

Biological Assessment of

Macclenny WWTP

Baker County

NPDES #FL0040495

Sampled January 25-28, 2009

October 2009

Biology Section

Bureau of Laboratories

Division of Environmental Assessment and Restoration

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Fifth Year Inspection Summary

The Fifth Year Inspection of the Macclenny WWTP conducted January 25-28, 2009 produced the following notable results. There were no organic constituents detected in the effluent and there were no metal exceedances in the effluent or at the in-stream Control and Test Sites.

The effluent was not toxic to the water flea, *Ceriodaphnia dubia*, or to the freshwater fish, *Pimephales promelas* during the 7-day chronic screen bioassay.

General physical-chemical and microbiological measurements complied with water quality criteria and effluent permit limits. Algal Growth Potential (AGP) values of the effluent and the Test Site exceeded the "problem" threshold of 5.0 mg dry wt/L for fresh water (Raschke & Schulz, 1987). The Control Site AGP value was below the problem threshold.

No adverse affects of the effluent on the periphyton and macroinvertebrate communities at the Test Site were found.

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.

Facility Overview

The Macclenny Wastewater Treatment Facility is an advanced secondary activated sludge Municipal Domestic Wastewater Treatment plant. The effluent is discharged into Turkey Creek, a Class III Fresh Water (see map in Appendix A). The design flow of the wastewater system is 1.30 million gallons per day (MGD). The annual average flow for January, 2008 to January, 2009 was 0.785 MGD. The flow measured during this survey was 0.556 MGD (Northeast District sampling staff).

See the Facility Summary (Appendix B) for a description of the facility, a summary of permit limits, and administrative order (AO) and discharge monitoring report (DMR) information. There is a site specific alternative criterion (SSAC) for this facility for dissolved oxygen. The facility's permit was revised on April 16, 2009; therefore the measurements taken for this inspection should be compared to the permit before the revision.

Methods

The purpose of this investigation was to determine the discharger's effects on the biota of the receiving waters. Chemical and biological comparisons were made between a Control Site located in Turkey Creek approximately 200 m upstream of the point of discharge and a Test Site located approximately 10 m downstream of the point of discharge.

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

The following were involved in this investigation: Eesa Ali and Stephen Nye (DEP Northeast District Office) and DEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Michael Tanski, Jennifer Paris, and Nancy Ross).

Results and Discussion

Organic Constituents (See Table 1 and Appendix E)

- No organic constituents were detected in the effluent.
- Cyanide was not detected in the effluent and therefore complied with facility permit limits.

Metals (See Table 2 and Appendix E)

- Effluent copper, nickel, and zinc were detected at levels that complied with Class III Fresh Water Quality Criteria (62-302.530 F.A.C).
- Effluent cadmium, chromium III, iron, and lead were present at levels between the minimum detection limit (MDL) and practical quantitation limit (PQL) and within the water quality criteria.
- Control and Test Site iron was detected at levels that complied with Class III Water Quality Criteria.
- Test Site copper and zinc were detected at levels that complied with Class III Water Quality Criteria.
- Although not a violation of water quality or permit limits, the fact that copper and zinc were detected in the effluent and at the Test Site but not at the Control Site indicates that the effluent is exerting an influence on the Test Site.
- Aluminum was detected at the Control Site, but there is no freshwater water quality criterion for aluminum.
- Control and Test Site levels of arsenic, chromium III, lead, and nickel were present at levels between the MDL and PQL and within the water quality criteria.
- Test Site aluminum was present at levels between the MDL and PQL.

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

- Toxicity Whole Effluent Test (See Table 1 and Appendices F and G). The effluent sample was not acutely or chronically toxic to the fish, *Pimephales promelas*, or to the water flea, *Ceriodaphnia dubia*, during the chronic screening bioassays and therefore, the NOEC for both species was equal to 100% effluent and complied with effluent permit limits.

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

- Habitat Assessment scores were similar at the Control Site (134) and Test Site (127), which places both sites in the “optimal” category. The Control Site had a slightly higher score due to better bank stability and riparian zone quality. Substrate availability was greater at the Test Site than the Control Site.
- Dissolved oxygen (mg/L), pH (Standard Units), and specific conductance (µmhos/cm) of the effluent complied with Class III Fresh Water Quality Criteria (62-302.530 F.A.C.) and effluent permit limits. On the January 26th sampling, the Test Site conductivity measurement was approximately 3.5 times higher than the Control Site.
- Dissolved oxygen was 2.5 mg/L at the Control Site on January 28, 2009, as measured in a water sample taken 1.9m below the surface of the water. On January 26, 2009 the dissolved oxygen at the Control Site was 6.5 mg/L which was taken at 0.3m below the surface of the water. Dissolved oxygen at the Test Site, measured at the surface of the water, met the Class III Fresh Water Quality Criterion (62-302.520 F.A.C). Total suspended solids (mg/L) were undetected in the effluent and Carbonaceous Biological Oxygen Demand (CBOD; mg/L) of the effluent complied with permit limits.
- Chlorophyll *a* content estimates algal biomass, and high algal biomass implies nutrient stress (Stevenson and Bahls, 1999). Chlorophyll *a* was detected in the effluent sample and at the Test Site at very low levels; chlorophyll *a* was not detected at the Control Site.
- Total suspended solids (mg/L) were undetected in the effluent and Carbonaceous Biological Oxygen Demand (CBOD; mg/L) of the effluent complied with permit limits.

Microbiology (See Table 1 and Appendix E)

- Fecal coliforms were detected in the effluent and at both the Control and Test Sites at very low levels which complied with Class III Fresh Water Quality Criterion (62-302.530(6) F.A.C.) and facility permit limits.

Nutrients (See Table 1 and Appendix E)

- Effluent organic nitrogen and total ammonia complied with effluent limits.
- All of the nutrients sampled were higher at the Test Site than at the Control Site. The effluent composite sample provides evidence of nutrient loading from the Macclenny facility. The value of nitrate-nitrite detected in the effluent composite sample was approximately three times higher than

the Test Site value and over three orders of magnitude higher than the Control Site value. Total phosphorus detected at the Test Site was over 53 times higher than at the Control Site, also an indication the effluent is exerting some influence on the Test Site.

Algal Growth Potential (See Table 3 and Appendix E)

- Algal growth potential (AGP) is a measure of nutrients available for algal growth (Miller *et al*. 1978). Raschke and Shultz (1987) found that AGP values above 5.0 mg dry weight/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The AGP values of the effluent (338 mg dry weight/L) and the Test Site (117 mg dry weight/L) were significantly above the problem threshold as opposed to the Control Site which was below the problem threshold (2.2 mg dry weight/L). It appears that the effluent is negatively influencing the Test Site through nutrient enrichment. Nitrogen seems to be the limiting nutrient at the effluent and the Test Site, whereas nitrogen and phosphorus appear to be co-limiting at the Control Site.

Bioassessment

Periphyton: (See Tables 4 and Appendices I-1 and I-2)

- Periphyton communities at the Control and Test Sites were very similar. Both sites consisted mostly of diatoms. There were no adverse affects apparent on the periphyton community in Turkey Creek from the effluent.

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

- The Shannon-Weaver diversity scores for the quantitative Hester-Dendy samples were similar for the Control and Test Sites (3.85 and 2.79, respectively). Although this appears to be more than a 25% reduction in diversity, both results could be negatively biased due to the low number of individuals collected at both sites. Both sites were dominated by dipterans but the difference in percent dominance, 96.6% dipterans at the Test Site compared to 58.5% at the Control Site, partially accounts for the lower diversity score at the Test Site. Both sites had two EPT taxa and a similar number of total taxa.
- Qualitative dipnet sample data indicated that the macroinvertebrate community at the Test Site was much better than the Control Site. The Test Site scored 64 A on the Stream Condition Index (SCI) placing it in Category 2, and the Control Site scored 19 A, placing it in Category 3 (see Appendix C for an explanation of SCI Categories). Both sites had similar numbers of ephemeroptera taxa, but the Test Site had higher numbers of total taxa, trichopteran taxa, clinger taxa, and sensitive taxa. The Test Site also had a significantly lower percentage of the dominant taxon and a higher percentage of filter feeders than the Control Site (see Appendix C for an explanation of how SCI metrics typically respond to human disturbance). The lower SCI score at the Control Site is likely attributable to the extremely high numbers of *Caecidotea* sp. collected. It was also noted in photos that the Control Site water level was very high during the sampling and may have been sampled at an inappropriate time, possibly affecting the SCI score. The water levels at the Test Site were suitable at the time of sampling.

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

MacClenny WWTP	Class III Criteria	Effluent Limits	Effluent Composite ^	Effluent Grab	Control Site 1/26/09	Control Site 1/28/09	Test Site 1/26/09	Test Site 1/28/09
Organic Constituents (µg/L)								
None Detected	-	-	None Detected					
Nutrients (mg/L)								
Ortho-phosphate	-	-	2.9	-	0.008 I	-	0.92	-
Total Phosphorus	-	-	3.7	-	0.026 I	-	1.4	-
Total Ammonia	-	4.0 s, p	0.19	-	0.028	-	0.037	-
Un-ionized Ammonia	≤ 0.02 s	-	-	-	≤ 0.02 c	- c	≤ 0.02 c	- c
Nitrate and Nitrite	-	-	6.4	-	0.005 I	-	1.9	-
Total Kjeldahl Nitrogen	-	-	1.5	-	0.46	-	0.74	-
Organic Nitrogen	-	4.0 s, p	1.31 c	-	0.432 c	-	0.703 c	-
Total Nitrogen	-	-	7.9 c	-	0.465 c	-	2.64 c	-
General Physical and Chemical Parameters								
Habitat Assessment	-	-	-	-	-	134	-	127
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 5.0 s	-	9.1	6.5	2.5	7.9	6.2
pH (SU)	6.0 - 8.5	6.0 - 8.5 s	-	6.9 ¥	6.2	6.0	6.8	6.1
Conductivity (µmhos/cm)	≤ 1,275	-	-	592	73	100	344	86
Temperature (°C)	-	-	-	19.6	14.2	14.3	16.9	15.3
Sample Depth (m)	-	-	-	0	0.3	1.9	0.3	0.2
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01 s	-	0.01	-	-	-	-
Chlorophyll *a* (µg/L) - Corrected	-	-	-	0.81 I	0.69 U	-	0.59 I	-
Phaeophytin (µg/L)	-	-	-	0.24 U	1.1	-	0.24 U	-
Total Suspended Solids (mg/L)	-	≤ 10.0 s, p	-	4 U	4 I	-	4 U	-
Color (pt-Co)	-	-	-	-	80	-	60	-
CBOD, 5 day (mg/L), N - inhibited	-	≤ 10.0 s, p	-	1.9 I	0.27 I	-	0.89 I	-
Cyanide (µg/L)	≤ 5.2	≤ 5.2 s, p	-	0.005 U	-	-	-	-
Flow (MGD)	-	≤ 1.30		0.556	-	-	-	-
Hardness (mg $CaCO_3$)	-	Report	154.61 c	- c	18.49 c	- c	71.21 c	- c
Toxicity (7-day chronic screening bioassay, NOEC)								
Bioassay - Water flea *(Ceriodaphnia dubia)*	-	100%	100%	-	-	-	-	-
Bioassay - Fish *(Cyprinella leedsi)*	-	100%	100%	-	-	-	-	-
Microbiology (Number of colony forming units/100ml)								
Fecal Coliforms @	≤ 400 s#	≤ 800 s	-	2 B*	18 B*	-	33 B*	-

Value exceeds the Class III Water Quality Criteria or permit limits

a - annual average

c - Value is calculated

p - 16 hour flow proportioned composite

s - Single sample

B - Results based on colony counts outside the acceptance range

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

J - Estimated value

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

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

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

^ - 23 hour composite

¥ - Value in Appendix E is incorrect due to illegible handwriting on the chain of custody form. Value in Table 1 is the correct value (pers.comm. with NE District staff)

@ - Fecal coliforms analysis was performed by Columbia Analytical Services

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.

MacClenny WWTP	Effluent Composite ^ Class III Criteria	Effluent Limits	Effluent Composite ^	Control Site 1/26/09 Class III Criteria	Control Site 1/26/09	Test Site 1/26/09 Class III Criteria	Test Site 1/26/09
Metals (µg/L unless otherwise noted)							
Aluminum	-	-	60 U	-	250	-	190 I
Arsenic	≤ 50	-	0.25 U	≤ 50	0.3 I	≤ 50	0.25 I
Cadmium	≤ 0.4 b	-	0.086 I	≤ 0.10 b	0.03 U	≤ 0.21 b	0.03 U
Calcium (mg/L)	-	-	38.5	-	4.6	-	17.8
Chromium-III	≤ 123.1 b	-	0.3 I	≤ 27.69 b	0.48 I	≤ 65.26 b	0.4 I
Copper	≤ 13.5 b	-	4.2	≤ 2.85 b	0.5 U	≤ 6.98 b	1.7
Iron	≤ 1,000	-	80 I	≤ 1,000	480	≤ 1,000	450
Lead	≤ 5.5 b	-	0.31 I	≤ 0.54 b	0.41 I	≤ 2.07 b	0.4 I
Magnesium (mg/L)	-	-	14.2	-	1.7	-	6.5
Mercury	≤ 0.012	≤ 0.012 p	-	≤ 0.012	-	≤ 0.012	-
Nickel	≤ 75.4 b	-	1.29	≤ 16.14 b	0.36 I	≤ 39.14 b	0.7 I
Selenium	≤ 5.0	-	0.2 U	≤ 5.0	0.2 U	≤ 5.0	0.2 U
Silver	≤ 0.07	≤ 0.07 p	0.01 U	≤ 0.07	0.01 U	≤ 0.07	0.01 U
Zinc	≤ 173.3 b	-	96	≤ 37.02 b	5 U	≤ 89.87 b	42

See Table 1 for calculated hardness
b - Value is calculated based on hardness
p - 16 hour flow proportioned composite
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
^ - 23-hour composite

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.

MacClenny 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	338	250.4 ± 50.1		300.2 ± 60.0		2.3	2.1
Control Site	2.2 A	1.3 ± 0.3	3.4 ± 0.7	17.7 ± 3.5	11.2 ± 2.2	4.1	17.9
Test Site	117	73.6 ± 14.7		100.3 ± 20.1		2.1	1.9

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

Table 4. Periphyton Composition - Qualitative.

MacClenny WWTP	Control Site	Test Site
Number of Wet Taxa	10	11
Number of Wet Algal Units Identified	300	304
Percent Dominant Wet Taxon	86.0	91.1
Dominant Wet Taxon Name	Bacillariophyta (Diatoms)	Bacillariophyta (Diatoms)
Number of Diatom Taxa	44	49
Number of Diatom Algal Units Identified	500	500
Percent Dominant Diatom Taxon	16.0	11.6
Dominant Diatom Taxon Name	*Eunotia* sp.	*Navicula germainii*
Percentage Composition for Wet Algae		
Blue-green algae	8.0	4.6
Green algae	5.7	4.0
Diatoms	86.0	91.1
Euglenophytes	0.0	0.3

Table 5. Macroinvertebrate Hester-Dendy Samples - Quantitative.

MacClenny WWTP	Control Site	Test Site
Summary Statistics		
Shannon-Weaver Diversity	3.85	2.79
Number of Taxa	20	23
Number of EPT Taxa	2	2
Percent Dominant Taxon	12.6	38.7
Dominant Taxon Name	*Tanytarsus* sp. L Epler (Diptera)	*Corynoneura* sp. (Diptera)
Total Number of Individuals (counted)	75	203
Total Number of Individuals (#/m^2)	200	538
Community Composition: Percent of total		
Coleoptera	5.3	0.5
Diptera	58.5	96.6
Ephemeroptera	14.7	0.0
Gastropoda	0.0	0.5
Isopoda	12.0	0.0
Odonata	0.0	0.5
Oligochaeta	9.3	0.5
Plecoptera	0.0	0.0
Trichoptera	0.0	1.5
Other	0.1	0.0
Functional Feeding Groups: Percent of total		
Browser-Grazers	6.0	0.0
Burrowing Deposit Feeders	9.3	0.5
Predators	15.1	27.6
Scavengers	6.0	0.0
Scrapers	12.9	1.7
Shredders	2.8	3.0
Surface Deposit Feeders	35.9	62.4
Suspension Feeders	11.8	4.8

* - Shannon Weaver Diversity scores calculated on samples with < 300 individuals have the potential for negative bias (lower diversity scores compared to sites with more individuals). (Lande 1996)

Table 6. Macroinvertebrate Dipnet Samples - Qualitative.

