	480	MF	AP
Salinity (ppth):	—					—	—	—	—

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FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1423905 **SOP#: TA 07** 01 **Test #** 1 **of** 1

Test Species:
Batch #: 4-24-12 Age: < 24 hour
- [x] *Ceriodaphnia dubia*
- [ ] *Cyprinella leedsi*
- [ ] *Pimephales promelas*
- [ ] *Menidia beryllina*
- [ ] *Americamysis bahia*
- [ ] Other:

Test Validation
Control Survival ≥ 90%: [x] Yes [ ] No
Temperature Range ≤ 3° C: [x] Yes [ ] No

Diluent (Batch # ~~4-MF~~ 4-23-12 **)**
- [ ] ASW
- [ ] 20% DMW
- [x] MHW + Selenium
- [ ] Well

Test Type: [x] Acute [x] Definitive
[ ] Static [x] Static Renewal [ ] Flow-Through

Test Duration:
- [ ] 48 hr
- [x] 96 hr
- [ ] ___hr

Test Started: Date 4-24-12 Time 1015

Test Ended: Date 4-28-12 Time 0900

Chamber Size 30 **ml**
Test Volume: 20 **ml**

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	1	5	5	5	5	5	5
	B	2	5	5	5	5	5	5
	C	3	5	5	5	5	5	5
	D	4	5	5	5	5	5	5
6.25%	A	5	5	5	5	5	5	5
	B	6	5	5	5	5	5	5
	C	7	5	5	5	5	5	5
	D	8	5	5	5	5	5	5
12.5%	A	9	5	5	5	5	5	5
	B	10	5	5	5	5	5	5
	C	11	5	5	5	5	5	5
	D	12	5	5	5	5	5	5
25%	A	13	5	5	5	5	5	5
	B	14	5	5	5	5	5	5
	C	15	5	5	5	5	5	5
	D	16	5	5	5	5	5	5
50%	A	17	5	5	5	5	5	5
	B	18	5	5	5	5	5	5
	C	19	5	5	5	5	5	5
	D	20	5	5	5	5	5	5
100%	A	21	5	5	5	5	5	5
	B	22	5	5	5	5	5	5
	C	23	5	5	5	5	5	5
	D	24	5	5	5	5	5	5
Checked or Verified by:			AP	MF	MF	MF	BA	BA

Food
- [x] YCT Batch# 1-20-12
- [x] P. subcapitata Batch# 2-17-12
- [ ] Artemia Lot#_____

Feeding and Artemia Batch #
- [x] 0 hr____ [x] Prior to Test
- [ ] 24 hr____
- [x] 48 hr____ [x] Prior to Renewal
- [ ] 72 hr____

Temperature Range (°C)
Incubator # 2
min. 24.1 max. 26.2 mean —

Incubator #___
min.____max.____mean____

Waterbath #___
min.____max.____mean____

Room B246
min. 24.1 max. 25.0 mean____

Light intensity (ft. candles): 50-100

Photoperiod (hours): 16 light, 8 dark

Loaded/ Verified by: MF / AP
m = missing, d = dead, BR/AR Before/ After Renewal

Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 0 % LC50: > 100%
Calculated LC50 (Definitive) 95% CI_____ Method_____

Comments:

V. 2.5 1-13-10

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

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FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 1423905 Test # 1 of 1

Test Species:

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

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

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☑ µmhos ☐ mmhos	Salinity* (ppth)
Control	A	0 hr	8.2	25.1	7.8	333	
		24 hr					
	C	48 hr BR	8.3	25.2	7.9	325	
	C	48 hr AR	8.3	24.1	8.2	351	
		72 hr					
	A	96 hr	7.6	24.2	6.9	347	
6.25%	A	0 hr	8.2	25.3	8.2	344	
		24 hr					
	C	48 hr BR	8.3	25.5	7.9	334	
	C	48 hr AR	8.3	24.2	8.2	356	
		72 hr					
	A	96 hr	7.7	24.0	7.0	366	
12.5%	A	0 hr	8.2	25.2	8.3	354	
		24 hr					
	C	48 hr BR	8.2	25.7	7.9	343	
	C	48 hr AR	8.3	24.1	8.4	373	
		72 hr					
	A	96 hr	7.7	24.0	7.7	376	
25%	A	0 hr	8.1	24.9	8.0	370	
		24 hr					
	C	48 hr BR	8.3	25.5	7.9	365	
	C	48 hr AR	8.2	24.3	8.2	392	
		72 hr					
	A	96 hr	7.8	24.0	7.3	391	
50%	A	0 hr	8.1	24.6	7.9	402	
		24 hr					
	C	48 hr BR	8.3	25.3	7.9	405	
	C	48 hr AR	8.3	23.9	8.1	434	
		72 hr					
	A	96 hr	7.9	24.0	7.4	445	
100%	A	0 hr	8.2	24.4	7.9	480	
		24 hr					
	C	48 hr BR	8.4	24.5	8.0	496	
	C	48 hr AR	8.5	24.3	8.2	502	
		72 hr					
	A	96 hr	7.9	24.0	7.4	526	
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

*Measure/ record salinity for marine tests

Comments:

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

Test ID: Quincy Acute Definitive Dates: 4-24-12 – 4-28-12

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

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

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

entered by M. Faircloth 5-3-12

V 1.1 9/21/10 MF/jd

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FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimphales promelas or Menidia beryllina

Facility: Quincy WWTP
Address: 300 N. G.F. and A. Drive, Quincy
County: Gadsden
NPDES Permit #: FL 0029033
Contact/District: Nathan Mulkey/Northwest

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

Start Date: 4.24.12 Time: 1:00 PM
End Date: 5.1.12 Time: 0900

Diluent/ Batch:
MHW / 4.23.12 Test Days Used: 0-7
MHW /_____ Test Days Used: _____
ASW /_____ Test Days Used: _____
ASW /_____ Test Days Used: _____

Organism age : <24hrs ~~days~~
Feeding Prior to Test and Daily
Artemia Lot # 23613
Chamber size : 1000 ml
Test volume : 500 ml

Artemia Batch #		Day 3	64-12
Day 0	61-12	Day 4	65-12
Day 1	62-12	Day 5	66-12
Day 2	63-12	Day 6	67-12

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2012-04-23-B	1423905	4-23-12 1200 AP	4-24-12 0800
Test Day 2	2	TLH-2012-04-25-91	1424732	4-25-12 1335	4-26-12 0800
Test Day 4	3	TLH-2012-04-27-16	1425350	4-27-12 0904	4-27-12 1204

Water Quality Parameters	Field Chlorine (mg/L)			Lab Chlorine (mg/L)			Alkalinity (mg/L as $CaCO_3$)			Hardness (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3	1	2	3
Sample:				<0.03	<0.03	<0.03	~~85~~ HR	141	133	99 AP	118	118
Diluent/Control:				<0.03			85			99		
Method:				Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach
Measured by:				AP	MF	JD	AP	AP	AP	AP	AP	AP
Verified by:				JD	JD	AP	JD	JD	JD	JD	JD	JD

	Conductivity (circle one) (µmhos-cm mmhos-cm)			Ammonia (mg/L)			Salinity (ppth)		
Lab Sample#:	1	2	3	1	2	3	1	2	3
Sample:	499	480	529	<0.017	<0.017	<0.017			
Diluent/Control:	330			<0.017					
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Mettler	Mettler	Mettler
Measured by:	BA	AP	BA	MF	MF	MF			
Verified by:	JD	JD	JD	~~MF~~ AP	JD	JD			

Lims entry 5-3-12 MF
verification 5.3.12 JD

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 3 min. 24.1 max. 25.1 mean —
Water bath # ___ min. _____ max. _____ mean _____
Room B246 min 24.1 max. 26.2 mean —

Statistics	
Growth NOEC:	12.5%
Growth LOEC:	25%
Growth IC_{20}:	>100%
Growth IC_{25}:	>100%
Ctrl % CV:	6.43%
Dunnetts PMSD:	13.8%
Survival NOEC:	100%
Survival LOEC:	>100%

Investigators' signatures
Bruce Atkins
Adrienne Pennington
Jason Jarrard
Marshall Faircloth
Liz Miller
REVIEWER

Comments:
Quincy sample #1: Alkalinity= 142, Hardness= 113 AP

revised 08/24/06 MF/SP

Chronic Bioassay Survival Benchsheet

Facility: Quincy

LIMS Sample Number: 1423905
(for Lab Sample # 1)