Macclenny WWTP	Control Site		Test Site	
Summary Statistics				
Stream Condition Index 2007 (value)	19 A		64 A	
Stream Condition Index 2007 (category) *	Category 3		Category 2	
Stream Condition Index Metrics	Rep 1	Rep 2	Rep 1	Rep 2
Number of Total Taxa	24	19	41	34
Number of Ephemeroptera Taxa	1	1	1	1
Number of Trichoptera Taxa	1	0	5	2
Number of Clinger Taxa	1	1	5	2
Number of Long-lived Taxa	0	1	1	1
Number of Sensitive Taxa	2	1	10	7
Percent of Dominant Taxon	62.7	60.8	12.1	13.9
Percent Suspension Feeders and Filterers	1.7	1.0	16.8	15.2
Percent of Tanytarsini Individuals	1.3	0.0	24.8	27.8
Percent of Very Tolerant Individuals	4.7	4.6	16.1	15.9
Total Number of Individuals	150	153	149	151
Community Composition: Percent of total				
Dominant Taxon Name	*Caecidotea* sp. (Isopoda)	*Caecidotea* sp. (Isopoda)	*Tanytarsus* sp. M Epler (Diptera)	*Tanytarsus* sp. L Epler (Diptera)
Acariformes	1.3	0.0	0.0	0.0
Amphipoda	1.3	0.0	0.7	0.7
Bivalvia	0.0	0.0	2.7	0.7
Coleoptera	4.0	7.2	15.4	11.9
Decapoda	0.0	0.7	0.0	0.0
Diptera	12.0	11.8	45.6	53.6
Ephemeroptera	8.7	8.5	0.7	2.0
Gastropoda	2.0	2.6	16.1	15.2
Isopoda	62.7	60.8	2.7	5.3
Odonata	3.3	2.0	1.3	0.7
Oligochaeta	3.3	5.9	8.7	6.6
Plecoptera	0.0	0.0	0.0	0.0
Trichoptera	1.3	0.0	5.4	2.0
Other	0.01	0.67	0.68	1.33
Functional Feeding Groups: Percent of total				
Browser-Grazers	31.3	30.4	1.3	2.7
Burrowing Deposit Feeders	3.3	5.9	8.7	6.6
Predators	10.7	7.8	11.7	13.3
Scavengers	31.3	30.7	1.3	2.7
Scrapers	7.3	9.8	24.5	21.5
Shredders	2.3	1.3	2.7	2.3
Surface Deposit Feeders	12.0	12.4	32.9	35.4
Suspension Feeders	1.7	1.0	16.8	15.2
Unknown	0.0	0.7	0.0	0.0

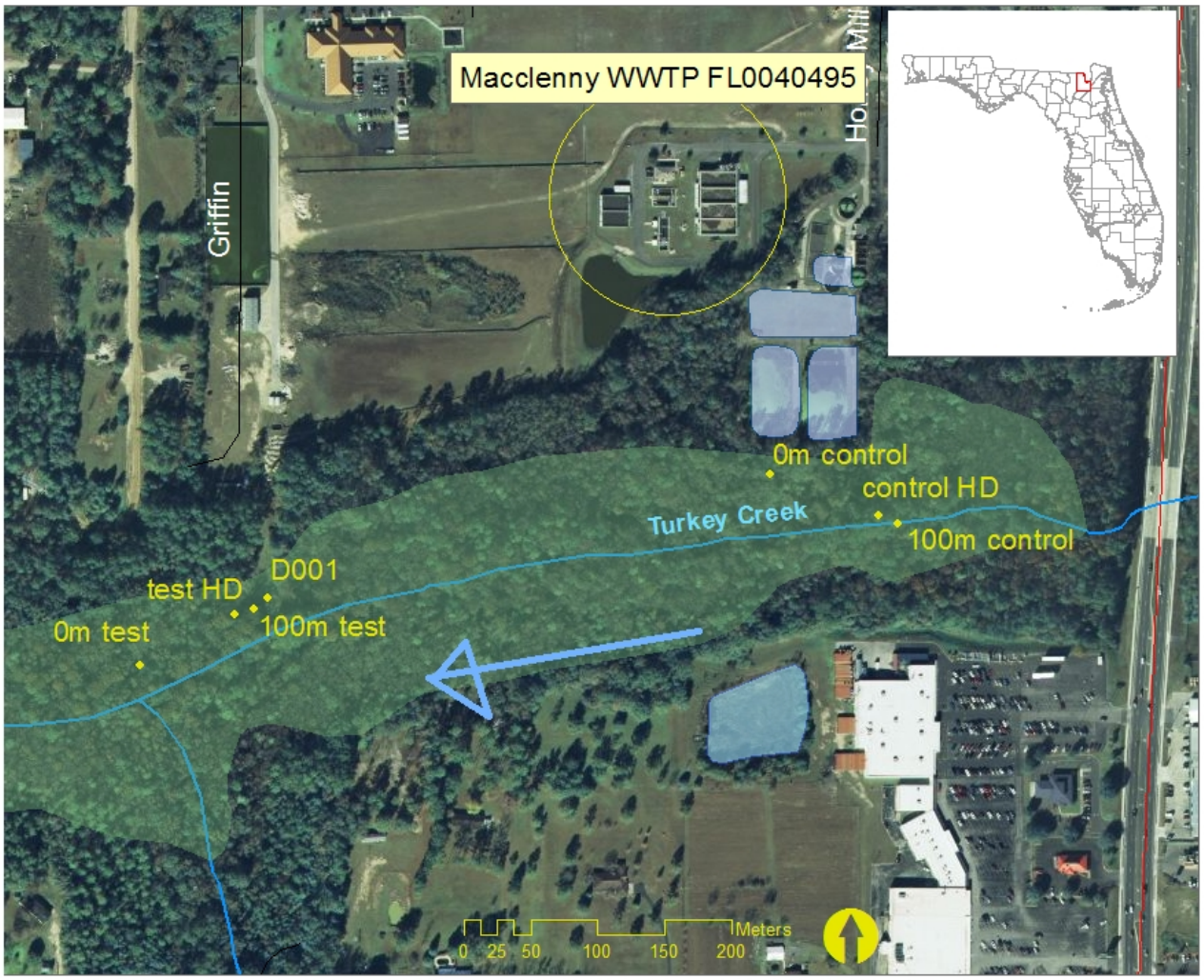
A - Value reported is the mean of two determinations

* 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: Kathleen H. Gerard	**Contact Number: (904) 807-3338**
Facility Name (as it appears on permit): Macclenny WWTF	**Former Names:**
NPDES Permit Number: FL0040495	**Permit Expiration Date: January 15, 2014**
Physical Address: 798 Honeymill Road, south of Lowder St., west of SR 121, Macclenny, Florida 32063	
District: Northeast	**County: Baker**
Function of Facility: Wastewater treatment	
Facility Type: Advanced secondary activated sludge wastewater treatment facility	**Permitted Capacity (MGD): 1.30 MGD**
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 0.785 MGD	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): N/A	
Description of type of Discharge: ☐ **Continuous** ☒ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**	

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

EFD-1 Effluent after dechlorination
EFA-1 Effluent after disinfection but before dechlorination
SWB-1 Located on Turkey Creek about 200 ft. downstream of the SR 121 bridge after the split stream system joins back together.
SWB-2 0.95 miles downstream of Outfall D-001 in Turkey Creek
SWB-3 Located on the South Prong about 200 ft. upstream of the confluence with Turkey Creek
SWB-4 Located on the South Prong in the shaded reach upstream of the railroad trestles prior to "shallows" (about 600 ft. upstream of the US 90 bridge)

Description of Permitted Outfall(s):

The 1.30 MGD annual average daily flow permitted discharge to Turkey Creek (Class III fresh waters) at discharge location (D-001) which is approximately 10 feet in length and discharges at a depth of about 6 feet. The point of discharge is located approximately at latitude 30 degrees 16'11" N, longitude 82 degrees 07' 37" W.

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

The Macclenny Wastewater Treatment Facility (WWTF), is a 1.30 million gallons per day (mgd) average annual daily flow (AADF) permitted capacity advanced secondary activated sludge domestic wastewater treatment facility (WWTF) consisting of an influent pumping station on the site of the previous WWTF, two manually-cleaned influent bar screens, a grit removal chamber, grit classification equipment, four sequencing batch reactors (SBRs) with a combined volume of approximately 1.668 million gallons (417,000 gallon each), gas chlorination for disinfection, two traveling bridge filters and automatic backwash with a combined surface area of approximately 850 square feet (425 square feet each), a chlorine contact chamber with a volume of approximately 31,400 gallons (15,700 gallons each side) and a stilling channel with a flow meter and totalizer with a weir for effluent flow measurement by ultrasonic meter, sodium dioxide gas equipment for the addition of the dechlorination agent in the post-aeration basin with a floating aerator and a volume of approximately 18,145 gallons, two aerobic digesters with a combined volume of approximately 448,000 gallons (224,000 gallons each), and four, polymer-assisted sludge drying beds with a combined surface area of approximately 6,400 square feet (1,600 square feet each). Residuals are land applied after treatment.

PART I: Continued

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

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow, in conduit or thru treatment plant	**MGD**	**Maximum**	**1.30**	**-**	**-**	**-**	**Continuous**	**Recording flow meters and totalizers**	**EFD-1**	**See Cond.I. A.5**
BOD, Carbonaceous 5-day, 20C	**MG/L**	**Maximum**	**5.0**	**6.25**	**7.5**	**10.0**	**Weekly**	**16-hour flow proportioned composite**	**EFD-1**	
Solids, Total Suspended	**MG/L**	**Maximum**	**5.0**	**6.25**	**7.5**	**10.0**	**Weekly**	**16-hour flow proportioned composite**	**EFD-1**	
Coliform, Fecal	**#/100 ML**	**Maximum**	**See Permit Condition I.A.6.**				**Weekly**	**Grab**	**EFD-1**	
pH	**SU**	**Range**	**-**	**-**	**-**	**6.0 to 8.5**	**Continuous**	**Instrument**	**EFD-1**	**See Cond.I. A.4**
Total Residual Chlorine (For Disinfection)	**MG/L**	**Minimum**	**-**	**-**	**-**	**0.5**	**Continuous**	**Instrument**	**EFA-1**	**See Cond.I. A.4, 7**
Total Residual Chlorine (For Dechlorination)	**MG/L**	**Maximum**	**-**	**-**	**-**	**0.01**	**Daily**	**Grab**	**EFD-1**	
Nitrogen, Organic, Total as N	**MG/L**	**Maximum**	**2.0**	**2.5**	**3.0**	**4.0**	**Weekly**	**16-hour flow proportioned composite**	**EFD-1**	
Ammonia, Total as N	**MG/L**	**Maximum**	**2.0**	**2.5**	**3.0**	**4.0**	**Weekly**	**16-hour flow proportioned composite**	**EFD-1**	
Whole Effluent Toxicity (Chronic)	**See Permit Condition I.A.8**								**EFD-1**	

Hardness, Total (as CaCO3)	**MG/L**	**Maximum**	**-**	**-**	**-**	**Report**	**Monthly**	**Grab**	**EFD-1**	**See Cond. I.A.3**
Oxygen, Dissolved (DO)	**MG/L**	**Minimum**	**-**	**-**	**-**	**5.0**	**Daily**	**Grab**	**EFD-1**	
Stream Monitoring	**See Permit Condition I.A.9**									
Cyanide, Total Recoverable	**UG/L**	**Maximum**	**-**	**-**	**-**	**5.2**	**Monthly**	**16-hour flow proportioned composite**	**EFD-1**	**See I.A.3**
Silver, Total Recoverable	**UG/L**	**Maximum**	**-**	**-**	**-**	**0.07**	**Monthly**	**16-hour flow proportioned composite**	**EFD-1**	**See I.A.3**
Mercury, Total Recoverable	**UG/L**	**Maximum**	**-**	**-**	**-**	**0.012**	**Monthly**	**16-hour flow proportioned composite**	**EFD-1**	**See I.A.3**

PART I: Continued	
Receiving Waters: **Turkey Creek**	**Classification (indicate whether fresh or marine):** **Class III fresh waters**

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 an Inhibition Concentration 25% (IC_{25}) of less than 100% effluent in any test. [Rule 62-302.530(61), as defined in 62-302.200(14) 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., F.A.C.]

b. Monitoring Frequency

(1) Routine toxicity tests shall be conducted annually, once every 12 months, starting within 12 months of the most recent test and lasting for the duration of the permit.

c. Sampling Requirements

(1) For each routine test or additional follow-up test conducted, a total of three *flow proportional 16-hour composite* 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%, 75%, 50%, 25%, and 12.5% 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.

e. Quality Assurance Requirements

(1) A standard reference toxicant (SRT) quality assurance (QA) chronic toxicity test shall be conducted with each species used in the required toxicity tests either concurrently or initiated no more than 30 days before the date of each routine or additional follow-up test conducted. Additionally, the SRT test must be conducted concurrently if the test organisms are obtained from outside the test laboratory unless the test organism supplier provides control chart data from at least the last five monthly chronic toxicity tests using the same reference toxicant and test conditions. If the organism supplier provides the required SRT data, the organism supplier's SRT data and the test laboratory's monthly SRT-QA data shall be included in the reports for each companion routine or additional follow-up test required.

(2) If the mortality in the control (0% effluent) exceeds 20% for either species in any test or does not meet test acceptability criteria, the test for that species (including the control) shall be invalidated and the test repeated. Test acceptability criteria for each species are defined in EPA-821-R-02-013, Section 13.12 (*Ceriodaphnia dubia*) and Section 11.11 (*Pimephales promelas*). The repeat test shall begin within 21 days after the last day of the invalid test.

(3) If 100% mortality occurs in all effluent concentrations prior to the end of any test and the control mortality is less than 20% at that time, the test (including the control) shall be terminated with the conclusion that the test fails and constitutes non-compliance

Routine and additional follow-up tests shall be evaluated for acceptability based on the observed dose-response relationship and the percent minimum significant difference (PMSD)as required by EPA-821-R-02-013, Section 10.2.6 and 10.2.8, respectively, and the evaluation shall be included with the bioassay laboratory reports.

f. Reporting Requirements

(1) Results from all required tests shall be entered on the Discharge Monitoring Report (DMR) as the calculated IC_{25} for each test species.

(2) A bioassay laboratory report for each routine test shall be prepared according to EPA-821-R-02-013, Section 10, Report Preparation and Test Review, and mailed or e-mailed to the Department at the address below within 30 days after the last day of the test.

(3) For additional follow-up tests, a single bioassay laboratory report shall be prepared according to EPA-821-R-02-013, Section 10, and mailed or e-mailed within 30 days after the last day of the second valid additional follow-up test.

(4) Data for invalid tests shall be included in the bioassay laboratory report for the repeat test.

(5) The same bioassay data shall not be reported as the results of more than one test.

(6) All bioassay laboratory reports shall be mailed or e-mailed to *Jacksonville*:

Florida Department of Environmental Protection
Northeast District – Wastewater Section
7825 Baymeadows Way, B-200
Jacksonville, Florida 32256-7590

g. Test Failures

(1) A test fails when the test results do not meet the limits in 8.a.

(2) Additional Follow-up Tests:

(a) If a routine test does not meet the chronic toxicity limitation in 8.a.(1) above, the permittee shall notify the Department at the address above within 21 days after the last day of the failed routine test and conduct two additional follow-up tests on each species that failed the test in accordance with 8.d.

(b) The first test shall be initiated within 28 days after the last day of the failed routine test. The remaining additional follow-up tests shall be conducted weekly thereafter until a total of two valid additional follow-up tests are completed.

(c) The first additional follow-up test shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 75%, 50%, 25%, and 12.5% effluent. The permittee may modify the dilution series in the second additional follow-up test to more accurately bracket the toxicity such that at least two dilutions above and two dilutions below the target concentration and a control are run. All test results shall be statistically analyzed according to the Appendices in EPA-821-R-02-013.

(3) In the event of three valid test failures (whether routine or additional follow-up tests) within a 12-month period, the permittee shall notify the Department within 21 days after the last day of the third test failure.

(a) The permittee shall submit a plan for correction of the effluent toxicity within 60 days after the last day of the third test failure.

(b) The Department shall review and approve the plan before initiation.

(c) The plan shall be initiated within 30 days following the Department's written approval of the plan.

(d) Progress reports shall be submitted quarterly to the Department at the address above.

(e) During the implementation of the plan, the permittee shall conduct quarterly routine whole effluent toxicity tests in accordance with 8.d. Additional follow-up tests are not required while the plan is in progress. Following completion or termination of the plan, the frequency of monitoring for routine and additional follow-up tests shall return to the schedule established in 8.b.(1). If a routine test is invalid according to the acceptance criteria in EPA-821-R-02-013, a repeat test shall be initiated within 21 days after the last day of the invalid routine test.

(f) Upon completion of four consecutive, valid routine tests that demonstrate compliance with the effluent limitation in 8.a.(1) above, the permittee may submit a written request to the Department to terminate the plan. The plan shall be terminated upon written verification by the Department that the facility has passed at least four consecutive valid routine whole effluent toxicity tests.

(g) If a test within the sequence of the four is deemed invalid, but is replaced by a repeat valid test initiated within 21 days after the last day of the invalid test, the invalid test will not be counted against the requirement for four consecutive valid tests for the purpose of terminating the plan.

(4) If chronic toxicity test results indicate greater than 50% mortality within 96 hours in an effluent concentration equal to or less than the effluent concentration specified as the acute toxicity limit in 8.(a)(2), the Department may revise this permit to require acute definitive whole effluent toxicity testing.

(5) The additional follow-up testing and the plan do not preclude the Department taking enforcement action for acute or chronic whole effluent toxicity permit limit violations.

Facility Mixing Zone Details (if applicable):			
List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year:			
Date	Parameter and Units	Limit	Result
January 2008	**TSS mg/L**	**7.5 mg/L Weekly Avg.**	**9.1 mg/L**
Describe previous FYI and WQBEL study:			

Describe previous or current Enforcement Actions (including WLs):

No current enforcement actions since the permit with the Administrative Order was recently issued. The new permit addresses the issues and has incorporated addition sampling for total recoverable cyanide, total recoverable silver and total recoverable mercury monitoring as well as added the following conditions from the AO: During the interim period in which the City of Macclenny is working to bring the facility into compliance as required by this Order, the following schedules shall be met:

a. Part I.B.1 for monitoring in the receiving stream and discharge from the WWTF, the City of Macclenny shall comply with the following conditions for the current SSAC and current WQBEL.

b. In accordance with Rule 62-650 FAC, (Water Quality Based Effluent Limitations), the average annual total phosphorus concentration limitation shall be determined and established as a Water Quality Based Effluent Limitation (WQBEL) pursuant to Rule 62-650.500, FAC. The City of Macclenny shall develop a plan of study which will include water quality and biological sampling (biological assessments) to develop a WQBEL for total phosphorus in accordance with Chapters 62-4, 62-302 and 62-650 FAC. The study shall be conducted in accordance with the following schedule:

ACTION ITEM	DUE DATE
The plant shall be operational and in compliance with all limits specified in condition I.A.2. of the permit except for SSAC DO, total recoverable cyanide, total recoverable silver and total recoverable mercury.	Upon permit issuance
Develop a plan of study, submit to DEP, including an implementation schedule, to conduct the WQBEL and SSAC study for the receiving streams for evaluation of compliance with Rules 62-4, 62-650 and 62-302 FAC. Obtain approval for plan of study.	April 1, 2009
Publish a Notice of Proposed Water Quality Study (to be provided by the Department) in a newspaper of general circulation and in the Florida Administrative Weekly concerning the initiation of the WQBEL Plan of Study.	June 1, 2009
Implement the plan of study.	Upon Department approval.
Submit first report summarizing progress on implementation of the plan of study including a report summarizing the sample results of total recoverable cyanide, total recoverable silver and total recoverable mercury.	Oct 1, 2009
Submit second report summarizing progress on implementation of the plan of study including a report summarizing the sample results of total recoverable cyanide, total recoverable silver and total recoverable mercury.	April 1, 2010
Submit third report summarizing progress on implementation of the plan of study including a report summarizing the sample results of total recoverable cyanide, total recoverable silver and total recoverable mercury.	Oct 1, 2010
Submit final report summarizing the water quality evaluation and determination of final limits. DEP will provide written approval of the plan with 30 days of a complete submittal including a report summarizing the sample results of total recoverable cyanide, total recoverable silver and total recoverable mercury.	April 1, 2011
City of Macclenny will apply for a permit revision as needed, based on the results of the WQBEL and SSAC for administrative relief.	October 1, 2011
City of Macclenny will provide interim report concerning construction progress as needed to meet approved WQBEL and SSAC for administrative relief.	April 1, 2012
Complete construction of facility improvements and modifications. Comply with final WQBEL limits and SSAC for DO in the receiving stream. In the event that the WQBEL does not lead to a permit revision for cyanide, silver or mercury via the mixing zone criteria, the City of Macclenny shall meet the final limits as specified in Chapter 62-302 FAC.	April 1, 2013

Describe any violations or problems noted in previous inspection:
The Administrative Order was issued with Permit FL0040495 due to:

1. City of Macclenny's discharge will not meet the limits for total recoverable cyanide, total recoverable silver and total recoverable mercury within Specific Condition Number I.A.1. of DEP Permit No. FL0040495.

2. The ambient water quality sampling indicates there were stream dissolved oxygen levels below the approved Site Specific Alternative Criteria (SSAC) for dissolved oxygen (DO). Stream water levels have been low, stream flow is below normal levels and the result is the Department has insufficient reliable information to assess biological integrity for the facility in accordance with Rule 62-303.430(2) FAC. Recent changes to the DEP rules concerning SSAC methodology along with the low stream DO levels will require the City of MacClenny to conduct a new SSAC study. The City is conducting a water quality study to determine waste load allocation limits to increase the permitted discharge to the receiving waters. MacClenny is required to conduct both the SSAC evaluation as well as a Level II Water Quality Based Effluent Limit Study (WQBEL) to generate reliable data for the Department to evaluate appropriate limits.

Discuss whether DMR trends within previous five years are improving or declining:
The quality of the effluent has improved over the last year. However, an AO was issued with the permit to address the above stated issues.

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

Permit FL0040495 was recently issued on January 16, 2009. It is expected to be revised shortly due to the way the SBR facility intermittently discharges and samples are required to be collected. The way that the toxicity samples are to be collected shall be revised. The way some of the metal parameters shall be collected shall be revised and other revisions/corrections to the permit shall be made.

PART II: Sampling Event Information	
Date(s) sample collected: **January 26, 2009**	**Sampler(s):** **Eesa Ali**
Temperature (Deg C):	**pH (SU):**
Dissolved Oxygen (mg/L):	**Conductivity (umhos/cm):**
Total Residual Chlorine (mg/L):	**Total Residual Chlorine - after Disinfection (mg/L):**
Method of Chlorination: **Chlorine gas**	**Method of De-chlorination:** **Sodium dioxide gas**
Flow During Sample Collection for each outfall(MGD): **0.556 MGD**	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day): **0.785 MGD**	
Describe Discharge during Sampling Event: ☐ **Continuous** ☒ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**	

Method of Chlorination:	Method of De-chlorination:
Chlorine gas	Sodium dioxide gas

Flow During Sample Collection for each outfall(MGD):
0.556 MGD

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

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:

This is a sequencing batch reactor (SBR) plant that discharges intermittently and with no specific interval between discharges. The Department sampling personnel collected the intermittent discharges from the facility in order to get representative composite samples for toxicity.

Sampling was also collected from various in-stream monitoring locations. Due to the number of locations and difficulty in reaching the locations, sampling was performed over several days.

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 exceedence 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 exceedences of 62-302.530(20), 62-302.530(61) and/or a violation of facility permit limits.

(4) Bacteriological Testing

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

(5) Habitat Assessment

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

(6) Algal Growth Potential (AGP)

The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. Raschke and Shultz (1987) found that an AGP above 5.0 mg dry weight/L represents a “problem” threshold for fresh receiving waters, implying nutrient enrichment. High AGP values may constitute exceedences 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 exceedence of 62-302.530(61) F.A.C.

(7) Algal Phytoplankton and Periphyton Assemblages

Qualitative periphyton are sampled by taking subsamples of algae from natural substrates throughout the sample reach. Phytoplankton were sampled from the water column using a 1 L grab sample. Periphyton were subsampled and identified to the lowest practical level, usually species. Wet taxa and diatoms are identified separately. In the wet taxa analysis, soft algae are identified to the lowest practical level, and diatoms are identified only to order level (diatom). In the diatom analysis, diatoms are identified to the lowest practical level.

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

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

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

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

(8) Benthic Macroinvertebrate Assemblages

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

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

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

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

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

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

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

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

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2009-01-26-21
Macclenny WWTP

Requester: Jennifer Paris

Field Report Prepared By:

Customer: NE-DIST

Collected By: SNIEA

Send Final Report To Tom Kallemeyn

Project ID: FYI5

Sampling Agency: DEP NED

PMAS: 1143

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
√	Macclenny EFD-1	☑ Comp ☐ Grab Date 1/26/09 Time 1230 pm Eastern Central	Date 1/26/09 Time 1055 Eastern Central	A
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft; ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm); NPDES Number
	Latitude o ' "	Longitude o ' "	Comments Tox, BOD, TSS, Nitrogen series, Metals, NH3, TRC < 0.01	

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Macclenny EFD-1	☐ Comp ☑ Grab Date 1/26/09 Time 1245 Eastern Central	Date Time Eastern Central	A
	Field ID	Tot Res Chlorine (mg/L) < 0.01	Diss Oxygen (mg/L) 8.14	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C) 19.55	pH 1.94	Sample Depth NA ☐ m ☐ ft; 0.29 ☐ Salinity (PPTh) 592 ☐ Sp Conductance (umho/cm); NPDES Number
	Latitude o ' "	Longitude o ' "	Comments BNA, PEST, CN, PO4 (ortho), AGP, FL, CHL	

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Macclenny @ Turkey Creek D-001	☐ Comp ☑ Grab Date 1/26/09 Time 1319 Eastern Central	Date Time Eastern Central	B,C
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 7.65	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C) 16.88	pH 6.82	Sample Depth 0.3 ☑ m ☐ ft; 0.17 ☐ Salinity (PPTh) 344 ☑ Sp Conductance (umho/cm); NPDES Number
	Latitude o ' "	Longitude o ' "	Comments BNP, PO4, AGP, CHL, BOD, TSS, ICP FL C [macros, periphyton]	

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	SWB-1 @ Turkey Creek (upstream)	☐ Comp ☑ Grab Date 1/26/09 Time 1352 Eastern Central	Date Time Eastern Central	B,C
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 6.43	Storet Station Number 19010016
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C) 14.24	pH 6.16	Sample Depth 0.3 ☑ m ☐ ft; 0.03 ☑ Salinity (PPTh) 73 ☐ Sp Conductance (umho/cm); NPDES Number
	Latitude o ' "	Longitude o ' "	Comments B [BNP, PO4, AGP, CHL, BOD, TSS, ICP FL] / C [macros, periphyton]	

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
EA	1/26/09	FEDEX					SK	1-27-09/2:00pm

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

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Blank 1-26-09 1124am SK

√ AGP Bioassay 2 1/27/09 1523

PO4 ⓥ PNP. 17:00.

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2009-01-26-21
Macclenny WWTP

Requester: Jennifer Paris

Field Report Prepared By:

Customer: NE-DIST

Collected By: C I SW

Send Final Report To Tom Kallemeyn

Project ID: FYI5

Sampling Agency: DEP/FED

PMAS: 1143

Lab ID *

Location: Macclenny @ Turkey Creek D-001

Field ID:

Matrix (Include type e.g. Salt, Fresh, etc): artificial substrate

Temp (C):

pH:

Latitude: o ' " .

Longitude: o ' " .

☑ Comp ☐ Grab

Collection (begin) Date 01/26/09 Time Eastern Central

Collection (end) Date 1/26/09 Time Eastern Central

Bottle Group(s)**: C

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: Replayed 12/29/08

Sent on 1-26-09

Lab ID *

Location: SWB-1 @ Turkey Creek (upstream)

Field ID:

Matrix (Include type e.g. Salt, Fresh, etc): artificial substrate

Temp (C):

pH:

Latitude: o ' " .

Longitude: o ' " .

☑ Comp ☐ Grab

Collection (begin) Date [illegible] Time Eastern Central

Collection (end) Date 1/26/09 Time Eastern Central

Bottle Group(s)**: C

Tot Res Chlorine (mg/L):

Diss Oxygen (mg/L):

Storet Station Number: 19010016

Sample Depth ☐ m ☐ ft

☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)

NPDES Number:

Comments: Replayed 12/29/08

Lab ID *

Location: Macclenny @ Turkey Creek D-001

Field ID:

Matrix (Include type e.g. Salt, Fresh, etc): Temp (C): 15.31 pH: 6.05

Latitude: o ' " .

Longitude: o ' " .

☐ Comp ☐ Grab

Collection (begin) Date 1-28-09 Time 1223 Eastern Central

Collection (end) Date Time Eastern Central

Bottle Group(s)**: C

Tot Res Chlorine (mg/L):

Diss Oxygen (mg/L): 6.22

Storet Station Number:

Sample Depth ☑ m: 0.24 ☐ ft

☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm): 86

NPDES Number:

Comments: [redacted] Macros + periphyton / facility discharging

Sent 1-28-09

Lab ID *

Location: SWB-1 @ Turkey Creek (upstream)

Field ID:

Matrix (Include type e.g. Salt, Fresh, etc): Temp (C): 14.34 pH: 6.0

Latitude: o ' " .

Longitude: o ' " .

☐ Comp ☐ Grab

Collection (begin) Date 1-28-09 Time 1430 Eastern Central

Collection (end) Date Time Eastern Central

Bottle Group(s)**: C

Tot Res Chlorine (mg/L):

Diss Oxygen (mg/L): 2.54

Storet Station Number:

Sample Depth ☑ m: 1.9 ☐ ft

☐ Salinity (PPTh) ☑ Sp Conductance (umho/cm): 100

NPDES Number:

Comments: [redacted] Macros inverts + periphyton

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[redacted]	1/28/09	FedEx	[redacted]	1-29-09 09:15				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

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Shipping Rec'd for by FID 1001 1.29.09

RQ2008-01-24-4

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: ~~RQ-2008-05-19~~
Methyl Mercury Bottle QC Check

Requester: _____ Field Report Prepared By: _____

Customer: Collected By: GA/SN/JG Send Final Report To _____

Project ID: Sampling Agency: FDEP NED

PMAS:

Lab ID *	Location: Macclenny SBR FYI EFD-7			☒ Comp ☐ Grab	Collection (begin) Date 01-27-07 Time 1000 Eastern Central	Collection (end) Date 01-28-07 Time Eastern Central	Bottle Group(s)** 17
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .		Comments DAY 2 CS TOX			
Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .		Comments			
Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .		Comments			
Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .		Comments			

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
				1-29-07 09:15				

* Shaded Areas for Lab use only.

**: Please see reverse side for Bottle Group information.

last revised October 1, 2003

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Appendix E

Chemical analysis of effluent and receiving water

Date_Sampled	UDL	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
1/30/2009	Effluent	MACCLENNY WWTP	Nutrients	Total Residual Chlorine	0.01		mg/L		
1/26/2009	Effluent	MACCLENNY WWTP	AGP/LN	Algal Growth Potential	338		mg DryWt/L	0.3	0.9
1/26/2009	Effluent	MACCLENNY WWTP	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.81	I	ug/L	0.55	1.7
1/26/2009	Effluent	MACCLENNY WWTP	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.24	U	ug/L	0.24	0.71
1/26/2009	Effluent	MACCLENNY WWTP	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.9	I	mg/L	0.2	2
1/26/2009	Effluent	MACCLENNY WWTP	Overflow	Fecal Coliforms-Membrane Filter	2	B	#/100 mL	1.6	
1/26/2009	Effluent	MACCLENNY WWTP	Toxicology	Bioassay-Chronic-Scrn-FW-Fish, NOEC	100		NOEC		
1/26/2009	Effluent	MACCLENNY WWTP	Toxicology	Bioassay-Chronic-Scrn-FW-C.dubia, NOEC	100		NOEC		
1/26/2009	Effluent	MACCLENNY WWTP	Metals	Magnesium	14.2		mg/L	0.04	0.16
1/26/2009	Effluent	MACCLENNY WWTP	Metals	Zinc	96		ug/L	5	20
1/26/2009	Effluent	MACCLENNY WWTP	Metals	Lead	0.31	I	ug/L	0.2	0.8
1/26/2009	Effluent	MACCLENNY WWTP	Metals	Arsenic	0.25	U	ug/L	0.25	1
1/26/2009	Effluent	MACCLENNY WWTP	Metals	Aluminum	60	U	ug/L	60	240
1/26/2009	Effluent	MACCLENNY WWTP	Metals	Iron	80	I	ug/L	30	120
1/26/2009	Effluent	MACCLENNY WWTP	Metals	Silver	0.01	U	ug/L	0.01	0.04
1/26/2009	Effluent	MACCLENNY WWTP	Metals	Selenium	0.2	U	ug/L	0.2	0.8
1/26/2009	Effluent	MACCLENNY WWTP	Metals	Nickel	1.29		ug/L	0.25	1
1/26/2009	Effluent	MACCLENNY WWTP	Metals	Calcium	38.5		mg/L	0.075	0.3
1/26/2009	Effluent	MACCLENNY WWTP	Metals	Cadmium	0.086	I	ug/L	0.03	0.12
1/26/2009	Effluent	MACCLENNY WWTP	Metals	Chromium	0.3	I	ug/L	0.2	0.8
1/26/2009	Effluent	MACCLENNY WWTP	Metals	Copper	4.2		ug/L	0.5	0.5
1/26/2009	Effluent	MACCLENNY WWTP	Nutrients	Total-P	3.7		mg P/L	0.1	0.3
1/26/2009	Effluent	MACCLENNY WWTP	Nutrients	O-Phosphate-P	2.9		mg P/L	0.04	0.1
1/26/2009	Effluent	MACCLENNY WWTP	Nutrients	NO2NO3-N	6.4		mg N/L	0.04	0.1
1/26/2009	Effluent	MACCLENNY WWTP	Nutrients	TSS	4	U	mg/L	4	16
1/26/2009	Effluent	MACCLENNY WWTP	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
1/26/2009	Effluent	MACCLENNY WWTP	Nutrients	Ammonia-N	0.19		mg N/L	0.01	0.02
1/26/2009	Effluent	MACCLENNY WWTP	Nutrients	Kjeldahl Nitrogen	1.5		mg N/L	0.08	0.2
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Metalaxyl	0.26	UJ	ug/L	0.26	1
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Simazine	0.051	U	ug/L	0.051	0.2
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Metolachlor	0.51	U	ug/L	0.51	2
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Diazinon	0.051	U	ug/L	0.051	0.2
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8

Date_Sampled	UDL	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Atrazine	0.051	U	ug/L	0.051	0.2
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Alachlor	0.61	UJ	ug/L	0.61	2.4
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Ethion	0.051	U	ug/L	0.051	0.2
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Fonofos	0.1	UJ	ug/L	0.1	0.4
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Phorate	0.051	U	ug/L	0.051	0.2
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Ametryn	0.051	U	ug/L	0.051	0.2
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Butylate	0.2	UJ	ug/L	0.2	0.8
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Chlorpyrifos Ethyl	0.051	U	ug/L	0.051	0.2
1/26/2009	Effluent	MACCLENNY WWTP	Pesticides	Naled	0.82	U	ug/L	0.82	3.3
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	2,4-Dinitrophenol	16	U	ug/L	16	63
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	4,4'-DDT	1.6	U	ug/L	1.6	6.3
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Acenaphthylene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Anthracene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Benzo(a)pyrene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Di-n-butyl phthalate	5.2	U	ug/L	5.2	21
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Dieldrin	1.6	U	ug/L	1.6	6.3
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Fluoranthene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Fluorene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	beta-BHC	1.6	U	ug/L	1.6	6.3
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Endrin	1.6	U	ug/L	1.6	6.3
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Heptachlor	1.6	U	ug/L	1.6	6.3
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Hexachlorobutadiene	3.1	U	ug/L	3.1	13
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Acenaphthene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Benzo(k)fluoranthene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	16	U	ug/L	16	63
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Endosulfan sulfate	1.6	U	ug/L	1.6	6.3
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4.2

Date_Sampled	UDL	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1	U	ug/L	2.1	8.4
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	delta-BHC	1.6	U	ug/L	1.6	6.3
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	42
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	4,4'-DDD	1.6	U	ug/L	1.6	6.3
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Aldrin	1.6	U	ug/L	1.6	6.3
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Endosulfan I	4.2	U	ug/L	4.2	17
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Phenanthrene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Chrysene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Endrin aldehyde	4.2	U	ug/L	4.2	17
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1	U	ug/L	3.1	13
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Pentachlorophenol	3.1	U	ug/L	3.1	13
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	gamma-BHC	1.6	U	ug/L	1.6	6.3
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1	U	ug/L	3.1	13
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	4-Nitrophenol	16	U	ug/L	16	63
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	420
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1	U	ug/L	3.1	13
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	42
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Endosulfan II	4.2	U	ug/L	4.2	17
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Hexachloroethane	3.1	U	ug/L	3.1	13
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	alpha-BHC	1.6	U	ug/L	1.6	6.3
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	4,4'-DDE	1.6	U	ug/L	1.6	6.3
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Benzo(a)anthracene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Benzo(b)fluoranthene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Benzo(g,h,i)perylene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Butyl benzyl phthalate	5.2	U	ug/L	5.2	21
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Heptachlor epoxide	1.6	U	ug/L	1.6	6.3
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	3,3'-Dichlorobenzidine	42	UJ	ug/L	42	170
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.1	U	ug/L	2.1	8.4
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.1	U	ug/L	2.1	8.4