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

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

		TEST DAY							
Concentration	Replicate	0	1	2	3	4	5	6	7
Control	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 6.25 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	9 10	9	9
	D	10	10	10	10	10	10	10	10
Sample 12.5 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	9 10	9	9	9	9	9
	D	10	10	10	10	10	10	10	10
Sample 25 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 50 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	9 10	9
	D	10	10	10	10	10	10	10	10
Sample 100 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	9 10	8 10	8	8
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample %	A	10							
	B	10							
	C	10							
	D	10		~~10~~					
Loaded by: BA	Checked by:		JD	AP	AP	BA	JD	AP	AP
Verified by: AP									

Comments:

Chronic Bioassay Parameters Benchsheet

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

Sample Source: Quincy
LIMS Sample #: 1423905 (for Lab sample #1)
Start Date: 4.24.12 End Date: 5.1.12
Start Time: 1300 End Time: 1200 0900 JD
conc = concentration rep = replicate circle umhos or mmhos

Test Day		Conc.	Before Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos/mmhos	Salinity ppth	After Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos/mmhos	Salinity ppth
Day 0	sample:	Control	A	7.5	24.1	7.4	330							
	1	6.25%	A	7.6	24.0	7.6	346							
	1	12.5%	A	7.6	24.0	7.6	357							
	1	25%	A	7.7	24.2	7.5	378							
	1	50%	A	7.8	24.0	7.5	416							
	1	100%	A	7.9	24.0	7.6	499							
	1		A											
	Measured by:			BA	BA	BA	BA							
	Recorded by:			BA	BA	BA	BA							
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	sample:	Control	B	7.5	24.3	7.4	345		B	7.6	24.0	7.8	324	
	1	6.25%	B	7.6	24.0	7.6	348		B	7.7	24.0	7.7	337	
	1	12.5%	B	7.7	24.2	7.7	356		B	7.7	24.0	7.8	346	
	1	25%	B	7.7	24.2	7.9	373		B	7.8	24.1	7.9	365	
	1	50%	B	7.8	24.3	7.8	408		B	7.8	24.1	7.9	403	
	1	100%	B	7.9	24.0	7.8	484		B	7.9	24.7	8.1	486	
	1		B						B					
	Measured by:			JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by:			JD	JD	JD	JD			JD	JD	JD	JD	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	sample:	Control	C	7.7	25.2	7.5	327		C	7.7	24.2	7.8	325	
	2	6.25%	C	7.7	25.2 AP	7.3	336		C	7.8	24.0	7.4	338	
	2	12.5%	C	7.7	25.5	6.8	338		C	7.8	24.0	7.5	347	
	2	25%	C	7.7	24.6	7.0	359		C	7.8	24.1	7.6	371	
	2	50%	C	7.7	25.1	7.1	397		C	7.8	24.1	7.5	410	
	2	100%	C	7.8	25.0	7.0	480		C	7.9	24.1	7.3	497	
	2		C						C					
	Measured by:			AP	AP	AP	AP			AP	JD	AP	AP	
	Recorded by:			AP	AP	AP	AP			AP	AP	AP	AP	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	sample:	Control	D	7.4	24.6	6.2	338		D	7.7	24.1	7.4	371	
	2	6.25%	D	7.4	24.6	5.8	346		D	7.8	24.3	7.0	340	
	2	12.5%	D	7.4	24.8	5.1	357		D	7.7	24.3	6.9	350	
	2	25%	D	7.4	24.8	5.2	378		D	7.8	24.4	6.8	373	
	2	50%	D	7.4	24.6	5.5	417		D	7.8	24.4	6.8	417	
	2	100%	D	7.5	25.3	5.5	506		D	7.8	24.7	7.0	502	
	2		D						D					
	Measured by:			JD	JD	JD	JD			AP	JD	AP	AP	
	Recorded by:			JD	AP	JD	JD			AP	AP	AP	AP	

Comments:
Day 2, 6.25% temp = 25.2 AP

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

Chronic Bioassay Parameters Benchsheet

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

Sample Source: Quincy — Start Date: 4,24,12 — End Date: 5,1,12

LIMS Sample #: 1423905 (for Lab sample #1) — Start Time: 1300 — End Time: 0900

conc = concentration — rep = replicate

Test Day ↓		Conc.	Before Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	After Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 4	sample:	Control	A	7.6	25.6	7.3	346		A	7.6	24.7	6.3	337	
	3	6.25	A	7.6	25.3	7.0	359		A	7.6	24.5	6.7	351	
	3	12.5	A	7.6	25.2	7.1	370		A	7.6	24.3	7.0	363	
	3	25	A	7.6	25.1	7.1	395		A	7.7	24.2	6.7	390	
	3	50	A	7.6	24.8	7.0	438		A	7.7	24.2	6.8	433	
	3	100	A	7.7	25.7	7.0	529		A	7.7	24.3	7.1	531	
	3		A						A					
	Measured by:			BA	BA	BA	BA	~~BA~~		BA	BA	BA	BA	
	Recorded by:			BA	BA	BA	BA	~~BA~~		BA	BA	BA	BA	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 5	sample:	Control	B	7.3	24.5	7.1	344		B	7.7	24.4	8.0	346	
	3	6.25%	B	7.4	24.3	7.3	355		B	7.7	24.6	7.9	359	
	3	12.5%	B	7.6	24.5	7.5	365		B	7.7	24.7	7.8	369	
	3	25%	B	7.5	24.4	7.5	385		B	7.8	24.8	7.9	391	
	3	50%	B	7.6	24.6	7.5	432		B	7.9	25.1	7.9	435	
	3	100%	B	7.6	24.8	7.5	518		B	7.9	25.8	8.0	522	
	3		B						B					
	Measured by:			JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by:			JD	JD	JD	JD			JD	JD	JD	JD	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	sample:	Control	C	~~25~~ 7.8 AP	25.1	7.5	352		C	7.7	24.5	7.7	341	
	3	6.25%	C	7.8	25.6	7.2	361		C	7.7	24.5	7.7	351	
	3	12.5%	C	7.7	25.1	7.3	367		C	7.7	24.4	7.7	360	
	3	25%	C	7.7	24.1	7.2	391		C	7.8	24.4	7.7	384	
	3	50%	C	7.7	24.6	6.7	429		C	7.8	24.4	7.7	423	
	3	100%	C	7.8	24.7	6.5	511		C	7.9	24.3	7.5	504	
	3		C						C					
	Measured by:			AP	AP	AP	AP			AP	AP	AP	AP	
	Recorded by:			AP	AP	AP	AP			AP	AP	AP	AP	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	sample:	Control	D	7.4	25.2	6.2	348		D					
	3	6.25%	D	7.4	25.1	5.8	365		D					
	3	12.5%	D	7.3	25.5	5.1	377		D					
	3	25%	D	7.3	25.2	4.9	394		D					
	3	50%	D	7.3	25.0	5.0	435		D					
	3	100%	D	7.3	25.0	4.2	520		D					
	3		D						D					
	Measured by:			JD	JD	JD	JD							
	Recorded by:			JD	JD	JD	JD							

Comments: Day 6, control, PH= 7.8 AP

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

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Chronic Bioassay Weighing Benchsheet

Facility: Quincy

LIMS Sample Number: 1423905
(for Lab Sample # 1)

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

			mean wt = fish wt divided by 10 convert g to mg: move decimal 3 places to right					
Concentration	Replicate	Pan #	Pan wt. g	Pan + Fish g	Fish wt. g	Original # Fish	Mean wt. mg	Avg
Control	A	1	0.02123	0.02740	0.006017	10	0.617	
	B	2	0.02264	0.02882	0.00618	10	0.618	
	C	3	0.02294	0.02934	0.006640	10	0.640	0.606
	D	4	0.02299	0.02849	0.00550	10	0.550	
sample 6.25 %	A	5	0.02206	0.02812	0.006006	10	0.606	
	B	6	0.02313	0.02856	0.00543	10	0.543	
	C	7	0.02258	0.02726	0.00468	10	0.468	0.55
	D	8	0.02297	0.02885	0.00588	10	0.588	
sample 12.5 %	A	9	0.02322	0.02861	0.00539	10	0.539	
	B	10	0.02288	0.02741	0.00453	10	0.453	
	C	11	0.02208	0.02805	0.00597	10	0.597	0.52
	D	12	0.02252	0.02767	0.00515	10	0.515	
sample 25 %	A	13	0.02240	0.02729	0.00489	10	0.489	
	B	14	0.02288	0.02741	0.00453	10	0.453	
	C	15	0.02222	0.02728	0.005506	10	0.506	0.501
	D	16	0.02323	0.02892	0.005569	10	0.569	
sample 50 %	A	17	0.02364	0.03008	0.00644	10	0.644	
	B	18	0.02369	0.02941	0.00572	10	0.572	
	C	19	0.02279	0.02836	0.00557	10	0.557	0.591
	D	20	0.02278	0.02880	0.00602	10	0.602	
sample 100 %	A	21	0.02352	0.02952	0.00600	10	0.600	
	B	22	0.02195	0.02738	0.00543	10	0.543	
	C	23	0.02278	0.02914	0.00636	10	0.636	0.583
	D	24	0.02206	0.02761	0.00555	10	0.555	
sample %	A					10		
	B					10		
	C					10		
	D					10		
	Weighed by initials:		AP	AP		revised 7/16/08 mf		

Comments:

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

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

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Chronic Bioassay Weighing Benchsheet

Quality Control

Facility: Quincy

LIMS Sample Number: 1423905
(for Lab Sample # 1)

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

Drying Oven ID:	ER034000	Tare weighed by:	AP
Temperature °C:	100	Final weighed by:	AP
Hours:	8		
Tare Weighing Date:	4.30.12	Final Weighing Date:	5.2.12

			Measured Value (g)		S-weight Value (g)
Tare Pan 1 after Pan 5 (g)	0.02126	@ 0.02123	S-weights	@	0.01
Tare Pan 1 after Pan 10 (g)	0.02121	@ 0.02123	at tare	@	0.03
Tare Pan 1 after Pan 15 (g)	0.02121	@ 0.02123	S-weights	@	0.01
Tare Pan 1 after Pan 20 (g)	0.02125	@ 0.02123	at final	@	0.05
Tare Pan 1 after Pan 25 (g)	0.02123	@ 0.02123			
Tare Pan 1 after Pan 30 (g)		@	Balance: Ohaus 250D Ser# 1125481084		
Tare Pan 1 after Pan 35 (g)		@	S-Weights: BIO-S-Weights-01		
Tare Pan 1 after Pan 40 (g)		@			
Tare Pan 1 after Pan 45 (g)		@			
Tare Pan 1 after Pan 48 (g)		@			
Final Pan 1 after Pan 5 (g)	0.02742	@ 0.02740			
Final Pan 1 after Pan 10 (g)	0.02741	@ 0.02740			
Final Pan 1 after Pan 15 (g)	0.02739	@ 0.02740			
Final Pan 1 after Pan 20 (g)	0.02740	@ 0.02740			
Final Pan 1 after Pan 25 (g)	0.02742	@ 0.02740			
Final Pan 1 after Pan 30 (g)		@			
Final Pan 1 after Pan 35 (g)		@			
Final Pan 1 after Pan 40 (g)		@			
Final Pan 1 after Pan 45 (g)		@			
Final Pan 1 after Pan 48 (g)		@			

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

Comments:

revised 7/16/08 MF

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Test ID: Quincy WWTP Dates: 4/24/12 - 5/1/12

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

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

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

5.1.12 JP.

V 1.1 9/21/10 MF/jd

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Larval Fish Growth and Survival Test-7 Day Growth					
Start Date:	4/24/2012 13:00	Test ID:	quinppap12	Sample ID:	Quincy P. prom chronic
End Date:	5/1/2012 09:00	Lab ID:	FDEP Biology Toxicity Lab	Sample Type:	EFF1-POTW
Sample Date:		Protocol:	EPAF 94-EPA/600/4-91/002	Test Species:	PP-Pimephales promelas
Comments:	P. promelas chronic test for Quincy WWTP April 2012				

Conc-%	1	2	3	4
D-Control	0.6170	0.6180	0.6400	0.5500
6.25	0.6060	0.5430	0.4680	0.5880
12.5	0.5390	0.4530	0.5970	0.5150
25	0.4890	0.4530	0.5060	0.5690
50	0.6440	0.5720	0.5570	0.6020
100	0.6000	0.5430	0.6360	0.5550

			Transform: Untransformed					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	0.6063	1.0000	0.6063	0.5500	0.6400	6.429	4	0.6063	1.0000
6.25	0.5513	0.9093	0.5513	0.4680	0.6060	11.156	4	0.5518	0.9101
12.5	0.5260	0.8676	0.5260	0.4530	0.5970	11.333	4	0.5518	0.9101
25	0.5043	0.8318	0.5043	0.4530	0.5690	9.617	4	0.5518	0.9101
50	0.5938	0.9794	0.5938	0.5570	0.6440	6.462	4	0.5518	0.9101
100	0.5835	0.9625	0.5835	0.5430	0.6360	7.325	4	0.5518	0.9101

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.97256	0.884	-0.1557	-0.7847
Bartlett's Test indicates equal variances (p = 0.95)	1.15733	15.0863		

			Linear Interpolation (200 Resamples)	
Point	%	SD	95% CL(Exp)	Skew
IC05*	3.4762			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

* indicates IC estimate less than the lowest concentration

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 4/16/12

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (°/₀₀)
Mysidopsis bahia						
Menidia beryllina	250 ca	10 DAYS	SS120406	25	7.9	20
	150 ca	12 DAYS	SS120404	25	7.9	20
						Hardness mg/L
Cyprinella leedsi						
Pimephales promelas	250	<24 HRS	FM120415-1610	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: _____

Thank you for your order.

4569 Samuel Street · Sarasota, FL 34233 · Tel: 941-925-3594 · Fax: 941-922-3874 · Web: www.biologylab.com

Appendix H

Standard Reference Toxicant Data

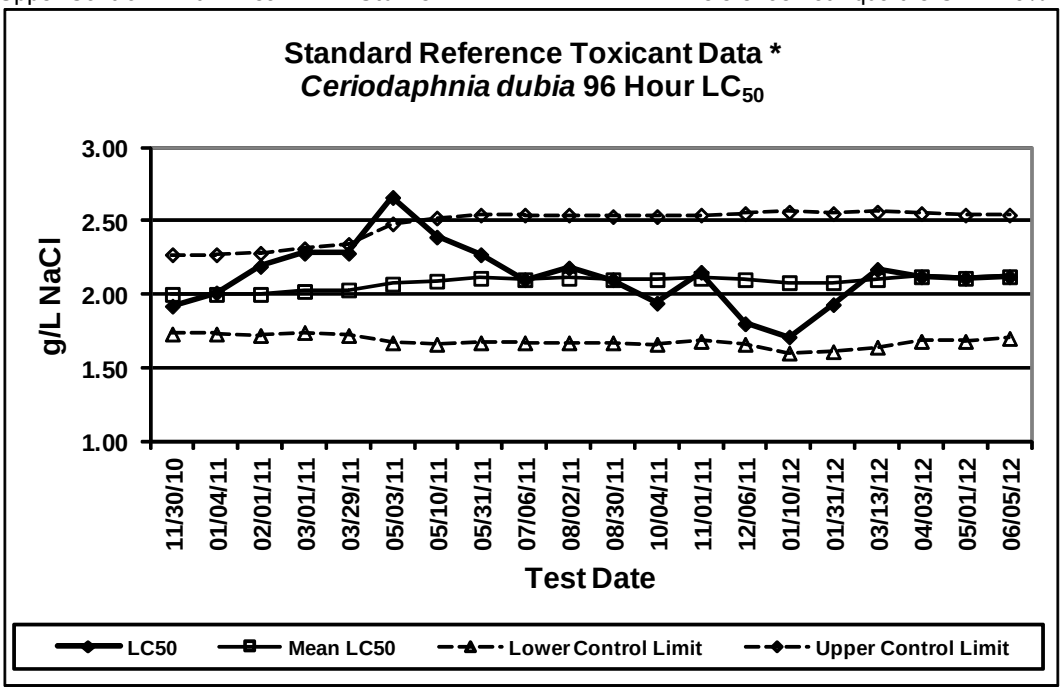
Florida Department of Environmental Protection
Bureau of Laboratories