Date_Sampled	UDL	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Naphthalene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Nitrobenzene	2.1	U	ug/L	2.1	8.4
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	Pyrene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4.2
1/26/2009	Effluent	MACCLENNY WWTP	Field Parameters	Dissolved Oxygen	9.14		mg/L		
1/26/2009	Effluent	MACCLENNY WWTP	Field Parameters	Total Residual Chlorine	0.01		mg/L		
1/26/2009	Effluent	MACCLENNY WWTP	Field Parameters	Temperature	19.55		C		
1/26/2009	Effluent	MACCLENNY WWTP	Field Parameters	pH	1.94				
1/26/2009	Effluent	MACCLENNY WWTP	Field Parameters	Specific Conductance	592		umhos/cm		
1/28/2009	Control Site	MACCLENNY WWTP	Field Parameters	pH	6				
1/28/2009	Control Site	MACCLENNY WWTP	Field Parameters	Temperature	14.34		C		
1/28/2009	Control Site	MACCLENNY WWTP	Field Parameters	Dissolved Oxygen	2.54		mg/L		
1/28/2009	Control Site	MACCLENNY WWTP	Field Parameters	Sample Depth	1.9		m		
1/28/2009	Control Site	MACCLENNY WWTP	Field Parameters	Specific Conductance	100		umhos/cm		
1/26/2009	Control Site	MACCLENNY WWTP	AGP/LN	Algal Growth Potential	2.23	A	mg DryWt/L	0.3	0.9
1/26/2009	Control Site	MACCLENNY WWTP	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1.1		ug/L	0.3	0.89
1/26/2009	Control Site	MACCLENNY WWTP	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.69	U	ug/L	0.69	2.1
1/26/2009	Control Site	MACCLENNY WWTP	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.27	I	mg/L	0.2	2
1/26/2009	Control Site	MACCLENNY WWTP	Overflow	Fecal Coliforms-Membrane Filter	18	B	#/100 mL	1.6	
1/26/2009	Control Site	MACCLENNY WWTP	Metals	Zinc	5	U	ug/L	5	20
1/26/2009	Control Site	MACCLENNY WWTP	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
1/26/2009	Control Site	MACCLENNY WWTP	Metals	Nickel	0.36	I	ug/L	0.25	1
1/26/2009	Control Site	MACCLENNY WWTP	Metals	Selenium	0.2	U	ug/L	0.2	0.8
1/26/2009	Control Site	MACCLENNY WWTP	Metals	Silver	0.01	U	ug/L	0.01	0.04
1/26/2009	Control Site	MACCLENNY WWTP	Metals	Aluminum	250		ug/L	60	240
1/26/2009	Control Site	MACCLENNY WWTP	Metals	Chromium	0.48	I	ug/L	0.2	0.8
1/26/2009	Control Site	MACCLENNY WWTP	Metals	Calcium	4.6		mg/L	0.075	0.3
1/26/2009	Control Site	MACCLENNY WWTP	Metals	Iron	480		ug/L	30	120
1/26/2009	Control Site	MACCLENNY WWTP	Metals	Magnesium	1.7		mg/L	0.04	0.16
1/26/2009	Control Site	MACCLENNY WWTP	Metals	Copper	0.5	U	ug/L	0.5	0.5
1/26/2009	Control Site	MACCLENNY WWTP	Metals	Arsenic	0.3	I	ug/L	0.25	1
1/26/2009	Control Site	MACCLENNY WWTP	Metals	Lead	0.41	I	ug/L	0.2	0.8
1/26/2009	Control Site	MACCLENNY WWTP	Nutrients	NO2NO3-N	0.005	I	mg N/L	0.004	0.01
1/26/2009	Control Site	MACCLENNY WWTP	Nutrients	Kjeldahl Nitrogen	0.46		mg N/L	0.08	0.2
1/26/2009	Control Site	MACCLENNY WWTP	Nutrients	Ammonia-N	0.028		mg N/L	0.01	0.02
1/26/2009	Control Site	MACCLENNY WWTP	Nutrients	O-Phosphate-P	0.008	I	mg P/L	0.004	0.01
1/26/2009	Control Site	MACCLENNY WWTP	Nutrients	Color	80		PCU	10	10
1/26/2009	Control Site	MACCLENNY WWTP	Nutrients	Total-P	0.026	I	mg P/L	0.02	0.06
1/26/2009	Control Site	MACCLENNY WWTP	Nutrients	TSS	4	I	mg/L	4	16
1/26/2009	Control Site	MACCLENNY WWTP	Field Parameters	Dissolved Oxygen	6.47		mg/L		
1/26/2009	Control Site	MACCLENNY WWTP	Field Parameters	Temperature	14.24		C		

Date_Sampled	UDL	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
1/26/2009	Control Site	MACCLENNY WWTP	Field Parameters	Specific Conductance	73		umhos/cm		
1/26/2009	Control Site	MACCLENNY WWTP	Field Parameters	pH	6.16				
1/26/2009	Control Site	MACCLENNY WWTP	Field Parameters	Sample Depth	0.3		m		
1/26/2009	Test Site	MACCLENNY WWTP	Field Parameters	Specific Conductance	344		umhos/cm		
1/26/2009	Test Site	MACCLENNY WWTP	Field Parameters	pH	6.82				
1/26/2009	Test Site	MACCLENNY WWTP	Field Parameters	Sample Depth	0.3		m		
1/26/2009	Test Site	MACCLENNY WWTP	Field Parameters	Dissolved Oxygen	7.89		mg/L		
1/26/2009	Test Site	MACCLENNY WWTP	Field Parameters	Temperature	16.88		C		
1/26/2009	Test Site	MACCLENNY WWTP	AGP/LN	Algal Growth Potential	117		mg DryWt/L	0.3	0.9
1/26/2009	Test Site	MACCLENNY WWTP	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.59	I	ug/L	0.55	1.7
1/26/2009	Test Site	MACCLENNY WWTP	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.89	I	mg/L	0.2	2
1/26/2009	Test Site	MACCLENNY WWTP	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.24	U	ug/L	0.24	0.71
1/26/2009	Test Site	MACCLENNY WWTP	Overflow	Fecal Coliforms-Membrane Filter	33	B	#/100 mL	1.6	
1/26/2009	Test Site	MACCLENNY WWTP	Metals	Copper	1.7		ug/L	0.5	0.5
1/26/2009	Test Site	MACCLENNY WWTP	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
1/26/2009	Test Site	MACCLENNY WWTP	Metals	Magnesium	6.5		mg/L	0.04	0.16
1/26/2009	Test Site	MACCLENNY WWTP	Metals	Selenium	0.2	U	ug/L	0.2	0.8
1/26/2009	Test Site	MACCLENNY WWTP	Metals	Silver	0.01	U	ug/L	0.01	0.04
1/26/2009	Test Site	MACCLENNY WWTP	Metals	Chromium	0.4	I	ug/L	0.2	0.8
1/26/2009	Test Site	MACCLENNY WWTP	Metals	Arsenic	0.25	I	ug/L	0.25	1
1/26/2009	Test Site	MACCLENNY WWTP	Metals	Nickel	0.7	I	ug/L	0.25	1
1/26/2009	Test Site	MACCLENNY WWTP	Metals	Aluminum	190	I	ug/L	60	240
1/26/2009	Test Site	MACCLENNY WWTP	Metals	Zinc	42		ug/L	5	20
1/26/2009	Test Site	MACCLENNY WWTP	Metals	Calcium	17.8		mg/L	0.075	0.3
1/26/2009	Test Site	MACCLENNY WWTP	Metals	Lead	0.4	I	ug/L	0.2	0.8
1/26/2009	Test Site	MACCLENNY WWTP	Metals	Iron	450		ug/L	30	120
1/26/2009	Test Site	MACCLENNY WWTP	Nutrients	NO2NO3-N	1.9		mg N/L	0.04	0.1
1/26/2009	Test Site	MACCLENNY WWTP	Nutrients	Ammonia-N	0.037		mg N/L	0.01	0.02
1/26/2009	Test Site	MACCLENNY WWTP	Nutrients	Color	60		PCU	10	10
1/26/2009	Test Site	MACCLENNY WWTP	Nutrients	TSS	4	U	mg/L	4	16
1/26/2009	Test Site	MACCLENNY WWTP	Nutrients	Total-P	1.4		mg P/L	0.1	0.3
1/26/2009	Test Site	MACCLENNY WWTP	Nutrients	Kjeldahl Nitrogen	0.74		mg N/L	0.08	0.2
1/26/2009	Test Site	MACCLENNY WWTP	Nutrients	O-Phosphate-P	0.92		mg P/L	0.04	0.1
1/26/2009	Test Site	MACCLENNY WWTP	Field Parameters	Sample Depth	0.3		m		
1/28/2009	Test Site	MACCLENNY WWTP	Field Parameters	Dissolved Oxygen	6.22		mg/L		
1/28/2009	Test Site	MACCLENNY WWTP	Field Parameters	pH	6.05				
1/28/2009	Test Site	MACCLENNY WWTP	Field Parameters	Sample Depth	0.24		m		
1/28/2009	Test Site	MACCLENNY WWTP	Field Parameters	Temperature	15.31		C		
1/28/2009	Test Site	MACCLENNY WWTP	Field Parameters	Specific Conductance	86		umhos/cm		
1/26/2009	Blank	MACCLENNY WWTP	Metals	Nickel	0.25	U	ug/L	0.25	1
1/26/2009	Blank	MACCLENNY WWTP	Metals	Copper	0.5	U	ug/L	0.5	0.5

Date_Sampled	UDL	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
1/26/2009	Blank	MACCLENNY WWTP	Metals	Silver	0.01	U	ug/L	0.01	0.04
1/26/2009	Blank	MACCLENNY WWTP	Metals	Arsenic	0.25	U	ug/L	0.25	1
1/26/2009	Blank	MACCLENNY WWTP	Metals	Calcium	0.075	U	mg/L	0.075	0.3
1/26/2009	Blank	MACCLENNY WWTP	Metals	Zinc	5	U	ug/L	5	20
1/26/2009	Blank	MACCLENNY WWTP	Metals	Selenium	0.2	U	ug/L	0.2	0.8
1/26/2009	Blank	MACCLENNY WWTP	Metals	Chromium	0.2	U	ug/L	0.2	0.8
1/26/2009	Blank	MACCLENNY WWTP	Metals	Iron	30	U	ug/L	30	120
1/26/2009	Blank	MACCLENNY WWTP	Metals	Lead	0.2	U	ug/L	0.2	0.8
1/26/2009	Blank	MACCLENNY WWTP	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
1/26/2009	Blank	MACCLENNY WWTP	Metals	Aluminum	60	U	ug/L	60	240
1/26/2009	Blank	MACCLENNY WWTP	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
1/26/2009	Blank	MACCLENNY WWTP	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
1/26/2009	Blank	MACCLENNY WWTP	Nutrients	Total-P	0.02	U	mg P/L	0.02	0.06
1/26/2009	Blank	MACCLENNY WWTP	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
1/26/2009	Blank	MACCLENNY WWTP	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
1/26/2009	Blank	MACCLENNY WWTP	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
1/26/2009	Blank	MACCLENNY WWTP	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Phorate	0.051	U	ug/L	0.051	0.2
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Atrazine	0.051	U	ug/L	0.051	0.2
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Metalaxyl	0.26	UJ	ug/L	0.26	1
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Chlorpyrifos Ethyl	0.051	U	ug/L	0.051	0.2
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Ametryn	0.051	U	ug/L	0.051	0.2
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Naled	0.82	U	ug/L	0.82	3.3
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Butylate	0.2	UJ	ug/L	0.2	0.8
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Alachlor	0.61	UJ	ug/L	0.61	2.4
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Metolachlor	0.51	U	ug/L	0.51	2
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Fonofos	0.1	UJ	ug/L	0.1	0.4
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Ethion	0.051	U	ug/L	0.051	0.2
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Diazinon	0.051	U	ug/L	0.051	0.2
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Simazine	0.051	U	ug/L	0.051	0.2
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6

Date_Sampled	UDL	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
1/26/2009	Blank	MACCLENNY WWTP	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Aldrin	1.5	U	ug/L	1.5	5.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Benzo(a)pyrene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	58
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Dieldrin	1.5	U	ug/L	1.5	5.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Fluorene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Naphthalene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	delta-BHC	1.5	U	ug/L	1.5	5.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	4,4'-DDT	1.5	U	ug/L	1.5	5.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Endosulfan I	3.9	U	ug/L	3.9	16
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Fluoranthene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Phenanthrene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	19
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Chrysene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	U	ug/L	4.9	19
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Endosulfan II	3.9	U	ug/L	3.9	16
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Heptachlor epoxide	1.5	U	ug/L	1.5	5.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Acenaphthene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Acenaphthylene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Anthracene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Benzidine	97	U	ug/L	97	390
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	alpha-BHC	1.5	U	ug/L	1.5	5.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	4,4'-DDE	1.5	U	ug/L	1.5	5.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Dimethyl phthalate	9.7	U	ug/L	9.7	39
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Endrin	1.5	U	ug/L	1.5	5.8

Date_Sampled	UDL	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	UJ	ug/L	39	160
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	4,4'-DDD	1.5	U	ug/L	1.5	5.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Benzo(a)anthracene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Benzo(b)fluoranthene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Diethyl phthalate	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Heptachlor	1.5	U	ug/L	1.5	5.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Pyrene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	beta-BHC	1.5	U	ug/L	1.5	5.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Endrin aldehyde	3.9	U	ug/L	3.9	16
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	58
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	2-Chloronaphthalene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Benzo(k)fluoranthene	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Endosulfan sulfate	1.5	U	ug/L	1.5	5.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.8
1/26/2009	Blank	MACCLENNY WWTP	Priority Organic Pollutants	gamma-BHC	1.5	U	ug/L	1.5	5.8

Appendix F

Toxicological results

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia

Facility: Macclenny WWTF
Address: 798 Honeyhill Road Macclenny, Fl. 32063
County: Baker
NPDES Permit #: FL 0040495
Contact/District: Eesa Ali / Northeast District

LIMS entry: 2-16-09 MF Verified: 2/17/09 JD

Diluent/ Batch: 20% DMW / 1-23-09 Test Days Used: 0-6
20% DMW / _____ Test Days Used: _____

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

Start Date: 1-27-09 Time: 1600
End Date: 2-3-09 Time: 1500

Organism: *Ceriodaphnia dubia*
Organism Batch #: 3-09
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: YCT *P. subcapitata*
Food Batch: 8-18-09 7-18-09
Chamber size : 30 ml
Sample volume : 20 ml

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH- 2009-0206-03	1164364	1-26-09 1230	1-27-09 1530
Test Day 2	2	TLH- 2009-01-2944	1162217	1-28-09 1000	1-29-09 1001
Test Day 4	3	TLH- 2009-01-3027	1162549	1-30-09 1030	1-30-09 1256

Water Quality Parameters	Field Chlorine (mg/L)			Lab Chlorine (mg/L)			Alkalinity (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3
Sample:	Not measured	Not measured	Not measured	<0.03	<0.03	<0.03	119	139	128
Diluent/Control:				<0.03	<0.03	<0.03	82	82	82
Method:	—	—	—	Hach	Hach	Hach	Hach	Hach	Hach
Measured by:	—	—	—	AGR	AGR	JD/AGR	BA	AGR	AGR
Verified by:	MF	MF	MF	MF	MF	MF	MF	MF	MF
	Conductivity (circle one) (umhos-cm) (mmhos-cm)			Ammonia (mg/L)			Hardness (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3
Sample:	604	625	620	0.0478	0.545	<0.017	183	151	135
Diluent/Control:	181	176	178	<0.017	<0.017	<0.017	88	88	88
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Hach	Hach	Hach
Measured by:	MF/AR	JD MF	JD/BA	MF	BA/MF	MF	BA	AGR	AGR
Verified by:	JD/MF	MF/JD	MF	~~JD~~ Initial incorrect space MF 1-27-09	MF/	~~JD~~ by MF	MF	MF	MF

Temperature Shipped ≤6° C (all samples) (yes) no
Holding Time ≤36 hours (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min. 25.2 max. 26.1 mean 25.6
Room B246 min. 23.9 max. 25.4 mean 24.9

Test Replicate	Loaded from culture vial
1	B14
2	B8
3	B28
4	B29
5	A21
6	A2
7	A7
8	B2
9	B5
10	B27

Statistics	
Control % CV:	21.3 %
Dunnetts PMSD:	19.5%
Reproduction NOEC:	100%
Survival NOEC:	100 %
T-test value	1.29154
T- table value:	~~1.7459~~ MF 1.7340 wrong table value 2/16
df:	18

Investigators' signatures
James Daniel
Athelia Rankin
Marshall Faircloth

Loretta C. Wolfe
REVIEWER

Comments:

PAGE 000027

revised 08/24/06 MF/SP

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

Facility: McCleary WWTP

LIMS Sample # 1164364 for lab sample 1

Start Date: 1-27-09 Time: 1600

End Date: 2/3/09 Time: 1500

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total Neonates	Surviving adults	Neonates per adult
Control	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	4	3	4	4	3	4	4	4	2	4	36	10	3.6
	5	8	5	8	9	6	(2) 5	9	0	0	13	60	10	6.0
	6	0	0	0	0	0	(7)	0	6	4	9	26	10	2.6
	7	9	7	5	8	9	9	10	8	6	0	71	10	7.1
	8													
	Total	21	15	17	21	18	22	23	18	12	26	193	10	19.3

Organisms loaded by: MF	
Day	Counted/ verified by:
0	BA
1	MF
2	MF
3	MF
4	MF
5	BA
6	BA
7	BA
8	

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total Neonates	Surviving adults	Neonates per adult
100% sample	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	(MF) 4	4	5	3	3	2	3	0	4		28	10	2.8
	5	7	2	8	10	9	(8) 10	9	5	9		77	10	7.7
	6	11	0	14	15	10	0	(10)	0	6	15	81	10	8.1
	7	0	12	0	0	0	12	0	11	0	0	35	10	3.5
	8													
	Total	18	18	24	30	22	23	22	23	11	28	221	10	22.1

Concentration	Mean neonates /adult	% survival
Control	19.3	100%
100%	22.1	100%

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

Comments: 3 - split brood BA/MF 2/2/09

(A) Rep 6 DAY (5) neonate MF for BA 2/4/08 100% sample. MF wrote wrong day 2/24/09

*Day 0 is test initiation day

X = Dead (original organism)