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

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
11/30/10	1.92	2.00	0.14	1.73	2.27
01/04/11	2.01	2.00	0.14	1.73	2.27
02/01/11	2.19	2.00	0.14	1.72	2.28
03/01/11	2.28	2.02	0.14	1.74	2.31
03/29/11	2.28	2.03	0.15	1.72	2.34
05/03/11	2.66	2.07	0.20	1.67	2.48
05/10/11	2.39	2.09	0.21	1.66	2.52
05/31/11	2.27	2.11	0.22	1.67	2.54
07/06/11	2.10	2.10	0.22	1.67	2.54
08/02/11	2.18	2.11	0.22	1.67	2.54
08/30/11	2.10	2.10	0.22	1.67	2.53
10/04/11	1.94	2.10	0.22	1.66	2.53
11/01/11	2.15	2.11	0.22	1.68	2.54
12/06/11	1.80	2.10	0.22	1.66	2.55
01/10/12	1.71	2.08	0.24	1.60	2.56
01/31/12	1.93	2.08	0.24	1.61	2.55
03/13/12	2.17	2.10	0.23	1.64	2.56
04/03/12	2.12	2.12	0.22	1.68	2.55
05/01/12	2.11	2.11	0.22	1.68	2.54
06/05/12	2.12	2.12	0.21	1.70	2.54

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

CV = 9.92
EPA reference 75th quartile CV = 29%



***Ceriodaphnia dubia* Acute SRT LC50 April 3, 2012**

DATE: 4-3-12 DURATION: 96 h TOXICANT : NaCl
SPECIES: *Ceriodaphnia dubia*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
1.50	20	0
2.00	20	5
2.50	20	19
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 2.12
95% LOWER CONFIDENCE: 2.01
95% UPPER CONFIDENCE: 2.24

FDEP Biology Laboratory - Acute SRT Bench Sheet

Method from EPA-821-R-02-012 except *H. azteca*

Test Organism: (check one)
- ☐ *Americamysis bahia* Method 2007.0 TA07.03
- ☐ *Menidia Beryllina* Method 2006.0 TA07.04
- ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
- ☑ *Ceriodaphnia dubia* Method 2002.0 TA07.01
- ☐ *Cyprinella leedsi* Method 2000.0 TA07.02
- ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Type: ☐ non-renewal ☑ renewal

Test Page 1 of 2

Diluent/ Batch #: SDMHW 14.24.12
Toxicant/ Batch#: NACL 15-1-12
Organism Batch: 5-1-12 Age: 224hr
Test Beginning: Date: 5.1.12 Time: 1000
Test Ending: Date: 5.5-12 Time: 0900

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AP
Alkalinity (mg/L as $CaCO_3$):	68	TA06_08	AP
Hardness (mg.L as $CaCO_3$):	92	TA06_09	AP
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity: µmhos ~~mmhos~~	0.311	TA06_25	KMS
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☑ YCT	4-19-12
☑ *P. subcapitata*	2-17-12
☐ Artemia Lot #	

Artemia Batch:
0 hr:
24 hr:
48 hr:
72 hr:

Chamber size: 30 mL
Test volume: 20 mL per replicate

Concentrations prepared by: M.F
Temperature Range °C:(if used)
Test Incubated in: Incubator # 2 Waterbath # ___ Incubator # 2 min 24.5 max 26.3 mean —
Light Intensity: 50-100 Ft. candles Waterbath # ___ min.____ max.____ mean____
Photoperiod: 16 hours Light / 8 hours dark Room B246 min. 24.5 max. 25.1 mean —

Feeding: √ as needed
- ☑ Before test
- ☐ 24 hr
- ☑ 48 hr
- ☐ 72 hr

all species 2 hrs prior to test
mysids daily
all species except *H. azteca* 2 hr prior to renewal
H. azteca 0 hr and 48 hr

Concentration µg/L mg/L g/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	—	5	4 1D	4	4	4	4
	B	—	5	5	5	5	5	5
	C	—	5	5	5	5	5	5
	D	—	5	5	5	5	5	5
1.5	A	—	5	5	5	5	5	5
	B	—	5	4 1D	4	4	4	4
	C	—	5	5	5	5	5	5
	D	—	5	4 1D	4	4	4	4
2.0	A	—	5	5	4 (1D)	4	4	4
	B	—	5	3 2D	3	3	3	3
	C	—	5	4 1D	4	4	3 1D	3
	D	—	5	4 1D	2 (2D)	2	2	2
2.5	A	—	5	4 1D	2 2D	2	1 1D	1
	B	—	5	3 2D	1 2D	1	1	1
	C	—	5	4 1D	3 1D	3	2 1D	2
	D	—	5	3 2D	0 3D	0	—	—
3.0	A	—	5	0 5D				
	B	—	5	0 5D				
	C	—	5	0 5D				
	D	—	5	0 5D				
4.0	A	—	5	0 5D				
	B	—	5	0 5D				
	C	—	5	0 5D				
	D	—	5	0 5D				
Organisms loaded by: MF	Checked by:		AP	AP	MF	MF	AP	MF
Loading Verified by: AP			AR = after renewal					

m = missing d = dead BR = before renewal hr = hour

H. azteca		
0 hr	Alk	Hrd
Well		
100%		
96 hr	Alk	Hrd
Well		
100%		

Comments:

Investigators' Signatures
Marshall Faircloth
Kim M Spencer
Adrienne Pennington
Bill Reed
James Daniels
Reviewer: Liz Mathews

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: —	—	—
96 hour: 2.11	1.96	2.27

Revised 7/15/2008 mf

FDEP Biology Laboratory - Acute SRT Bench Sheet
0-96 hour parameters

Methods from EPA-821-R-02-012 except *H. azteca*

Test Page 2 of 2

Test Organism: (check one)
- ☐ *Americamysis bahia* Method 2007.0 TA07.03
- ☐ *Menidia Beryllina* Method 2006.0 TA07.04
- ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
- ☑ *Ceriodaphnia dubia* Method 2002.0 TA07.01
- ☐ *Cyprinella leedsi* Method 2000.0 TA07.02
- ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Beginning: Date: 5.1.12 Time: 1000
Test Ending: Date: 5-5-12 Time: 0900

Test Type: ☐ non-renewal ☒ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L g/L	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☑ ~~mmhos~~	Salinity (ppth)
Control	M	0 hr	~~8.0~~ 7.9	25.6	~~7.6~~ 7.5	~~0.315~~ 0.311	
	—	24 hr	—	—	—	—	
	M	48 hr BR	8.1	25.2	8.1	0.308	
	A	48 hr AR	8.1	24.0	8.2	0.312	
		72 hr					
	A	96 hr	8.1	24.6	7.6	0.310	
~~0.375~~ kmr 1.5	M	0 hr	~~8.0~~ 7.9	~~25.6~~ 25.7	7.6	~~1.05~~ 3.28	
	—	24 hr	—	—	—	—	
	M	48 hr BR	8.1	25.3	8.1	3.35	
	A	48 hr AR	8.0	24.2	8.2	3.26	
		72 hr					
	A	96 hr	8.1	24.1	7.4	3.20	
~~0.75~~ kmr 2.0	M	0 hr	~~8.0~~ 7.9	25.6	7.6	~~1.780~~ 4.04	
	—	24 hr	—	—	—	—	
	M	48 hr BR	8.1	25.2	8.2	4.22	
	A	48 hr AR	8.1	24.1	8.1	4.02	
		72 hr					
	A	96 hr	8.1	24.3	7.2	4.16	
~~1.5~~ kmr 2.5	M	0 hr	8.0	~~25.4~~ 25.5	7.6	~~5.16~~ 4.92	
	—	24 hr	—	—	—	—	
	M	48 hr BR	8.1	25.4	8.2	5.13	
	A	48 hr AR	8.1	24.1	8.1	4.97	
		72 hr					
	A	96 hr	8.1	24.0	7.3	4.95	
~~3.0~~ kmr 3.0	M	0 hr	8.0	~~25.2~~ 25.1	7.6	5.~~88~~9 JD	
	A	24 hr	7.9	23.8	7.7	6.15	
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
~~6.0~~ kmr 4.0	M	0 hr	8.0	~~24.4~~ 24.7	7.6	~~17.3~~ 7.61	
	A	24 hr	7.9	23.8	7.8	7.96	
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
Marshall Faircloth
Kim M Spencer
Arleen Pennington
Bruce Ahlbo
James Daniels
Reviewed By: Liz Miller