Test Page 2 of 3 PAGE

Revised 08/21/06 MF/SP

8300003

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Mccleary WWTP

LIMS Sample # : 1164364 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0	sample:	Control	M	7.9	24.7	7.5	181					
	1		M	7.8	25.6	7.7	587					
	Measured by:			MF	MF	MF	MF					
	Recorded by:			MF	MF	MF	MF					
Day 1	sample:	Control	M	8.2	24.6	6.7	195	M	8.1	24.5	5.9	206
	1	100%	M	7.9	25.6	7.0	620	M	8.2	24.5	6.1	605
	Measured by:			ADR	ADR	ADR	ADR		ADR	ADR	ADR	ADR
	Recorded by:			ADR	ADR	ADR	ADR		ADR	ADR	ADR	ADR
Day 2	sample:	Control	M	8.1	24.0	8.0	176	M	8.2	24.2	7.8	186
	2	100%	M	8.0	24.1	8.2	613	M	8.2	24.4	7.6	624
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 3	sample:	Control	M	8.0	24.0	7.8	186	M	8.1	24.0	7.2	196
	2	100%	M	7.8	24.3	8.9	643	M	8.2	24.2	7.4	639
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 4	sample:	Control	M	8.2	24.1	7.8	186	M	8.2	24.8	7.4	193
	3	100%	M	8.0	24.4	8.2	594	M	8.1	24.9	7.4	640
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 5	sample:	Control	M	8.2	24.0	7.4	178	M	7.8	24.0	7.3	188
	3	100%	M	8.1	24.0	7.5	565	M	8.1	24.0	7.3	569
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 6	sample:	Control	M	8.2	24.0	7.5	180	M	7.9	24.0	7.6	188
	3	100%	M	8.1	24.0	7.7	565	M	8.1	24.0	7.6	576
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 7	sample:	Control	M					M	7.8	24.0	7.7	190
	3	100%	M	Not Renewed				M	8.0	24.0	7.6	582
	Measured by:								BA	BA	BA	BA
	Recorded by:								BA	BA	BA	BA
Day 8	sample:	Control						M				
	3							M				
	Measured by:											
	Recorded by:											

Comments:

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

FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimphales promelas or Menidia beryllina

Facility: Macclenny WWTF
Address: 798 Honeymill Road Macclenny FL, 32063
County: Baker
NPDES Permit #: FL 0040495
Contact/District: Elsa Ali / Northeast District

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: 1-27-09 Time: 1610
End Date: 2-3-09 Time: 1400

Diluent/ Batch:
MHW / 1-23-09 Test Days Used: 0-6
MHW / _____ Test Days Used: _____
ASW / _____ Test Days Used: _____
ASW / _____ Test Days Used: _____

Organism Batch # : 1-27-09
Organism age : <26 ~~hours days~~ MF
Feeding Prior to Test and Daily
Artemia Lot # : 38348
Chamber size : 1000 ml
Test volume : 500 ml

Artemia Batch #		Day 3	1-30-09
Day 0	1-27-09	Day 4	1-31-09
Day 1	1-28-09	Day 5	2-1-09
Day 2	1-29-09	Day 6	2-2-09

LIMS:	Date	Initials
Entry:	2-17-09	MA
Verification:	2/17/09	JB

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2009-02-06-03	1164364	1-26-09 1230	1-27-09 1530
Test Day 2	2	TLH-2009-01-29-44	1162217	1-28-09 1000	1-27-09 1001
Test Day 4	3	TLH-2009-01-30-27	1162549	1-30-09 1030	1-30-09 1256

Water Quality Parameters	Batch # 1-23-09 ☑ MHW ☐ ASW	☐ MHW ☐ ASW	NA Sample 1	NA Sample 2	NA Sample 3	Other:	Measured by:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	~~Not Measured~~	NOT MEASURED	<0.01		ELSA ALI	MF
Lab Total Residual Cl_2 (mg/L):	<0.03		<0.03	<0.03	<0.03		AG/RD	MF
Alkalinity (mg/L as $CaCO_3$):	74		119	139	128		BA	MF
Hardness (mg/L as $CaCO_3$):	100		183	151	135		BA	MF
Total Ammonia (mg/L as N):	<0.017		0.0478	0.545	<0.017		MF/BA	MF/BA
Conductivity: (umhos) mmhos:	323		603	625	620		BA/MF/RD	MF/JB
Salinity (ppth):	—	—	—	—	—	—	—	—

Temperature Shipped ≤6° C (all samples) (yes) no
Holding Time ≤36 hours (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark

Temperature Range °C: (if used)
Incubator # 2 min. 25.2 max. 26.1 mean 25.7
Water bath # ____ min. _____ max. _____ mean _____
Room B246 min. 23.9 max. 25.4 mean 24.9

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

Investigators' signatures
James Daniel
Marshall Faircloth
Amelia Rankin
Brie Abercrombie

REVIEWER Loretta C Wolfe

Statistics	
Control %cv:	28.2%
Dunnetts PMSD:	32.7%
Survival NOEC:	100%
Survival LOEC:	>100%
Growth NOEC:	100%
Growth LOEC:	>100%

Comments: (A) MF field TRC = <0.01 mg/L looked at wrong sample on submitted sheet MF 2-6-09

PAGE 06

revised 7/15/08 MF

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Pimphales promelas or Menidia beryllina Survival

Facility: Macclenny WWTP

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

LIMS Sample Number: 164364 for lab sample #1

Start Date: 1-27-09 Time: 1610

End Date: 2-3-09 Time: 1400

		TEST DAY							
Concentration	Replicate	0	1	2	3	4	5	6	7
Control	A A9	10	10	10	10	8	8	8	8
	B A10	10	10	10	10	10	10	10	10
	C A11	10	10	10	10	10	10	10	10
	D A12	10	10	10	10	10	10	10	10
100 % sample concentration	A A13	10	10	10	10	10	10	10	10
	B A14	10	10	10	10	10	10	10	10
	C A15	10	10	10	10	10	10	10	10
	D A16	10	10	10	10	10	10	10	10
Control	A	10							
	B	10							
	C	10							
	D	10							
% sample concentration	A	10							
	B	10							
	C	10							
	D	10							
Loaded by: BA	Checked by:		JD	JD	JD	JD	JD	JD	JD
Verified by: MF									

Comments:

Biology Laboratory Chronic Screening Bioassay Benchsheet

Parameters

P. promelas SOP TA-07_09 *M. beryllina* SOP TA-07_14

Sample Source: MacClenny WWTP

LIMS Sample #: 1164364 (for Lab sample #1)

Test Day			Old Sample							New Sample						
								Cond						Cond	
		Conc.	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	(µmhos/cm) (mmhos/cm)	Salinity ppth	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	(µmhos/cm) (mmhos/cm)	Salinity ppth
Day 0	sample:	Control							A	7.5	24.9	7.5	323	—
	1	100%							A	7.7	25.9	7.7	603	—
	Measured by:									MF	MF	MF	MF	—
	Recorded by:									MF	MF	MF	MF	—
Day 1	sample:	Control	B	7.8	24.4	6.5	354	0.10	B	8.0	24.0	6.9	348	0.10
	1	100%	B	8.0	24.4	6.1	615	0.24	B	7.9	24.0	6.8	619	0.24
	Measured by:			MF	MF	MF	MF	AOR		AOR	AOR	AOR	AOR	AOR
	Recorded by:			MF	MF	MF	MF	AOR		AOR	AOR	AOR	AOR	AOR
Day 2	sample:	Control	C	7.9	25.6	6.4	338	—	C	7.9	24.0	7.3	347 (R)	—
	2	100%	C	7.8	25.2	6.1	615	—	C	7.9	24.0	7.5	633	—
	Measured by:													—
	Recorded by:									AOR	AOR	AOR	AOR	—
Day 3	sample:	Control	D	7.5	24.9	6.0	360	—	D	8.0	24.0	5.5	345	—
	2	100%	D	7.7	25.5	4.1	647	—	D	7.8	24.0	5.5	641	—
	Measured by:									AOR	AOR	AOR	AOR	—
	Recorded by:									AOR	AOR	AOR	AOR	—
Day 4	sample:	Control	A	7.5	24.4	6.1	356	—	A	8.0	24.0	7.1	343	—
	3	100%	A	7.8	24.6	5.4	652	—	A	7.9	24.0	7.2	623	—
	Measured by:													
	Recorded by:													
Day 5	sample:	Control	B	7.1	25.4	5.2	348	—	B	7.7	24.0	7.6	345	—
	3	100%	B	7.9	25.3	5.6	548	—	B	7.9	24.2	7.7	591	—
	Measured by:													
	Recorded by:													
Day 6	sample:	Control	C	7.6	25.3	6.4	350	—	C	7.9	24.0	7.5	349	—
	3	100%	C	7.7	25.7	6.5	547	—	C	7.8	24.0	7.6	600	—
	Measured by:													
	Recorded by:													
Day 7	sample:	Control	D	7.5	24.1	6.8	362	—						
	3	100%	D	7.6	24.3	6.8	619	—						
	Measured by:													
	Recorded by:													

Test Rep. = Replicate Record Salinity < 1 if freshwater Circle µmhos-cm or mmhos-cm

Comments: (R) transcription error AOR 1/29/09

revised 7/15/08 mf

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Facility: MacClenny WWTP

LIMS Sample Number: 164364 for lab sample #1

Concentration	Replicate	Pan #	Pan wt. (g)	Pan + Fish (g)	Fish wt. (g)	Original # Fish	Mean wt. (mg)
			mean wt = fish wt divided by 10 convert g to mg: move decimal 3 places to right				
Control	A	1	0.02390	0.02696	0.00306	10	.306
	B	2	0.02232	0.02737	0.00505	10	.505
	C	3	0.02397	0.02861	0.00464	10	.464
	D	4	0.02162	0.02794	0.00632	10	.632
100% sample	A	5	0.02255	0.02690	0.00435	10	.435
	B	6	0.02267	0.02757	0.00490	10	.490
	C	7	0.02096	0.02594	0.00498	10	.498
	D	8	0.02177	0.02818	0.00641	10	.641
Control	A					10	
	B					10	
	C					10	
	D					10	
% sample	A					10	
	B					10	
	C					10	
	D					10	
	Weighed by initials:		TD	TD			

Growth	%CV	PMSD
Control	28.19	32.7

Growth	Table	Calculated	dF
T-test	1.94300	0.8488 70	6

MF entry # 2/10/09

Drying	
Temperature °C:	100
Hours:	8

S-weight ID: BIO-S-WEIGHTS-01

Balance ID: OHAUS 250D SER. 1125481084

Tare Weighing Date: 2-2-09 Final Weighing Date: 2-9-09

		Measured Value (g)		S-weight Value (g)
Tare Pan 1 after Pan 5 (g)	0.02390 @ 0.02390	S-weights at tare	0.00998	@ 0.01
Tare Pan 1 after Pan 8 (g)	0.02393 @ 0.02390		0.04001	@ 0.04
Final Pan 1 after Pan 5 (g)	0.02696 @ 0.02696	S-weights at final	0.02	@ 0.02
Final Pan 1 after Pan 8 (g)	0.02697 @ 0.02696		0.05004	@ 0.05

Comments:

Bioassay Instrument ID

Test ID: Macclenny WWTP FL0040495 Dates: 1-27-09 - 2-3-09

METER / DEVICE	ID	SOP	Parameter	Method	√used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓ ✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Thermometer (DO probe)	YSI 5750 SN 05J1720	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓
Drying Oven				—	✓

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

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

Entered by M. Faircloth 2/6/09

V 1.1 6/12/08 MF

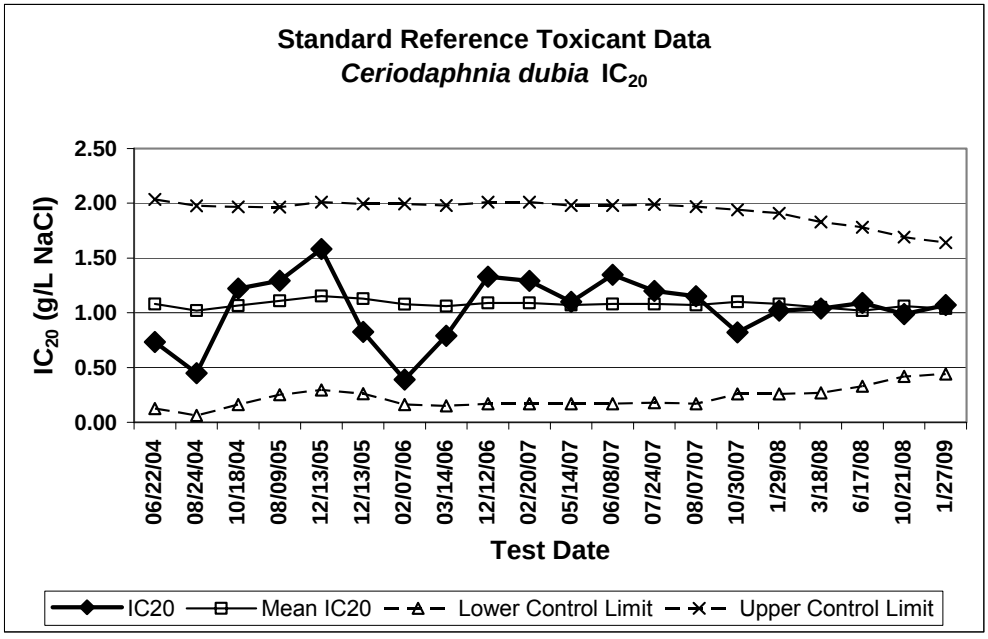
Appendix G
Standard Reference Toxicant Data

Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit	Date
06/22/04	0.73	1.08	0.48	0.13	2.03	06/22/04
08/24/04	0.45	1.02	0.48	0.06	1.98	08/24/04
10/18/04	1.22	1.07	0.45	0.16	1.97	10/18/04
11/16/04	1.29	1.11	0.43	0.25	1.96	08/09/05
08/09/05	1.58	1.15	0.43	0.30	2.01	12/13/05
12/13/05	0.83	1.13	0.43	0.26	1.99	12/13/05
02/07/06	0.39	1.08	0.46	0.16	1.99	02/07/06
03/14/06	0.79	1.06	0.46	0.15	1.98	03/14/06
12/12/06	1.33	1.09	0.46	0.17	2.01	12/12/06
02/20/07	1.29	1.09	0.46	0.17	2.01	02/20/07
05/14/07	1.10	1.07	0.45	0.17	1.98	05/14/07
06/08/07	1.35	1.08	0.45	0.17	1.98	06/08/07
07/24/07	1.20	1.08	0.45	0.18	1.99	07/24/07
08/07/07	1.15	1.07	0.45	0.17	1.97	08/07/07
10/30/07	0.82	1.10	0.42	0.26	1.94	10/30/07
1/29/08	1.02	1.08	0.41	0.26	1.91	1/29/08
3/18/08	1.04	1.05	0.39	0.27	1.83	3/18/08
6/17/08	1.09	1.02	0.36	0.33	1.78	6/17/08
10/21/08	0.99	1.06	0.32	0.42	1.69	10/21/08
1/27/09	1.07	1.04	0.30	0.44	1.64	1/27/09

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

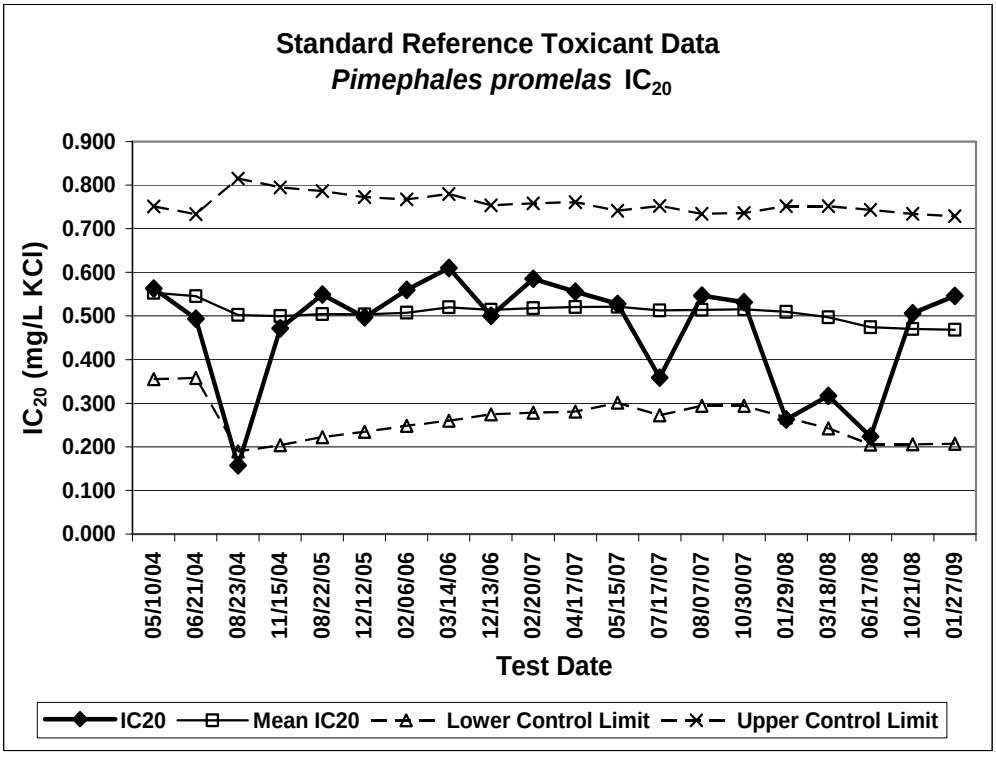


Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Pimephales promelas (fathead minnow) - Potassium Chloride (KCl)

Date	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit	Date
05/10/04	0.563	0.553	0.10	0.355	0.751	05/10/04
06/21/04	0.494	0.546	0.09	0.358	0.734	06/21/04
08/23/04	0.157	0.503	0.16	0.190	0.815	08/23/04
11/15/04	0.472	0.499	0.15	0.204	0.795	11/15/04
08/22/05	0.549	0.504	0.14	0.222	0.786	08/22/05
12/12/05	0.497	0.503	0.13	0.234	0.772	12/12/05
02/06/06	0.559	0.508	0.13	0.248	0.767	02/06/06
03/14/06	0.610	0.520	0.13	0.260	0.780	03/14/06
12/13/06	0.501	0.514	0.12	0.274	0.754	12/13/06
02/20/07	0.585	0.518	0.12	0.278	0.758	02/20/07
04/17/07	0.556	0.521	0.12	0.281	0.761	04/17/07
05/15/07	0.528	0.521	0.11	0.301	0.741	05/15/07
07/17/07	0.358	0.513	0.12	0.273	0.753	07/17/07
08/07/07	0.547	0.514	0.11	0.294	0.734	08/07/07
10/30/07	0.531	0.515	0.11	0.294	0.736	10/30/07
01/29/08	0.263	0.509	0.12	0.267	0.752	01/29/08
03/18/08	0.317	0.497	0.13	0.242	0.752	03/18/08
06/17/08	0.223	0.474	0.13	0.205	0.743	06/17/08
10/21/08	0.506	0.470	0.13	0.206	0.734	10/21/08
01/27/09	0.546	0.468	0.13	0.207	0.729	01/27/09

Means are from all SRT tests, up to 20 tests..
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev



Ceriodaphnia dubia Survival and Reproduction

Start Date: 1-27-09 Time: 1400 Loaded by: MF
End Date: 2-3-09 Time: 1100 Verified by: BA

Concentration	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Live adults	Neonates per adult
Control	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	4	0	0	0	4	10	0.4
	4	3	2	1	4	3	3	0	1	4	0	21	10	2.1
	5	9	10	2	6	6	8	5	3	3	2	54	10	5.4
	6	10	7	2	0	0	13	10	0	0	5	35	10	3.5
	7	0	0	0	9	11	11	12*	5	0	8	56	10	5.6
	8													
	Total	22	19	5	19	20	23	19*	9	7	15	158	10	15.8
0.59 ppth	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	3	0	0	0	3	10	0.3
	4	1	4	3	2	3	3	0	3	3	3	25	10	2.5
	5	9	7	4	5	2	3	11	8	8	8	65	10	6.5
	6	11	9	4	0	0	0	12	7	0	0	43	10	4.3
	7	0	1	0	0	9	2	15*	0	7	1	35	10	2.7
	8										156			
	Total	27*	21	11	7	14	8	26	18	18	12	177	10	15.6
0.89 ppth	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	2	2	3	3	1	2	2	2	3	4	24	10	2.4
	5	5	6	8	9	5	8	9	6	6	7	69	10	6.9
	6	9	9	5	0	0	0	10	3	0	0	36	10	3.6
	7	0	0	3	7	8	9	0	0	8	8	43	10	4.3
	8													
	Total	16	17	19	19	14	19	21	11	17	19	172	11	17.2

Comments: 1-31-09 0.89 ppth Rep 9 3 neonates MF
S- split brood BA/MF 2/3/09
* 4th brood not counted MF 2/4/09

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

Concentration	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Live adults	Neonates per adult
1.3 ppth	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	0	2	2	2	0	0	4	0	2	2	14	10	1.4
	5	0	4	3	2	4	2	0	0	6	6	27	10	2.7
	6	0	5	1	0	0	0	8	0	0	10	24	10	2.4
	7	0	0	0	5	8	4	0	3	3	0	23	10	2.3
	8													
	Total	0	11	6	9	12	6	12	3	11	18	88	10	8.8
2.0 ppth	0												10	
	1												10	
	2	0	0	X0	0	X0	0	0	0	0	0	0	8	0
	3	X0	0	+	0	+	0	0	0	0	X0	0	6	0
	4		0		0		0	0	0	0		0	6	0
	5		0		0		0	2	3	0		5	6	0,5
	6		3		2		0	0	0	0		5	6	0,5
	7		6		1		30 (3A)	3	3	2		6	6	1,95
	8						wrong place							
	Total	0	9	0	3	0	2/3/09 0	5	6	2	0	25	6	2,5
3.0 ppth	0												10	
	1	X	X		X	X	X			X	X		4	
	2	0	0	X0	X0	0	0	X	X	—	—	0	0	0
	3												0	0
	4												0	0
	5												0	0
	6												0	0
	7												0	0
	8												0	
	Total	0	0	0	0	0	0	0	0	0	0		0	0

Comments:

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Parameters

Test Day ↓	Conc.	New Sample Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0	Control	M	7.9	24.7	7.4	169					
	0.59 ppth	M	7.9	25.2	7.4	1333					
	0.89 ppth	M	7.9	25.2	7.4	1907					
	1.3ppth	M	8.0	25.2	7.5	2760					
	2.0 ppth	M	8.0	25.2	7.5	3960					
	3.0 ppth	M	8.0	25.2	7.5	5780					
	Measured by:		MF	MF	MF	MF					
	Recorded by:		AOR	AOR	AOR	AOR					2-23-09
Day 1	Control	M	8.3	24.9	7.1	195	M	8.1	23.3	5.8	210
	0.59 ppth	M	8.2	25.0	7.0	1351	M	8.1	23.4	(A) 5.5 6.0 AOR	1395
	0.89 ppth	M	8.2	24.9	5.7	1940	M	8.1	23.4	(B) 5.5 2nd 6.3	2610
	1.3ppth	M	8.2	24.7	6.0	2760	M	8.1	23.4	(A) 5.5 2nd 6.5	2820
	2.0 ppth	M	8.2	24.4	5.8	3990	M	8.1	23.4	(B) 5.9 2nd 6.5	4140
	3.0 ppth	M	8.2	24.6	5.5	5920	M	8.1	23.4	6.3	6000
	Measured by:		AOR	AOR	AOR	AOR		AOR	AOR	AOR	AOR
	Recorded by:		AOR	AOR	AOR	AOR		AOR	AOR	AOR	AOR
Day 2	Control	M	8.1	24.4	7.8	176	A	8.2	24.4	7.8	184
	0.59 ppth	M	8.1	24.6	7.9	1320	A	8.2	24.2	7.7	1395
	0.89 ppth	M	8.1	24.5	7.9	1935	A	8.2	24.3	7.6	1956
	1.3ppth	M	8.1	24.5	7.9	2770	A	8.2	24.3	7.6	2850
	2.0 ppth	M	8.1	24.5	7.8 1-29-09 MF	4020 2nd 4080	A	8.1	24.4	7.6	4060
	3.0 ppth	M	8.1	24.5	7.8	5860	C	8.2	24.4	7.6	5920
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 3	Control	M	8.0	24.0	7.0	184	A	8.0	24.3	7.5	188
	0.59 ppth	M	8.0	24.0	7.0	1371	A	8.0	24.4	7.3	1403
	0.89 ppth	M	8.0	24.0	7.0	1928	A	8.0	24.2	7.3	2040
	1.3ppth	M	8.0	24.0	6.7 (B)	2750	A	8.0	24.4	7.3	2870
	2.0 ppth	M	8.0	24.0	6.8	3970	B	8.0	24.4	7.2	4130
	3.0 ppth	M	—	—	—	—	corrected on 1-30-09 MF	—	—	—	—
	Measured by:		AOR	AOR	AOR	AOR		MF	MF	MF	MF
	Recorded by:		AOR	AOR	AOR	AOR		MF	MF	MF	MF

Comments: (A) Transcription error 1/28/09 AOR
(B) transcription error 1/30/09 AOR. ensured it was a B MF 2-23-09

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

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Parameters

Test Day	Conc.	Replicate	New Sample pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Replicate	Old Sample pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 4	Control	M	8.1	24.0	7.8	181	A	7.8	24.0	7.4	186
	0.59 ppth	M	8.1	24.0	7.8	1327	A	7.9	24.0	7.6	1336
	0.89 ppth	M	8.1	24.0	7.8	1875	A	7.9	24.0	7.6	1923
	1.3ppth	M	8.1	24.0	7.8	2680	A	8.0	24.0	7.7	2650
	2.0 ppth	M	8.1	24.0	7.9	3800	A B mf	8.0	24.0	7.7	3770
	3.0 ppth	M					2-3-09				
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA
Day 6	Control	M	7.9	24.0	7.9	188	A	7.9	24.0	7.2	178
	0.59 ppth	M	7.9	24.0	7.8	1383	A	7.9	24.0	7.5	1284
	0.89 ppth	M	7.9	24.0	7.7	1964	A	7.9	24.0	7.5	1894
	1.3ppth	M	8.0	24.0	7.7	2770	A	8.0	24.0	7.7	2680
	2.0 ppth	M	8.0	24.0	7.7	3920	B mf A 9 2150	8.0	24.0	7.7	3870
	3.0 ppth	M									
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA.	BA		BA	BA	BA	BA
Day 6	Control	M	8.2	24.0	7.9	185	A	8.2	24.7 BA	7.7	188 ~~178~~
	0.59 ppth	M	8.1	24.2	7.7	1340	A	8.2	24.7	7.6	1365
	0.89 ppth	M	8.1	24.3	7.8	1905	A	8.2	24.4	7.5	2020
	1.3ppth	M	8.1	24.3	7.6	2740	A	8.2	24.3	7.7	2750
	2.0 ppth	M	8.1	24.4	7.6	3910	B	8.2	24.4	7.8	3960
	3.0 ppth	M									
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 7	Control	M					A	7.7	24.0	8.0	183
	0.59 ppth	M					A	7.7	24.0	7.9	1346
	0.89 ppth	M					A	7.8	24.0	7.8	1952
	1.3ppth	M					A	7.8	24.0	8.0	2710
	2.0 ppth	M					A	7.9	24.0	8.0	3920
	3.0 ppth	M									
	Measured by:							BA	BA	BA	BA
	Recorded by:							BA	BA	BA	BA
Day 8	Control	M									
	0.59 ppth	M									
	0.89 ppth	M									
	1.3ppth	M									
	2.0 ppth	M									
	3.0 ppth	M									
	Measured by:										
	Recorded by:										

5 mf 2/3/09 ← (B)

(B) 2 mf 2/3/09

(A) (B) mf 2/3/09

4 (B)

MF for BA 2-23-09

(A) "New" and "old" samples swapped BA 2-2-09 Replicate M= "Metered" vial, a surrogate vial for parameters

(B) Day #'s corrected. MF failed to transcribe from pad to book on 1/31/09 MF 2/3/09

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia

Diluent/ Batch: 20% DMW / 1-23-09 Test Days Used: 0-6
20% DMW /_____ Test Days Used: _____
Toxicant/ Batch: NaCl / 1-26-09

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

Organism: *Ceriodaphnia dubia*
Organism Batch #/ Age: 3-09 / <24 hr.
Feeding: Prior to Test and Daily
Food: YCT *P. subcapitata*
Food Batch: 6-18-08 7-18-08
Chamber size: 30 mL ✓
Test Volume: 20 mL ✓

Start Date: 1-27-08 Time: 1400
End Date: 2-3-09 Time: 1100

Water Quality Parameters	20% DMW Batch 1-23-09	Diluent (or other)	Method	Measured by:	Verified by:
Lab Total Residual Cl_2 (mg/L):	<0.03		HACH	AGR	MF
Alkalinity (mg/L as $CaCO_3$):	82		HACH	BA	MF
Hardness (mg/L as $CaCO_3$):	88		HACH	BA	MF
Total Ammonia (mg/L as N):	<0.017		DENVER	MF	JD
Conductivity (umhos-cm mmhos-cm :	169		YSI (Mettler)	MF	JD

Results	
Control % CV:	41.1 %
Dunnetts PMSD:	31.6 %
Reproduction NOEC:	0.89 g/L
Reproduction LOEC:	1.3 g/L
Survival NOEC:	1.3 g/L
Survival LOEC:	2 g/L
ICP_{20}:	1.07 g/L
ICP_{25}:	1.11 g/L

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

Test Replicate	Loaded from culture vial
1	A10
2	A14
3	A19
4	A25
5	A28
6	A29
7	B5
8	B12
9	B14
10	B21

Comments:

Investigators' signatures

James Daniels
Marshall Faircloth
Amelia Rankin
Bruce Alexander

Doretta C. Wolfe
REVIEWER

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min. 23.3 max. 26.1 mean 25.7
Incubator # ____ min. _____ max. _____ mean _____
Room B246 min. 23.9 max. 25.9 mean 24.9

000026

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: MW/1.23.09 Test Days Used: 0-7

Diluent/ Batch: _____ Test Days Used: _____

Toxicant/ Batch # : KCl 1.26.09

Artemia Lot # : 38348

Start Date: 1-27-09 Time: 1300

End Date: 2-3-09 Time: 1100

Organism Batch #/ Age: 1-27-09 < 24hours

Artemia Batch #	Day 2 9-09	Day 5 12-09
Day 0 7-09	Day 3 10-09	Day 6 13-09
Day1 8-09	Day 4 11-09	

Chamber size : 1000 ml

Test volume : 500 ml

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

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

Water Quality Parameters	Diluent	Diluent (or other)	Method	Measured by	Verified by
Total Residual Cl_2 (mg/L):	< 0.03		HACH	AGR	MF
Alkalinity (mg/L as $CaCO_3$):	74		HACH	BA	MF
Hardness (mg/L as $CaCO_3$):	100		HACH	BA	MF
Total Ammonia (mg/L as N):	<0.017		DENVER	MF	"
Conductivity (µmhos-cm) mmhos-cm:	323		METTLER	BA	MF

Statistics	
Growth NOEC:	0.5 g/L
Growth LOEC:	1 g/L
Growth IC_{20}:	0.5460 g/L
Growth IC_{25}:	0.5841 g/L
Ctrl % CV:	11.2 %
Dunnetts PMSD:	27.8 %
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. 25.3 max. 26.1 mean 25.7

Water bath # ____ min._____ max._____ mean_____

Room B246 min. 23.9 max. 25.8 mean 24.9

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

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

Investigators' signatures

James Daniels

Amelia Rankin

Marshall Fairchild

Loretta E. Wolfe

REVIEWER

Comments:

revised 7/16/08 MF

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: MW/1.23.09 Test Days Used: 0-7

Diluent/ Batch: _____ Test Days Used: _____

Toxicant/ Batch # : KCl 1.26.09

Artemia Lot # : 38348

Start Date: 1-27-09 Time: 1300

End Date: 2-3-09 Time: 1100

Organism Batch #/ Age: 1-27-09 < 24hours

Artemia Batch #	Day 2 9-09	Day 5 12-09
Day 0 7-09	Day 3 10-09	Day 6 13-09
Day1 8-09	Day 4 11-09	

Chamber size : 1000 ml

Test volume : 500 ml

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

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

Water Quality Parameters	Diluent	Diluent (or other)	Method	Measured by	Verified by
Total Residual Cl_2 (mg/L):	< 0.03		HACH	AGR	MF
Alkalinity (mg/L as $CaCO_3$):	74		HACH	BA	MF
Hardness (mg/L as $CaCO_3$):	100		HACH	BA	MF
Total Ammonia (mg/L as N):	< 0.017		DENVER	MF	
Conductivity (µmhos-cm) mmhos-cm:	323		METTLER	BA	MF

Statistics	
Growth NOEC:	0.5 g/L
Growth LOEC:	1 g/L
Growth IC_{20}:	0.5460 g/L
Growth IC_{25}:	0.5841 g/L
Ctrl % CV:	11.2 %
Dunnetts PMSD:	27.8 %
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. 25.3 max. 26.1 mean 25.7

Water bath # ____ min._____ max._____ mean_____

Room B246 min. 23.9 max. 25.8 mean 24.9

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

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

Investigators' signatures

James Daniels

Amelia Rankin

Marshall Faircloth

Loretta C. Wolfe

REVIEWER

Comments:

revised 7/16/08 MF

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or Menidia beryllina Survival

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

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

			TEST DAY							
Concentration	Replicate	Chamber	0	1	2	3	4	5	6	7
Control	A	B1	10	10	10	10	10	10	10	10
	B	B 2	10	10	10	10	10	10	10	10
	C	B 3	10	10	10	10	10	10	10	10
	D	B 4	10	10	10	10	10	10	9 1D	9
.125	A	B 5	10	10	10	10	10	10	10	9 1D
	B	B 6	10	10	10	10	10	10	10	10
	C	B 7	10	10	10	10	10	10	9 1D	9
	D	B 8	10	10	10	10	10	6 4D	6	6
.25	A	B 9	10	10	10	10	10	10	10	10
	B	B 10	10	10	10	10	10	10	10	10
	C	B 11	10	10	10	10	10	9 1D	9	9
	D	B 12	10	10	10	10	10	10	10	10
.5	A	B 13	10	9 1D	9	9	9	9	9	9
	B	B 14	10	10	10	10	10	10	10	10
	C	B 15	10	10	10	10	10	10	10	10
	D	B 16	10	9 1D	9	9	9	9	9	9
1.0	A	B 17	10	1 9D	1	1	1	1	1	1
	B	B 18	10	1 9D	1	0 1D	—	—	—	—
	C	B 19	10	1 9D	1	1	1 4D	1	1	1
	D	B 20	10	0 10D	—	—	—	—	—	—
2.0	A	B 21	10	0 10D						
	B	B 22	10	0 10D						
	C	B 23	10	0 10D						
	D	B 24	10	0 10D						
	A		10							
	B		10							
	C		10							
	D		10							
Loaded by (0 hr): BA		Checked by:		JD	JD	JD	JD	JD	JD	JD
Verified by (0 hr): JDF										
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: 1.27.09 End Date: 2/3/09

Start Time: 1300 End Time: 1100

conc = concentration rep = replicate circle umhos or mmhos

Test Day	Conc.	New Sample Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos) mmhos	Salinity ppth	Old Sample Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos) mmhos	Salinity ppth
Day 0	Control	A	8.0	24.7	7.8	330	<1						
	.125	A	8.0	24.7	7.8	569	<1						
	.25	A	8.0	24.7	7.8	843	<1						
	.5	A	8.1	25.0	7.8	1341	<1						
	1.0	A	8.1	25.5	7.6	2340	1.15						
	2.0	A	8.1	25.9	7.6	4220	2.20						
		A											
	Measured by		~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~						
	Recorded by		~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~						
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	Control	B	8.1	24.3	6.8	351	0.10	B	7.8	24.9	6.4	352	<1
	.125	B	8.0	24.1	6.7	652	0.26	B	7.8	24.9	6.4	631	<1
	.25	B	8.0	24.0	6.7	893	0.39	B	7.9	24.8	6.2	887	<1
	.5	B	8.1	24.0	6.8	1403	0.66	B	8.0	24.8	6.2	1397	<1
	1.0	B	8.1	24.0	6.7	2360	1.18	B	7.9	24.7	6.4	2400	1.24
	2.0	B	—	—	—	—	—	B	7.9	24.6	5.9	4440	2.31
		B						B					
	Measured by		ADR	ADR	ADR	ADR	ADR		ADR	ADR	ADR	ADR	ADR
	Recorded by		ADR	ADR	ADR	ADR	ADR		ADR	ADR	ADR	ADR	ADR
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	Control	C	7.9	24.0	7.7	342	<1	C	7.6	24.4	6.6	357	<1
	.125	C	7.9	24.0	7.7	588	<1	C	7.6	24.6	6.8	665	<1
	.25	C	7.9	24.0	7.7	860	<1	C	7.6	24.4	6.6	905	<1
	.5	C	7.9	24.1	7.6	1378	<1	C	7.6	24.4	6.3	1441	<1
	1.0	C	7.9	24.0	7.5	2320	1.2	C	7.6	25.0	6.4	2450	1.22
		C						C					
		C						C					
	Measured by		~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~		~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~
	Recorded by		ADR	ADR	ADR	ADR	ADR		~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	Control	D	7.9	24.0	5.6	345	<1	D	7.5	25.1	6.5	350	<1
	.125	D	7.7	24.0	6.5	581	<1	D	7.5	25.0	5.3	616	<1
	.25	D	7.9	24.0	6.7	884	<1	D	7.4	25.4	6.2	899	<1
	.5	D	7.8	24.0	6.0	1408	<1	D	7.4	25.1	5.8	1428	<1
	1.0	D	7.8	24.0	6.4	2370	1.20	~~D~~ C	7.5	25.2	5.8	2400	1.21
		D						D					
		D						D					
	Measured by		ADR	ADR	ADR	ADR	ADR		~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~
	Recorded by		ADR	ADR	ADR	ADR	ADR		~~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.