Measured by:
0 hr: kmr
24 hr: AP
48 hr BR: MK
48 hr AR: MK
72 hr:
96 hr: MK

Measure/record salinity for marine tests

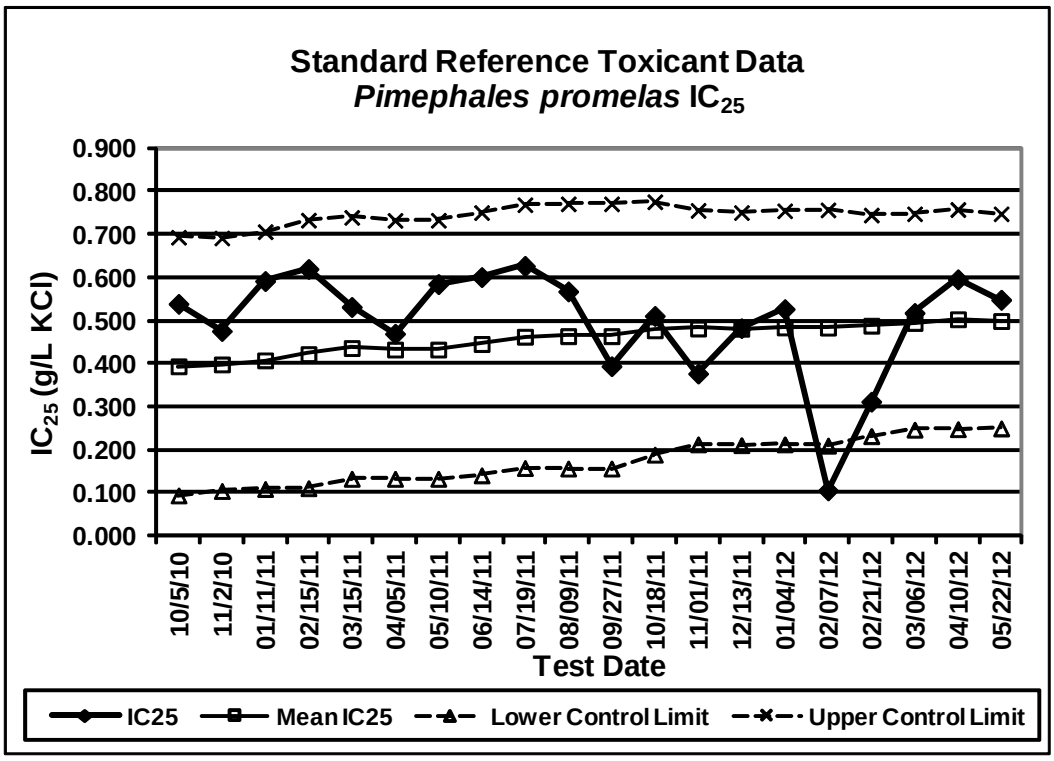
Comments:
8HR: TRANSCRIPTION ERROR kmr

Revised 07/15/2008 MF

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

Date	IC25	Mean IC25	Std Dev	Lower Control Limit	Upper Control Limit	Date
10/05/10	0.539	0.394	0.15	0.094	0.694	10/5/10
11/02/10	0.476	0.398	0.15	0.105	0.692	11/2/10
01/11/11	0.592	0.408	0.15	0.109	0.707	01/11/11
02/15/11	0.620	0.422	0.16	0.111	0.733	02/15/11
03/15/11	0.532	0.436	0.15	0.133	0.740	03/15/11
04/05/11	0.470	0.433	0.15	0.133	0.733	04/05/11
05/10/11	0.585	0.433	0.15	0.133	0.733	05/10/11
06/14/11	0.601	0.446	0.15	0.141	0.751	06/14/11
07/19/11	0.627	0.463	0.15	0.158	0.769	07/19/11
08/09/11	0.568	0.464	0.15	0.157	0.771	08/09/11
09/27/11	0.394	0.464	0.15	0.157	0.771	09/27/11
10/18/11	0.511	0.478	0.14	0.189	0.776	10/18/11
11/01/11	0.377	0.482	0.14	0.213	0.756	11/01/11
12/13/11	0.483	0.481	0.14	0.211	0.751	12/13/11
01/04/12	0.527	0.484	0.14	0.213	0.755	01/04/12
02/07/12	0.106	0.484	0.14	0.210	0.757	02/07/12
02/21/12	0.312	0.489	0.13	0.232	0.745	02/21/12
03/06/12	0.518	0.495	0.13	0.247	0.748	03/06/12
04/10/12	0.596	0.503	0.13	0.248	0.758	04/10/12
05/22/12	0.548	0.499	0.12	0.250	0.748	05/22/12

Means are from the last 20 SRTs.
Lower Confidence Limit = mean - 2 * Std Dev EPA 75th %CV: 38%
Upper Confidence Limit = mean + 2 * Std Dev lab % CV: 24.9%



Larval Fish Growth and Survival Test-7 Day Growth					
Start Date:	4/10/2012 13:00	Test ID:	ppchsrt412	Sample ID:	REF-Ref Toxicant
End Date:	4/17/2012 22:00	Lab ID:	FDEP Bio Toxicity Lab	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 94-EPA/600/4-91/002	Test Species:	PP-Pimephales promelas
Comments:	P. promelas chronic SRT april 10, 2012				

Conc-gm/L	1	2	3	4
D-Control	0.5460	0.5540	0.6740	0.6230
0.125	0.5130	0.5060	0.5650	0.4540
0.25	0.5070	0.5670	0.4960	0.5840
0.5	0.5130	0.4580	0.5530	0.5670
1	0.1290	0.0000	0.2040	0.2290
2	0.0000	0.0000	0.0000	0.0000

			Transform: Untransformed					Isotonic	
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	0.5993	1.0000	0.5993	0.5460	0.6740	10.121	4	0.5993	1.0000
0.125	0.5095	0.8502	0.5095	0.4540	0.5650	8.912	4	0.5240	0.8744
0.25	0.5385	0.8986	0.5385	0.4960	0.5840	8.081	4	0.5240	0.8744
0.5	0.5228	0.8723	0.5228	0.4580	0.5670	9.346	4	0.5228	0.8723
1	0.1405	0.2345	0.1405	0.0000	0.2290	73.206	4	0.1405	0.2345
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	4	0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96247	0.868	-0.5634	0.29497
Bartlett's Test indicates equal variances (p = 0.53)	3.13889	13.2767		

			Linear Interpolation (200 Resamples)		
Point	gm/L	SD	95% CL(Exp)		Skew
IC05*	0.0498	0.1109	0.0221	0.7877	3.2938
IC10*	0.0995	0.1909	0.0441	0.8180	0.7780
IC15	0.5175	0.1774	0.0000	0.6274	-0.9402
IC20	0.5567	0.0726	0.3254	0.6620	-4.0784
IC25	0.5959	0.0342	0.4994	0.7014	0.1737
IC40	0.7135	0.0355	0.6172	0.8256	0.2941
IC50	0.7919	0.0399	0.6864	0.9200	0.2873

* indicates IC estimate less than the lowest concentration

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina*

Test Species (circle one)

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

Diluent/ Batch: MHW Test Days Used: 4.10.12 0-7 Start Date: 4/19/12 Time: 1300

Diluent/ Batch: ~~NaCl~~ HW Test Days Used: _____ End Date: 4.17.12 Time: 1000

Toxicant/ Batch # : KCl / 4.9.12 Organism Batch #/ Age: 4.10.12 / <24 hrs

Artemia Lot # : 23613

Artemia Batch #	Day 2 49-12	Day 5 52-12
Day 0 47-12	Day 3 50-12	Day 6 53-12
Day1 48-12	Day 4 51-12	

Chamber size : 1000 ml

Test volume : 500 ml

Feeding: *P. promelas* 0.15 g wet wt. 2X day 6 hour interval

M. beryllina 0.10 g wet wt days 0-2 0.15g wet wt. days 3-7

Water Quality Parameters	Diluent	Diluent (or other)	Method	Measured by	Verified by
Total Residual Cl_2 (mg/L):	<0.03		HACH	AP	JD
Alkalinity (mg/L as $CaCO_3$):	91		HACH	HW	JD
Hardness (mg/L as $CaCO_3$):	88		HACH	HW	JD
Total Ammonia (mg/L as N):	<0.017		DENVER	MF	JD
Conductivity (µmhos-cm) mmhos-cm:	320		METTLER	JD	MF

Statistics	
Growth NOEC:	0.5 g/L
Growth LOEC:	1 g/L
Growth IC_{20}:	0.5567 g/L
Growth IC_{25}:	0.5959 g/L
Ctrl % CV:	10.1 %
Dunnetts PMSD:	17.9 %
Survival NOEC:	0.5 g/L
Survival LOEC:	1 g/L

Test incubated in : ☒ Incubator # 2

☐ Waterbath #_____

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Temperature Range °C:

Incubator # 2 min. 24.8 max. 26.5 mean –

Water bath # ____ min._____ max._____ mean_____

Room B246 min. 24.6 max. 25.5 mean –

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

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

Investigators' signatures

Matthew Pennington

Hans Wells

James Daniels

Marshall Faircloth

Bruce Allen

Liz Miller

REVIEWER

Comments:

revised 7/16/08 MF

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or Menidia beryllina Survival

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

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

Concentration	Replicate	Chamber	TEST DAY 0	1	2	3	4	5	6	7
Control	A	C1	10	10	10	10	10	10	10	10
	B	C2	10	10	10	10	10	10	10	10
	C	C3	10	10	10	10	10	10	10	10
	D	C4	10	10	10	10	10	10	10	10
0.125	A	C5	10	10	10	10	10	10	10	10
	B	C6	10	10	10	10	10	10	10	10
	C	C7	10	10	10	10	10	10	10	10
	D	C8	10	10	10	10	10	10	10	10
0.25	A	C9	10	10	10	9 1D	9	9	9	9
	B	C10	10	10	10	10	10	10	10	10
	C	C11	10	10	10	10	10	10	10	10
	D	C12	10	10	9 1D	9	9	9	9	9
0.5	A	C13	10	10	10	10	10	10	10	10
	B	C14	10	10	10	10	10	10	10	10
	C	C15	10	10	10	10	10	10	10	10
	D	C16	10	10	10	10	10	10	10	10
1.0	A	C17	10	4 6D	4	3 1D	3	3	3	3
	B	C18	10	2 8D	0 2D	—	—	—	—	—
	C	C19	10	4 6D	4	4	4	4	4	4
	D	C20	10	5 5D	4 1D	4	4	4	4	4
2.0	A	C21	10	0 10D						
	B	C22	10	0 10D						
	C	C23	10	0 10D						
	D	C24	10	0 10D						
	A		10							
	B		10							
	C		10							
	D		10							
Loaded by (0 hr): JD		Checked by:		HW	JD	JD	JD	JD	JD	
Verified by (0 hr): HW										
Concentrations prepared by:				JD	JD	JD	JD	JD	JD	

Comments:

revised 7/16/08 MF

Chronic SRT Parameters Benchsheet

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

Start Date: 4/10/12 End Date: 4/17/12

Start Time: 1300 End Time: 1000

conc = concentration rep = replicate circle umhos or mmhos

Test Day		Before Renewal						After Renewal					
↓	Conc.	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 0	Control	A	8.0	24.0	7.5	320							
	0.125	A	8.0	24.0	7.6	568							
	0.25	A	8.0	24.1	7.7	813							
	0.5	A	8.0	24.7	7.8	1247							
	1.0	A	8.1	25.9	8.2	2340							
	2.0	A	8.2	25.9	8.1	4170							
		A											
	Measured by		JD	JD	JD	JD							
	Recorded by		JD	JD	JD	JD							
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	Control	B	7.6	25.4	8.5	339		B	7.5	24.2	7.1	321	
	.125	B	7.8	24.7	8.3	581		B	7.7	24.0	7.1	556	
	.25	B	7.8	24.2	8.4	823		B	7.7	24.0	7.2	792	
	.5	B	7.9	24.3	8.6	1251		B	7.8	24.1	7.4	1241	
	1.0	B	7.9	25.1	8.8	2320		B	7.9	24.3	7.5	2210	
	2.0	B	7.9	24.6	8.8	4130		B					
		B						B					
	Measured by		JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by		JD	JD	JD	JD			JD	JD	JD	JD	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	Control	C	7.7	24.6	6.6	321		C	7.8	24.0	7.5	353	
	.125	C	7.8	25.0	6.7	558		C	7.9	24.0	7.2	552	
	.25	C	7.7	24.8	6.7	794		C	7.9	24.0	7.3	828	
	.5	C	7.8	24.8	6.8	1242		C	8.0	24.0	7.3	1327	
	1	C	7.9	24.2	7.0	2220		C	8.1	24.1	7.4	2200	
		C						C					
		C						C					
	Measured by		JD	JD	JD	JD			AP	JD	AP	AP	
	Recorded by		JD	JD	JD	JD			AP	JD	AP	AP	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	Control	D	7.3	24.4	5.9	335		D	7.4	24.7	6.6	JD ~~324~~ 329	
	.125	D	7.5	24.8	6.7	547		D	7.5	24.6	6.7	567	
	.25	D	7.5	24.7	7.0	818		D	7.6	24.7	6.8	766	
	.5	D	7.6	25.3	7.2	1324		D	7.7	24.8	7.0	1286	
	1	D	7.6	24.7	7.0	2170		D	7.8	24.8	7.3	2190	
		D						D					
		D						D					
	Measured by		JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by		JD	JD	JD	JD			JD	JD	JD	JD	

Comments:

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

Chronic SRT Parameters Benchsheet

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

Start Date: 4,10,12 End Date: 4/17/12

Start Time: 1300 End Time: 1000

conc = concentration rep = replicate

Test Day			Before Renewal						After Renewal					
↓	Conc.	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth		Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 4	Control	A	7.8	25.0	5.7	356			A	7.6	24.7	7.0	332	
	.125	A	7.7	24.9	5.7	595			A	7.6	24.7	7.1	594	
	.25	A	7.8	24.6	6.1	812			A	7.6	24.7	7.2	733	
	.5	A	7.9	24.7	6.6	1336			A	7.7	25.0	7.3	1461	
	1	A	8.0	24.3	6.8	2260			A	7.8	24.8	7.5	2040	
		A							A					
		A							A					
	Measured by		JD	JD	JD	JD				JD	JD	JD	JD	
	Recorded by		JD	JD	JD	JD				JD	JD	JD	JD	
		Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity
Day 5	Control	B	7.1	25.5	5.7	345			B	7.7	25.2	7.1	328	
	.125	B	7.3	24.8	5.5	599			B	7.7	25.0	7.0	565	
	.25	B	7.3	25.0	5.5	671			B	7.7	25.1	7.0	789	
	.5	B	7.4	24.7	5.5	1472			B	7.8	25.1	7.1	1333	
	1	C B JD	7.6	24.6	JD 6.8	2040			C B JD	7.9	25.2	7.3	2120	
		B			6.8				B					
		B							B					
	Measured by		JD	JD	JD	JD				JD	JD	JD	JD	
	Recorded by		JD	JD	JD	JD				JD	JD	JD	JD	
		Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	Control	C	7.2	24.8	5.1	340			C	7.6	24.9	7.2	323	
	.125	C	7.2	24.6	4.6	637			C	7.6	24.8	6.7	538	
	.25	C	7.2	24.4	4.7	858			C	7.7	24.8	7.0	797	
	.5	C	7.3	24.3	4.6	1378			C	7.7	25.0	6.9	1314	
	1	C	7.4	24.4	4.9	2180			C	7.8	24.9	6.8	2210	
		C							C					
		C							C					
	Measured by		JD	JD	JD	JD				AP	JD	AP	AP	
	Recorded by		JD	JD	JD	JD				AP	AP	AP	AP	
		Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	Control	D	7.2	24.5	4.9	338			D					
	.125	D	7.2	25.0	5.0	565			D					
	.25	D	7.2	24.7	5.1	824			D					
	.5	D	7.3	24.9	5.4	1341			D					
	1	D	7.5	24.6	6.9	2270			D					
		D							D					
		D							D					
	Measured by		JD	JD	JD	JD								
	Recorded by		JD	JD	JD	JD								

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

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Weights

SOP TA06_21

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

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

mean wt = fish wt divided by 10

convert g to mg: move decimal 3 places to right

Concentration	Replicate	Pan #	Pan wt. (g)	Pan + Fish (g)	Fish wt. (g)	Original # of fish	Mean wt. (mg)	
Control	A	1	0.02398	0.02944	0.00549	10	.549	
	B	2	0.02262	0.02816	0.00554	10	.554	.600
	C	3	0.02370	0.03044	0.00674	10	.674	
	D	4	0.02285	0.02908	0.00623	10	.623	
.125	A	5	0.02390	0.02903	0.00513	10	.513	
	B	6	0.02303	0.02809	0.00506	10	.506	.509
	C	7	0.02275	0.02840	0.00565	10	.565	
	D	8	0.02239	0.02693	0.00454	10	.454	
.25	A	9	0.02265	0.02772	0.00507	10	.507	
	B	10	0.02278	0.02845	0.00567	10	.567	.539
	C	11	0.02355	0.02851	0.00496	10	.496	
	D	12	0.02114	0.02698	0.00584	10	.584	
.5	A	13	0.02262	0.02775	0.00513	10	.513	
	B	14	0.02206	0.02664	0.00458	10	.458	
	C	15	0.02386	0.02939	0.00553	10	.553	.523
	D	16	0.02374	0.02941	0.00567	10	.567	
1	A	17	0.02174	0.02303	0.00129	10	.129	
	B	—	—	—	—	10	—	.187
	C	18	0.02258	0.02462	0.00204	10	.204	
	D	19	0.02266	0.02495	0.00229	10	.229	
	A					10		
	B					10		
	C					10		
	D					10		
	A					10		
	B					10		
	C					10		
	D					10		
		Weighed by:	JD	JD				

Comments:

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

revised 8/24/06 MF/SP

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* QC

SOPs TA07_09, TA07_14 and TA06_21

all weights in grams

Empty Pan Weights Date: 4/16/12 Weighed by: JD

	Pan 1 wt.		Pan 1 initial wt.
after Pan 5	0.02396	@	0.02398
after Pan 10	0.02397	@	0.02398
after Pan 15	0.02393	@	0.02398
after Pan 20	0.02394	@	0.02398
after Pan 25		@	
after Pan 30		@	
after Pan 35		@	
after Pan 40		@	
after Pan 45		@	
after Pan 48		@	

	Measured Value	S-weight Value
S-weights	0.0002g	@ 0.0g
	0.0999g	@ 0.1g

Balance: Ohaus 250D Ser# 1125481084

S-Weights: BIO-S-Weights-01

Fish + Pan Weights Date: 4/18/12 Weighed by: JD

	Pan 1 wt.		Pan 1 initial wt.
after Pan 5	0.02944	@	0.02944
after Pan 10	0.02945	@	0.02944
after Pan 15	0.02948	@	0.02944
after Pan 20	0.02945	@	0.02944
after Pan 25		@	
after Pan 30		@	
after Pan 35		@	
after Pan 40		@	
after Pan 45		@	
after Pan 48		@	

	Measured Value	S-weight Value
S-weights	0.0002g	@ 0.0g
	0.0500g	@ 0.05g

Drying Oven ID: ER034000

Temperature °C: 100

Drying Hours: 8

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

Comments:

revised 7/16/08 MF

Test ID: P. promelas Chronic SRT Dates: 4/10/12 - 4/17/12

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

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

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

4.18.12 [signature]

V 1.1 9/21/10 MF/jd

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Appendix I-1

Wet ID taxa list and number of algal units counted to a target of 300 natural units for qualitative natural periphyton collections made from Quincy WWTP on 4/23/12.

	Control Site	Test Site
Bacillariophyta		
Bacillariophyta	239	245
Chlorophycota		
Ankistrodesmus falcatus	1	-
Apatococcus lobatus	-	4
Chlorella sp.	2	2
Oedogonium sp.	4	-
Cyanophycota		
Cyanothece aeruginosa	3	-
Jaaginema gracile	6	3
Oscillatoria tenuis	10	7
Planktolyngbya lacustris	-	6
Planktolyngbya limnetica	-	4
Pseudanabaena mucicola	-	3
Schizothrix calcicola	33	25
Synechocystis sp.	2	2

Appendix I-2

Diatom taxa list and number of valves counted to a target of 500 valves for qualitative periphyton collected from Quincy WWTP on 4/23/12.

	Control Site	Test Site
Bacillariophyta		
Bacillariophyceae		
Achnanthes biasolettiana	148	-
Achnanthes fluviatilis	16	6
Achnanthidium affine	2	-
Achnanthidium exiguum	2	3
Achnanthidium minutissimum	-	2
Bacillaria paxillifer	-	3
Cocconeis fluviatilis	4	4
Cocconeis placentula	12	1
Craticula sp.	5	13
Diadesmis contenta	2	9
Encyonema minutum	2	2
Eunotia sp.	27	9
Eunotia bilunaris	2	2
Eunotia paludosa	1	-
Frustulia rhomboides	4	-
Geissleria acceptata	14	17
Geissleria decussis	1	2
Gomphonema sp.	31	-
Gomphonema clevei	26	-
Gomphonema minutum	4	7
Gomphonema parvulum	6	12
Gyrosigma sp.	-	1
Hantzschia amphioxys	1	-
Hippodonta capitata	-	1
Hippodonta hungarica	2	-
Lemnicola hungarica	-	1
Luticola mutica	-	1
Navicula sp.	18	55
Navicula bouillantensis	2	-
Navicula cryptocephala	4	2
Navicula cryptotenella	-	2
Navicula germainii	25	11
Navicula gregaria	-	6
Navicula ingenua	-	7
Navicula longicephala	-	5
Navicula minima	11	12
Navicula rhynchocephala	4	-
Navicula rostellata	4	1
Navicula seminulum hustedtii	1	5
Navicula symmetrica	15	15
Navicula viridulacalcis	5	6

Appendix I-2 (continued)

	Control Site	Test Site
Naviculaceae	1	2
Nitzschia sp.	11	23
Nitzschia amphibia	2	2
Nitzschia capitellata	2	1
Nitzschia clausii	-	1
Nitzschia dissipata	2	-
Nitzschia filiformis	-	20
Nitzschia gracilis	-	2
Nitzschia intermedia	-	15
Nitzschia palea	13	37
Nitzschia subacicularis	1	-
Nupela vitiosa	3	55
Pinnularia sp.	4	4
Planothidium sp.	2	2
Planothidium apiculatum	1	-
Planothidium delicatulum	-	4
Planothidium frequentissimum	-	6
Planothidium rostratum	17	29
Sellaphora pupula	2	3
Sellaphora seminulum	-	13
Stauroneis sp.	-	2
Stauroneis anceps	-	1
Stauroneis smithii	2	-
Surirella sp.	1	2
Surirella angusta	-	4
Coscinodiscophyceae		
Melosira varians	6	21
Fragilariophyceae		
Asterionella ralfsii	2	-
Fragilaria capucina	1	9
Fragilaria martyi	4	-
Pseudostaurosira brevistriata	-	2
Staurosirella pinnata	23	15
Synedra ulna	-	1
Mediophyceae		
Cyclotella atomus	1	-
Thalassiosira weissflogii	-	2

Appendix J-1

Qualitative benthic macroinvertebrate collapsed taxa list and number of individuals counted from 20-discrete-dipnet sweeps conducted upstream and downstream of Quincy WWTP on 4/23/12. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site		Test Site	
	Rep 1	Rep 2	Rep 1	Rep 2
Annelida				
Oligochaeta				
Branchiobdella sp.	-	-	1	-
Branchiobdellidae	2	-	-	-
Eclipidrilus palustris	-	-	-	2
Limnodrilus hoffmeisteri	-	1	5	6
Naididae	1	1	-	-
Tubificidae	3	-	-	-
Arthropoda				
Arachnida				
Acariformes				
Atractides sp.	-	-	1	-
Hygrobates sp.	1	3	-	-
Lebertia sp.	1	1	-	2
Mideopsis sp.	1	-	1	2
Crustacea				
Amphipoda				
Crangonyx sp.	-	-	2	2
Hyalella azteca	1	1	38	33
Decapoda				
Cambaridae	1	-	6	5
Palaemonetes sp.	-	-	-	1
Isopoda				
Caecidotea sp.	-	-	3	7
Lirceus sp.	-	-	-	1
Insecta				
Coleoptera				
Ancyronyx variegatus	1	-	7	2
Chrysomelidae	1	-	-	-
Dineutus sp.	-	-	-	1
Dubiraphia vittata	-	-	2	1
Gyretes sp.	-	1	-	-
Macronychus glabratus	2	2	5	9
Microcylloepus pusillus	-	-	1	1
Stenelmis sp.	1	1	-	-
Stenelmis convexula	-	-	11	-
Stenelmis xylonastis	-	-	-	21
Diptera				
Ablabesmyia annulata	-	1	-	-
Ablabesmyia mallochi	-	1	8	8
Ablabesmyia rhamphe grp.	-	-	1	-

Appendix J-1 (continued)