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Chronic SRT Parameters Benchsheet

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

Start Date: 1-27-09 End Date: 2-3-09

Start Time: 1300 End Time: 1100

conc = concentration rep = replicate

Test Day ↓	Conc.	New Sample Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	Old Sample Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	pH
Day 4	Control	A	8.0	24.0	7.5	355	–	A	8.1	24.9	6.2	362	–	7.4
	.125	A	8.0	24.0	7.3	593	–	A	.125	24.6	6.2	593	–	7.4
	.25	A	8.0	24.0	7.3	874	–	A	.25	24.8	6.2	899	–	7.4
	.5	A	7.9	24.0	7.2	1384	–	A	.5	24.7	5.8	1421	–	7.4
	1.0	A	8.0	24.1	7.0	2420	1.21	A	1.0 (A)	24.9	5.2	2.400	1.21	7.4
	2.0	A						A						
		A						A						
	Measured by													
	Recorded by													
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity	
Day 5	Control	B	7.8	24.0	7.6	359	–	B	7.6	25.1	6.8	348	–	
	.125	B	7.7	24.0	7.7	597	–	B	7.6	25.0	6.4	597	–	
	.25	B	7.8	24.0	7.6	855	–	B	7.5	25.1	6.2	877	–	
	.5	B	7.8	24.0	7.5	1357	–	B	7.5	25.1	4.9	1395	–	
	1.0	B[C]	7.8	24.0	7.5	2340	1.18	B[C]	7.5	25.1	4.9	2420	1.22 ppt	
	2.0	B						B						
		B						B						
	Measured by													
	Recorded by													
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity	
Day 6	Control	C	7.9	24.0	7.6	350	–	C	7.5	25.0	6.8	346	–	
	.125	C	7.9	24.0	7.5	583	–	C	7.5	25.4	6.4	596	–	
	.25	C	7.9	24.0	7.5	884	–	C	7.5	25.5	6.5	862	–	
	.5	C	7.9	24.1	7.6	1447	–	C	7.6	25.0	6.5	1366	–	
	1.0	C	7.9	24.1	7.5	2420	1.22	C	7.6	25.0	6.0	2380	1.20 (B)	
		C						C						
		C						C						
	Measured by													
	Recorded by													
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity	
Day 7	Control							D	7.6	24.1	6.1	306	–	
	.125							D	7.5	24.2	6.0	612	–	
	.25							D	7.6	24.2	6.3	924	–	
	.5							D	7.6	24.3	6.6	1476	–	
	1.0							D	7.6	24.2	6.6	2520	1.25 ppt	
								D						
								D						
	Measured by								JD	JD	JD	JD	JD	
	Recorded by								JD	JD	JD	JD	JD	

(A) PH column Day 4 old sample transcription error rewritten @ side J.D.

(B) Day 6, old, salinity, Transcription error. J.D. 2.2.09

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

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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	17	0.02013	0.02354	0.00341	10	.341
	B	18	0.02087	0.02535	0.00448	10	.448
	C	19	0.01923	0.02321	0.00398	10	.398
	D	20	0.02342	0.02760	0.00418	10	.418
.125	A	21	0.02385	0.02728	0.00343	10	.343
	B	22	0.02276	0.02636	0.00360	10	.360
	C	23	0.02354	0.02647	0.00293	10	.293
	D	24	0.02261	0.02513	0.00252	10	.252
.25	A	25	0.02394	0.02810	0.00416	10	.416
	B	26	0.02247	0.02632	0.00385	10	.385
	C	27	0.02114	0.02492	0.00378	10	.378
	D	28	0.02110	0.02567	0.00457	10	.457
.5	A	29	0.01921	0.02254	0.00333	10	.333
	B	30	0.02159	0.02441	0.00282	10	.282
	C	31	0.02270	0.02578	0.00308	10	.308
	D	32	0.02202	0.02660	0.00458	10	.458
1.0	A	33	0.02196	0.02310	0.00114	10	.114
	B	—				10	.
	C	34	0.02084	0.02297	0.00213	10	.213
	D	—				10	
2.0	A					10	
	B					10	
	C					10	
	D					10	
	A					10	
	B					10	
	C					10	
	D					10	
			Weighed by:				

Comments:

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

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* QC

SOPs TA07_09, TA07_14 and TA06_21

all weights in grams

Empty Pan Weights Date: 2.2.09 Weighed by: JD

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02350 ~~0.02347~~	@ 0.02350 ~~0.02347~~
after Pan 10	0.02353	@ 0.02350
after Pan 15	0.02354	@ 0.02350
after Pan 20	0.02353	@ 0.02350
after Pan 25	0.02353	@ 0.02390
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value	S-weight Value
S-weights	0.0998	@ 0.01
	0.04001	@ 0.04

Balance: Ohaus 250D Ser# 1125481084

S-Weights: BIO-S-Weights-01

Fish + Pan Weights Date: 2.9.09 Weighed by: JD

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02353	@ 0.02354
after Pan 10	0.02353	@ 0.02354
after Pan 15	0.02350	@ 0.02354
after Pan 20	0.02355	@ 0.02354
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	0.02	@ 0.02
	0.05004	@ 0.05

Drying Oven ID: VWR #2

Temperature °C: 95

Drying Hours: 8

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

Comments:

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revised 7/16/08 MF

Bioassay Instrument ID

Test ID: P. promelas chronic SRT Dates: Jan. 27 – Feb. 3, 2009

METER / DEVICE	ID	SOP	Parameter	Method	√used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Thermometer (DO probe)	YSI 5750 SN 05J1720	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓
Drying Oven				-	✓

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

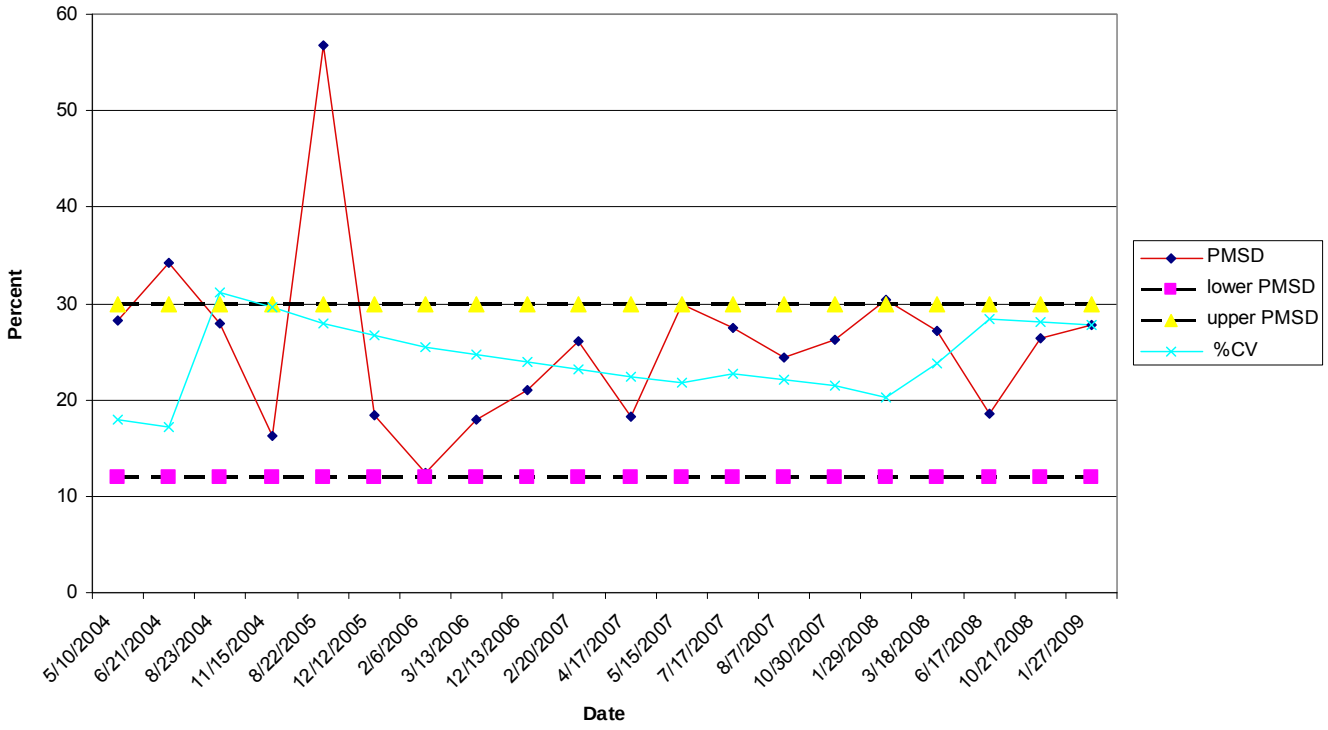
Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT–Chronic SRT)

Entered by M. Faircloth 3/19/09 MF wrong day → 3/19/09

V 1.1 6/12/08 MF

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P promelas KCL SRT
Percent Minimum Significant Difference
and % CV



MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 1/26/09

Shipped to: FDEP

P.O. No: N/A

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia						
Menidia beryllina						
						Hardness
Cyprinella leedsi	X					
Pimephales promelas	450	<24 Hrs	FM090125-1445	25°C	7.8	80mg/L
	100	8 DA-IS	FM090118	25°C	7.8	80mg/L

Packed by: JW

Shipped Via: FedEx

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

Habitat Assessment Field Sheets

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

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		11/18/09	1400	Little St. Marys

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Baker	SWB-1e Turkey Creek	Control

RIPARIAN ZONE/STREAM FEATURES

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

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
80	2	4	2	5	5		2 Utility

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

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

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

List & map dominant Vegetation on back

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

Artificially Channelized ☐ no ☐ ☐ ☐ ☐ (recent, severe some recovery mostly recovered more sinuous)

Artificially Impounded ☐ yes

0.1 m/s | 0.1 m/s | 0.1 m/s

High Water Mark: 0.1 (m above present water level) + 2 (present depth in m) = 2.1 (m above bed)

m deep | 2.0 m deep | m deep

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

SEDIMENT/SUBSTRATE

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

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

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

Substrate Type	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)	6	5		Sand	50	5	
Leaf Packs of Mats	3	5		Mud/Muck/Silt			
Aquatic Vegetation				Other:			
Rock or Shell Rubbie				Other:			
Undercut banks/Roots	3	5		*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (umho/cm) Or Salinity (ppt):			Secchi (m):
Top								
Mid-depth								
Bottom	1.90	14.34	6.0	2.54	100			0.8

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

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

Water Surface Oils (check box): None: ☑ Sheen: ☐ Globs: ☐ Slick: ☐

Clarity (check box): Clear: ☑ Slightly turbid: ☐ Turbid: ☐ Opaque: ☐

Color (check box): Tannic: ☑ Green (algae): ☐ Clear: ☐ Other: ☐

Weather Conditions/Notes:
Water level high.
More habitat than assessed
very tannic + deep.

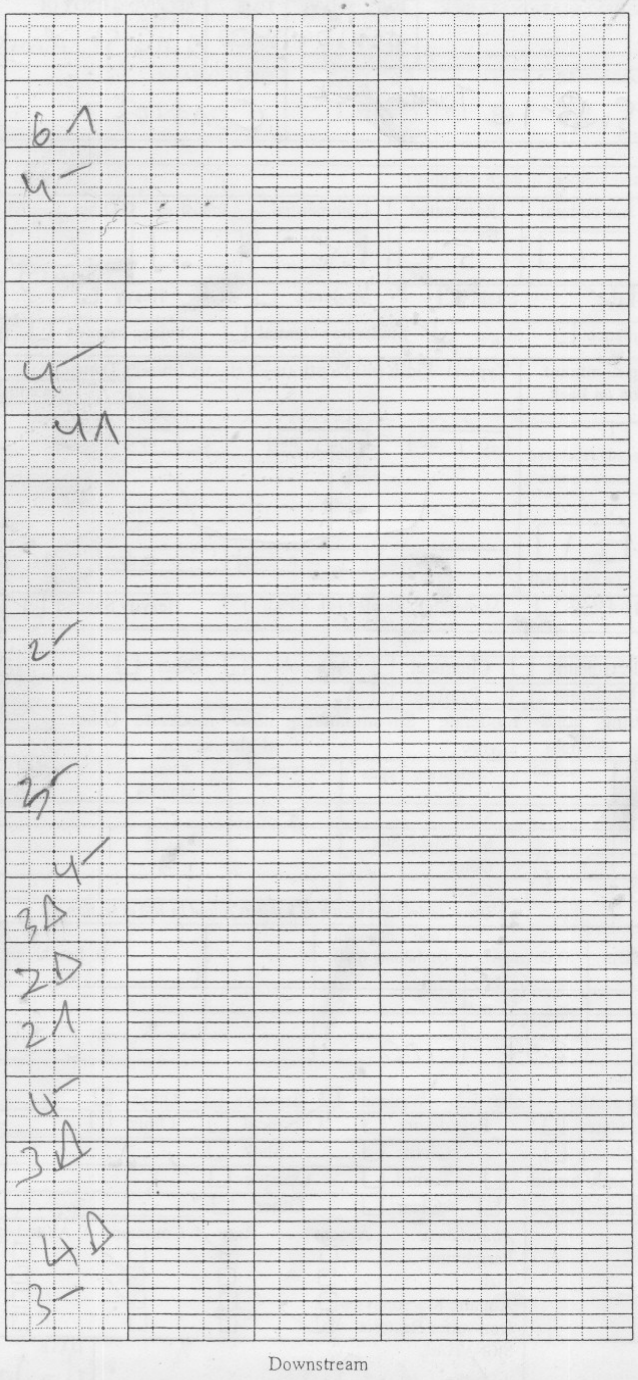
Abundance:	Absent	Rare	Common	Abundant
Periphyton	☐	☑	☐	☐
Fish	☐	☐	☑	☐
Aquatic Macrophytes	☐	☐	☑	☐
Iron/sulfur Bacteria	☑	☐	☐	☐

SAMPLING TEAM: SN / JG / EA

SIGNATURE: [signature]

DATE: 11/18/09

Stream/River Habitat Sketch Sheet, Form FD 9000-4 (June 1, 2001)
Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).



Smwide

Substrates: Code key, draw proportionate habitat abundance.

- ☑ Snags
- ☑ Roots/undercut banks
- ☑ Leaf Packs (or mats)
- ☑ Macrophytes
- ☑ rock
- ☐ _____
- ☐ _____

Velocity:
Note where velocity measures were taken.

Habitat Smothering:
Note areas (on map) where sand or silt is something 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:

12 1
24 —
12 Δ 9%

0.1 ms⁻¹
waymore habitat
water too deep
to sample

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:
		1/28/09	Little St. Mary's

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
Water high	Baker	Macclenny SWB-1 Turkey Creek	CONTROL

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 15	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 8	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 (8) 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity 11	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 20 Primary Score 64	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. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 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 10	Width of vegetation greater than 18 m (10) 9	Width of vegetation >12 to 18 m 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 10 Secondary Score 80	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 is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

134 **TOTAL SCORE**

Date:	Analyst:	Signature:
1/28/09	Ben G. Mc	

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

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		1/28/09	1200	Lil' St Marys

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Baker	Turkey Creek @ Macclenny D-001	TEST

RIPARIAN ZONE/STREAM FEATURES

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

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
80	2	4	2	5	5		2

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

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

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

List & map dominant Vegetation on back

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

Artificially Impounded ☐ yes more sinuous

High Water Mark: 1 + 0.5 = 1.5
(m above present water level) (present depth in m) (m above bed)

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

4 m wide

0.1 m/s 0.2 m/s 0.1 m/s

0.1 m deep 0.5 m deep 0.1 m deep

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

SEDIMENT/SUBSTRATE

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

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

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

Substrate Type	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)	13.25	5		Sand	5	5	
Leaf Packs of Mats	3	3		Mud/Muck/Silt			
Aquatic Vegetation	C1	0		Other:			
Rock or Shell Rubbie		0		Other:			
Undercut banks/Roots	3.25	5					

Draw aerial view sketch of habitats found in 100 m section

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond (umho/cm) Or Salinity (ppt):			Secchi (m):
Top								
Mid-depth	0.24	15.31	6.05	6.22	86			0.24L
Bottom								

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

Water Odors (check box): Normal: ☑ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐ WWTP smell

Water Surface Oils (check box): None: ☐ Sheen: ☑ Globs: ☑ Slick: ☐

Clarity (check box): Clear: ☑ Slightly turbid: ☐ Turbid: ☐ Opaque: ☐

Color (check box): Tannic: ☐ Green (algae): ☐ Clear: ☐ Other: ☐

Weather Conditions/Notes: 71°F overcast, 60% humid

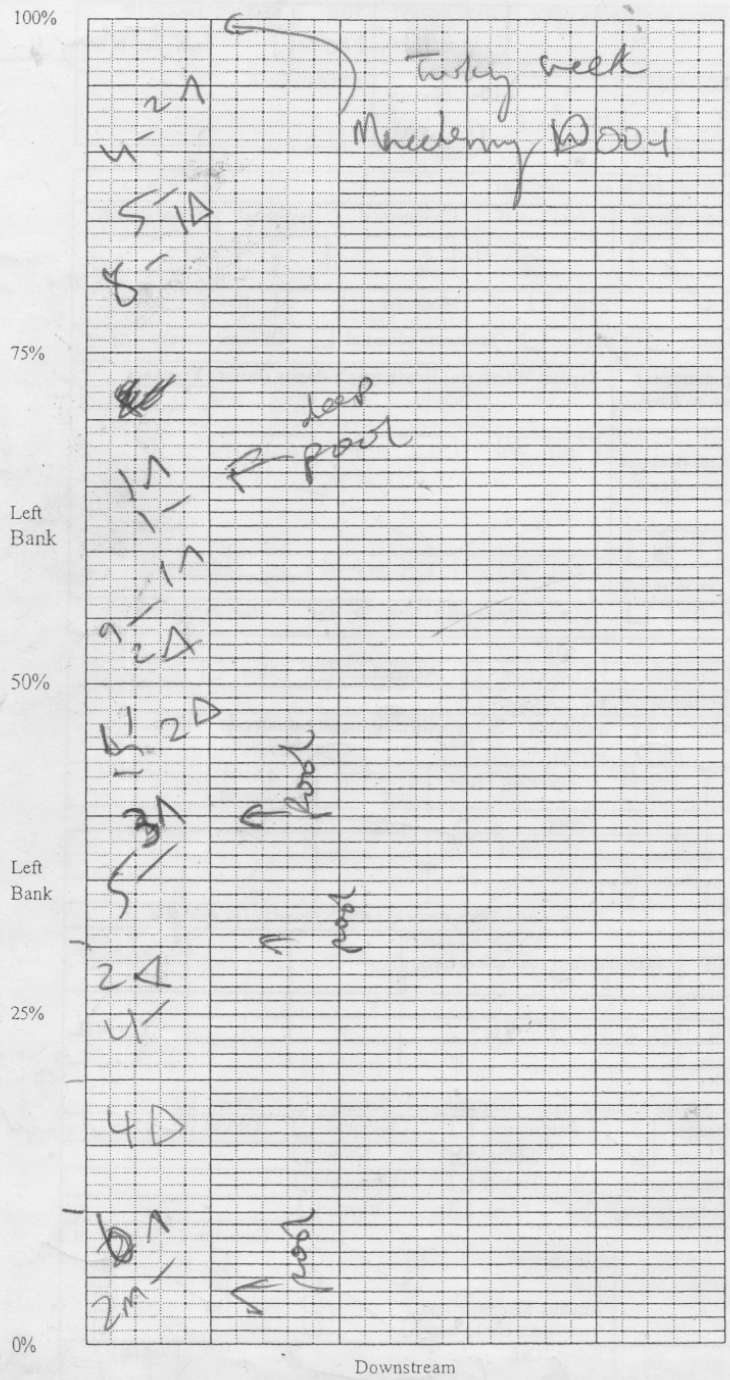
Abundance:	Absent	Rare	Common	Abundant
Periphyton	☐	☐	☐	☑
Fish	☐	☐	☐	☐
Aquatic Macrophytes	☐	☐	☑	☐
Iron/sulfur Bacteria	☑	☐	☐	☐

SAMPLING TEAM: GH JH BK

SIGNATURE: [signature]

DATE: 1/28/09

Stream/River Habitat Sketch Sheet, Form FD 9000-4 (June 1, 2001)
Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).