	Control Site		Test Site	
	Rep 1	**Rep 2**	**Rep 1**	**Rep 2**
Atrichopogon sp.	2	2	-	-
Cecidomyiidae	-	-	1	-
Cladotanytarsus sp. D Epler	-	1	-	-
Cricotopus sp.	1	1	-	-
Cricotopus or orthocladius sp.	3	4	-	-
Cryptochironomus sp.	1	-	-	-
Dicrotendipes neomodestus	1	-	-	2
Hemerodromia sp.	1	-	-	-
Kribiodorum perpulchrum	-	-	1	-
Labrundinia sp.	-	-	-	1
Larsia sp.	-	-	2	-
Natarsia sp.	-	1	-	-
Palpomyia/bezzia grp.	1	-	1	-
Parametriocnemus sp.	-	1	-	-
Paratanytarsus sp.	2	2	3	-
Phaenopsectra punctipes grp.	1	-	-	-
Polypedilum aviceps	7	10	-	-
Polypedilum fallax	-	-	1	-
Polypedilum flavum	2	4	-	-
Polypedilum illinoense grp.	5	3	-	-
Polypedilum scalaenum grp.	2	2	1	-
Rheocricotopus robacki	2	-	-	-
Rheotanytarsus exiguus grp.	11	17	1	1
Rheotanytarsus pellucidus	-	-	2	-
Simulium sp.	1	2	1	-
Stenochironomus sp.	-	-	-	2
Tanytarsus sp.	-	-	1	-
Tanytarsus sp. A Epler	1	1	-	-
Tanytarsus sp. C Epler	2	3	-	1
Tanytarsus sp. U Epler	4	4	-	-
Thienemannimyia grp.	3	3	-	2
Tribelos fuscicornis	-	-	1	1
Tribelos jucundum	-	1	1	-
Ephemeroptera				
Baetidae	-	-	-	1
Baetis intercalaris	12	6	-	-
Caenis macafferti	6	8	-	-
Caenis sp.	-	-	24	20
Hexagenia sp.	-	-	-	2
Leptophlebiidae	-	1	-	-
Maccaffertium smithae	-	-	-	1
Maccaffertium sp.	3	4	-	-
Pseudocentroptiloides usa	-	-	2	-
Pseudocloeon propinquum	-	9	-	-
Megaloptera				
Sialis sp.	-	1	-	-

Appendix J-1 (continued)

	Control Site		Test Site	
	Rep 1	**Rep 2**	**Rep 1**	**Rep 2**
Odonata				
Aeshnidae	-	-	-	4
Argia sp.	-	-	4	1
Boyeria vinosa	-	-	3	-
Plecoptera				
Neoperla carlsoni	-	-	-	1
Trichoptera				
Cheumatopsyche sp.	1	10	1	2
Hydroptila sp.	1	2	1	-
Neotrichia sp.	-	-	1	4
Oxyethira sp.	-	1	-	-
Triaenodes sp.	-	-	-	1
Mollusca				
Bivalvia				
Corbicula fluminea	1	1	1	5
Gastropoda				
Ancylidae	51	32	1	2
Physa sp.	-	2	-	-
Planorbidae	-	-	1	-

Appendix J-2

Qualitative benthic macroinvertebrate taxa list and number of individuals counted from 20-discrete-dipnet sweeps conducted upstream and downstream of Quincy WWTP on 4/23/12.

	Control Site		Test Site	
	Rep 1	**Rep 2**	**Rep 1**	**Rep 2**
Annelida				
Oligochaeta				
Branchiobdella sp.	-	-	1	-
Branchiobdellidae	2	-	-	-
Eclipidrilus palustris	-	-	-	1
Limnodrilus hoffmeisteri	-	1	2	1
Lumbriculidae	-	-	-	1
Naididae	1	1	-	-
Tubificidae	3	-	3	5
Arthropoda				
Arachnida				
Acariformes				
Atractides sp.	-	-	1	-
Hygrobates sp.	1	3	-	-
Lebertia sp.	1	1	-	2
Mideopsis sp.	1	-	1	2
Crustacea				
Amphipoda				
Crangonyx sp.	-	-	2	2
Hyalella azteca	1	1	38	33
Decapoda				
Cambaridae	1	-	6	5
Palaemonetes sp.	-	-	-	1
Isopoda				
Caecidotea sp.	-	-	3	7
Lirceus sp.	-	-	-	1
Insecta				
Coleoptera				
Ancyronyx variegatus	1	-	7	2
Chrysomelidae	1	-	-	-
Dineutus sp.	-	-	-	1
Dubiraphia vittata	-	-	2	1
Elmidae	-	1	-	3
Gyretes sp.	-	1	-	-
Macronychus glabratus	2	1	5	8
Microcylloepus pusillus	-	-	1	1
Stenelmis convexula	-	-	1	-
Stenelmis sp.	1	1	10	17
Stenelmis xylonastis	-	-	-	2

Appendix J-2 (continued)

	Control Site		Test Site	
	Rep 1	**Rep 2**	**Rep 1**	**Rep 2**
Diptera				
Ablabesmyia annulata	-	1	-	-
Ablabesmyia mallochi	-	1	8	6
Ablabesmyia rhamphe grp.	-	-	1	-
Atrichopogon sp.	2	2	-	-
Cecidomyiidae	-	-	1	-
Chironomidae	2	-	-	2
Cladotanytarsus sp. D Epler	-	1	-	-
Cricotopus sp.	1	1	-	-
Cricotopus or orthocladius sp.	3	4	-	-
Cryptochironomus sp.	1	-	-	-
Dicrotendipes neomodestus	1	-	-	2
Hemerodromia sp.	1	-	-	-
Labrundinia sp.	-	-	-	1
Larsia sp.	-	-	2	-
Natarsia sp.	-	1	-	-
Palpomyia/bezzia grp.	1	-	1	-
Parametriocnemus sp.	-	1	-	-
Paratanytarsus sp.	2	2	3	-
Phaenopsectra punctipes grp.	1	-	-	-
Polypedilum sp.	-	1	-	-
Polypedilum aviceps	7	9	-	-
Polypedilum fallax	-	-	1	-
Polypedilum flavum	2	4	-	-
Polypedilum illinoense grp.	5	3	-	-
Polypedilum scalaenum grp.	2	2	1	-
Rheocricotopus robacki	2	-	-	-
Rheotanytarsus sp.	1	-	-	-
Rheotanytarsus exiguus grp.	8	17	1	1
Rheotanytarsus pellucidus	-	-	2	-
Simulium sp.	1	2	1	-
Stelechomyia perpulchra	-	-	1	-
Stenochironomus sp.	-	-	-	2
Tanytarsus sp.	-	-	1	-
Tanytarsus sp. A Epler	1	1	-	-
Tanytarsus sp. C Epler	2	3	-	1
Tanytarsus sp. U Epler	4	4	-	-
Thienemannimyia grp.	3	3	-	2
Tribelos fuscicornis	-	-	1	1
Tribelos jucundum	-	1	1	-
Ephemeroptera				
Baetidae	4	3	1	1
Baetis intercalaris	8	5	-	-
Caenis macafferti	1	3	-	-
Caenis sp.	5	5	24	20

Appendix J-2 (continued)

	Control Site		Test Site	
	Rep 1	**Rep 2**	**Rep 1**	**Rep 2**
Heptageniidae	2	3	-	-
Hexagenia sp.	-	-	-	2
Leptophlebiidae	-	1	-	-
Maccaffertium sp.	1	1	-	-
Maccaffertium smithae	-	-	-	1
Pseudocentroptiloides usa	-	-	1	-
Pseudocloeon propinquum	-	7	-	-
Megaloptera				
Sialis sp.	-	1	-	-
Odonata				
Aeshnidae	-	-	2	4
Argia sp.	-	-	4	1
Boyeria vinosa	-	-	1	-
Plecoptera				
Neoperla carlsoni	-	-	-	1
Trichoptera				
Cheumatopsyche sp.	1	10	1	2
Hydroptila sp.	1	2	1	-
Neotrichia sp.	-	-	1	4
Oxyethira sp.	-	1	-	-
Triaenodes sp.	-	-	-	1
Mollusca				
Bivalvia				
Corbicula fluminea	1	1	1	5
Gastropoda				
Ancylidae	51	32	1	2
Physa sp.	-	2	-	-
Planorbidae	-	-	1	-

The Bioassay of the Quincy WWTP effluent sampled on April 23, 2012, NPDES #FL0029033

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 9 0 3 3 11 12	1 2 0 4 2 3	# B	# S	# 1

Remarks

#

The Priority Pollutants Analysis for Bioassay of the Quincy WWTP effluent sampled on April 23, 2012, NPDES #FL0029033

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 9 0 3 3 11 12	1 2 0 4 2 3	# X	# S	# 1

Remarks

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Biological Analyses of the Quincy WWTP effluent sampled on April 23, 2012, NPDES #FL0029033

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 9 0 3 3 11 12	1 2 0 4 2 3	# S	# S	# 1

Remarks

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