Substrates: Code key, draw proportionate habitat abundance.
Snags
Roots/undercut banks
Leaf Packs (or mats)
Macrophytes
_____
_____
_____
Velocity: Note where velocity measures were taken.
Habitat Smothering: Note areas (on map) where sand or silt is something 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:

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:
		1/28/09	Little St. Mary's
REMARKS:	COUNTY: Baker	LOCATION: Turkey Creek Mercer Lemy D-001	FIELD ID/NAME: TEST

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 13	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 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 11	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 18 Primary Score 55	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. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank 8 Left Bank 8	Bankfull > 60% of bank height. Slope of bank ≤ 60º. 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 > 60º. 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 18 m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 8 Left Bank 8 Secondary Score 74	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 is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

TOTAL SCORE 127

Date:	Analyst:	Signature:
1/28/09	BA	

Appendix I-1

Wet algal taxa list and natural unit counts to a target of 300 units for qualitative natural periphyton collections made from Macclenny WWTP on January 28, 2009.

	Control Site	Test Site
Bacillariophyta		
Bacillariophyta	258	277
Chlorophycota		
Ankistrodesmus falcatus	-	2
Chlamydomonas sp.	6	4
Chlorella sp.	-	3
Oedogonium sp.	1	-
Protococcus viridis	8	3
Stigeoclonium sp.	1	-
Ulothrix sp.	1	-
Chrysophyta		
Mallomonas sp.	1	-
Cyanophycota		
Chroococcus turgidus	2	-
Jaaginema sp.	8	9
Phormidium sp.	-	1
Planktolyngbya sp.	3	1
Planktothrix agardhii	-	1
Planktothrix sp.	-	1
Schizothrix calcicola	11	1
Euglenophycota		
Euglena sp.	-	1

Appendix I-2

Diatom taxa list and number of valves counted to a target of 500 valves for periphyton collected from Macclenny WWTP in (site) on January 28, 2009.

	Control Site	Test Site
Bacillariophyceae		
Achnanthes sp.	1	-
Achnanthes fluviatilis	-	1
Achnanthes rupestoides	1	-
Achnanthidium exiguum	-	5
Achnanthidium minutissimum	2	-
Amphora sp.	1	-
Brachysira vitrea	1	-
Caloneis sp.	3	15
Cavinula jaernefeltii	-	1
Chamaepinnularia minutissima	2	-
Craticula sp.	-	2
Diadesmis confervacea	1	24
Encyonema silesiacum	2	-
Eunotia sp.	80	61
Eunotia arcus	6	-
Eunotia bilunaris	36	1
Eunotia formica	12	44
Eunotia incisa	7	-
Eunotia naegelii	35	-
Eunotia paludosa	21	-
Eunotia pirla	2	-
Eunotia siolii	-	6
Eunotia soleirolii	1	-
Frustulia sp.	10	2
Frustulia vulgaris	2	9
Gomphonema sp.	16	-
Gomphonema gracile	17	1
Gomphonema parvulum	7	2
Hippodonta sp.	-	6
Hippodonta capitata	-	1
Kobayasiella sp.	4	-
Luticola mutica	3	-
Navicula sp.	3	35
Navicula cryptocephala	-	2
Navicula festiva	3	-
Navicula germainii	1	72
Navicula ingenua	-	1
Navicula latens	-	2
Navicula longicephala	1	3
Navicula minima	1	1
Navicula rhynchocephala	-	38
Navicula seminulum	-	21
Navicula wildii	-	2
Naviculaceae	-	2
Neidium alpinum	1	-

Appendix I-2 cont'd

	Control Site	Test Site
Nitzschia sp.	58	33
Nitzschia amphibia	-	4
Nitzschia amphibioides	-	2
Nitzschia clausii	-	6
Nitzschia dissipata	1	-
Nitzschia fonticola	-	3
Nitzschia gracilis	33	-
Nitzschia nana	3	2
Nitzschia palea	30	2
Nitzschia serrata	24	-
Nupela sp.	2	58
Nupela neotropica	3	1
Pinnularia sp.	37	10
Placoneis elginensis	-	2
Placoneis gastrum	-	1
Planothidium sp.	1	-
Planothidium apiculatum	-	1
Planothidium frequentissimum	-	3
Planothidium lanceolatum	-	2
Planothidium rostratum	-	1
Psammothidium sacculum	-	2
Sellaphora sp.	1	2
Stauroneis sp.	2	1
Stauroneis prominula	-	1
Coscinodiscophyceae		
Aulacoseira sp.	22	-
Fragilariophyceae		
Fragilaria capucina	-	1
Pseudostaurosira brevistriata	-	2

Appendix J-1

Benthic macroinvertebrates collapsed taxa list and density (average number of individuals/m^2 rounded to the nearest individual, n = 3 samples) from Hester-Dendy artificial substrates incubated for 29 days upstream and downstream of the Macclenny WWTF and collected on January 26, 2009. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Annelida		
Oligochaeta		
Dero digitata complex	15	-
Slavina appendiculata	4	3
Arthropoda		
Crustacea		
Caecidotea sp.	24	-
Insecta		
Coleoptera		
Ancyronyx variegatus	-	3
Hydroporus sp.	11	-
Diptera		
Ablabesmyia mallochi	8	-
Ablabesmyia rhamphe grp.	-	3
Atrichopogon sp.	-	3
Conchapelopia sp.	-	5
Corynoneura sp.	8	208
Dicrotendipes sp.	22	-
Hemerodromia sp.	-	3
Labrundinia becki	4	-
Labrundinia pilosella	4	3
Labrundinia virescens	4	-
Parachironomus longistilus	3	-
Parametriocnemus sp.	3	-
Phaenopsectra obediens grp.	22	-
Polypedilum fallax	3	14
Polypedilum illinoense grp.	3	16
Polypedilum tritum	6	3
Rheotanytarsus exiguus grp.	-	8
Rheotanytarsus pellucidus	-	3
Simulium sp.	-	5
Tanytarsus sp.L Epler	25	8
Tanytarsus sp. M Epler	-	5
Thienemanniella lobapodema	-	64
Thienemanniella xena	-	36
Thienemannimyia grp.	3	132
Ephemeroptera		
Caenis sp.	13	-
Leptophlebia bradleyi	16	-
Odonata		
Boyeria vinosa	-	3
Trichoptera		
Hydropsychidae	-	3
Lype diversa	-	5
Mollusca		
Gastropoda		
Ancylidae	-	3

Appendix J-2

Benthic macroinvertebrates taxa list and counts (number of individuals counted) collected from Hester-Dendy artificial substrates (n= 3 samples) incubated upstream and downstream of the Macclenny WWTP for 29 days and collected on January 26, 2009.

	Control Site	Test Site
Annelida		
Oligochaeta		
Dero digitata complex	4	-
Naididae	2	-
Slavina appendiculata	1	1
Arthropoda		
Crustacea		
Caecidotea sp.	9	-
Insecta		
Coleoptera		
Ancyronyx variegatus	-	1
Dytiscidae	1	-
Hydroporus sp.	3	-
Diptera		
Ablabesmyia mallochi	3	-
Ablabesmyia rhamphe grp.	-	1
Atrichopogon sp.	-	1
Chironomidae	2	4
Conchapelopia sp.	-	2
Corynoneura sp.	3	77
Dicrotendipes sp.	8	-
Hemerodromia sp.	-	1
Labrundinia sp.	1	-
Labrundinia becki	1	-
Labrundinia pilosella	1	1
Labrundinia virescens	1	-
Parachironomus longistilus	1	-
Parametriocnemus sp.	1	-
Phaenopsectra obediens grp.	8	-
Polypedilum fallax	1	5
Polypedilum illinoense grp.	1	6
Polypedilum tritum	2	1
Rheotanytarsus exiguus grp.	-	3
Rheotanytarsus pellucidus	-	1
Simulium sp.	-	2
Tanytarsus sp.	1	-
Tanytarsus sp. L Epler	8	3
Tanytarsus sp. M Epler	-	2
Thienemanniella	-	1
Thienemanniella lobapodema	-	23
Thienemanniella xena	-	13
Thienemannimyia grp.	1	49
Ephemeroptera		
Caenis sp.	5	-
Leptophlebia bradleyi	4	-
Leptophlebiidae	2	-
Odonata		
Boyeria vinosa	-	1
Trichoptera		
Hydropsychidae	-	1
Lype diversa	-	2
Mollusca		
Gastropoda		
Ancylidae	-	1

Appendix K-1

Qualitative benthic macroinvertebrate collapsed taxa list and number of individuals counted from 20-discrete-dipnet sweeps conducted upstream and downstream of Macclenny WWTF on January 28, 2009. 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				
Hirudinea				
Undetermined Hirudinea	-	-	-	1
Oligochaeta				
Aulodrilus pigueti	-	-	2	-
Bratislavia unidentata	-	-	-	1
Eclipidrilus sp.	-	2	-	-
Haemonais waldvogeli	-	5	-	-
Limnodrilus hoffmeisteri	3	2	5	8
Lumbriculus variegatus	-	-	1	-
Naididae	2	-	-	-
Nais communis complex	-	-	1	-
Slavina appendiculata	-	-	4	1
Arthropoda				
Arachnida				
Limnesia sp.	1	-	-	-
Unionicola sp.	1	-	-	-
Crustacea				
Caecidotea sp.	94	93	4	8
Cambaridae	-	1	-	-
Crangonyx sp.	-	-	1	1
Hyalella azteca	2	-	-	-
Insecta				
Coleoptera				
Ancyronyx variegatus	-	-	3	2
Dubiraphia vittata	3	8	11	11
Dytiscidae	-	-	1	2
Microcylloepus pusillus	-	-	6	3
Neoporus sp.	3	3	-	-
Stenelmis sp.	-	-	2	-
Diptera				
Ablabesmyia mallochi	3	5	1	6
Ablabesmyia rhamphe grp.	1	-	9	9
Atrichopogon sp.	-	-	-	3
Chironomus sp.	-	-	-	1
Clinotanypus sp.	1	-	-	-
Dicrotendipes simpsoni	2	3	-	-
Hemerodromia sp.	-	-	2	2
Kiefferulus sp.	2	1	-	-
Labrundinia virescens	2	3	-	-
Paratanytarsus sp.	-	-	3	6
Paratendipes subaequalis	-	1	-	-
Pentaneura inconspicua	-	-	-	1
Phaenopsectra obediens grp.	-	1	-	-
Polypedilum fallax	-	-	1	-
Polypedilum flavum	-	-	1	-
Polypedilum halterale grp.	-	-	1	-
Polypedilum illinoense grp.	-	1	-	1
Polypedilum scalaenum grp.	-	-	1	1

Appendix K-1 cont'd

	Control Site		Test Site	
	Rep 1	Rep 2	Rep 1	Rep 2
Polypedilum tritum	2	3	-	-
Rheotanytarsus exiguus grp.	1	-	1	1
Rheotanytarsus pellucidus	-	-	1	-
Stempellinella fimbriata	-	-	1	-
Stenochironomus sp.	1	-	1	1
Tanytarsus sp. L Epler	1	-	12	21
Tanytarsus sp. M Epler	-	-	18	14
Tanytarsus sp. O Epler	-	-	1	-
Thienemannimyia grp.	-	-	3	2
Tribelos jucundum	2	-	11	12
Ephemeroptera				
Caenis sp.	13	13	-	3
Eurylophella doris	-	-	1	-
Megaloptera				
Corydalus cornutus	-	-	-	1
Odonata				
Argia sp.	-	-	1	1
Enallagma sp.	4	3	1	-
Libellulidae	1	-	-	-
Trichoptera				
Cernotina sp.	-	-	2	-
Lype diversa	-	-	1	-
Neureclipsis crepuscularis	-	-	3	1
Oecetis sp.	2	-	1	-
Triaenodes sp.	-	-	1	-
Triaenodes perna/helo	-	-	-	2
Mollusca				
Bivalvia				
Sphaeriidae(mollusca)	-	-	4	1
Gastropoda				
Ancylidae	3	4	8	8
Micromenetus sp.	-	-	16	13
Physa sp.	-	-	-	2
Nemertea				
Enopla				
Prostoma sp.	-	-	1	-
Platyhelminthes				
Undetermined Platyhelminthes	-	1	-	-

Appendix K-2

Qualitative benthic macroinvertebrate taxa list and number of individuals counted from 20-discrete-dipnet sweeps conducted upstream and downstream of Macclenny WWTF on January 28, 2009.

	Control Site		Test Site	
Taxon Name	Rep 1	Rep 2	Rep 1	Rep 2
Annelida				
Hirudinea				
Undetermined Hirudinea	-	-	-	1
Oligochaeta				
Aulodrilus pigueti	-	-	1	-
Bratislavia unidentata	-	-	-	1
Eclipidrilus sp.	-	2	-	-
Haemonais waldvogeli	-	1	-	-
Limnodrilus hoffmeisteri	1	1	2	1
Lumbriculus variegatus	-	-	1	-
Naididae	2	4	-	-
Nais communis complex	-	-	1	-
Slavina appendiculata	-	-	4	1
Tubificidae	2	1	4	7
Arthropoda				
Arachnida				
Acariformes				
Limnesia sp.	1	-	-	-
Unionicola sp.	1	-	-	-
Crustacea				
Amphipoda				
Crangonyx sp.	-	-	1	1
Hyalella azteca	2	-	-	-
Decapoda				
Cambaridae	-	1	-	-
Isopoda				
Caecidotea sp.	94	93	4	8
Insecta				
Coleoptera				
Ancyronyx variegatus	-	-	3	2
Dubiraphia vittata	3	8	10	11
Dytiscidae	2	2	1	2
Elmidae	-	-	1	-
Microcylloepus pusillus	-	-	6	3
Neoporus sp.	1	1	-	-
Stenelmis sp.	-	-	2	-
Diptera				
Ablabesmyia sp.	-	-	-	2
Ablabesmyia mallochi	3	5	1	4
Ablabesmyia rhamphe grp.	1	-	7	7
Atrichopogon sp.	-	-	-	3
Chironomidae	-	-	16	10
Chironomus sp.	-	-	-	1
Clinotanypus sp.	1	-	-	-
Dicrotendipes simpsoni	2	3	-	-
Hemerodromia sp.	-	-	2	2
Kiefferulus sp.	2	1	-	-
Labrundinia sp.	1	1	-	-

Appendix K-2 cont'd

Taxon Name	Control Site Rep 1	Control Site Rep 2	Test Site Rep 1	Test Site Rep 2
Labrundinia virescens	1	2	-	-
Paratanytarsus sp.	-	-	2	5
Paratendipes subaequalis	-	1	-	-
Pentaneura inconspicua	-	-	-	1
Phaenopsectra obediens grp.	-	1	-	-
Polypedilum fallax	-	-	1	-
Polypedilum flavum	-	-	1	-
Polypedilum halterale grp.	-	-	1	-
Polypedilum illinoense grp.	-	1	-	1
Polypedilum scalaenum grp.	-	-	1	1
Polypedilum tritum	2	3	-	-
Rheotanytarsus exiguus grp.	1	-	1	1
Rheotanytarsus pellucidus	-	-	1	-
Stempellinella fimbriata	-	-	1	-
Stenochironomus sp.	1	-	1	1
Tanytarsus sp.	-	-	1	-
Tanytarsus sp. L Epler	1	-	9	18
Tanytarsus sp. M Epler	-	-	11	12
Tanytarsus sp. O Epler	-	-	1	-
Thienemannimyia grp.	-	-	2	2
Tribelos jucundum	2	-	8	10
Ephemeroptera				
Caenis sp.	13	13	-	3
Eurylophella doris	-	-	1	-
Megaloptera				
Corydalus cornutus	-	-	-	1
Odonata				
Argia sp.	-	-	1	1
Coenagrionidae	-	1	-	-
Enallagma sp.	4	2	1	-
Libellulidae	1	-	-	-
Trichoptera				
Cernotina sp.	-	-	2	-
Lype diversa	-	-	1	-
Neureclipsis crepuscularis	-	-	2	1
Oecetis sp.	2	-	1	-
Polycentropodidae	-	-	1	-
Triaenodes sp.	-	-	1	-
Triaenodes perna/helo	-	-	-	2
Mollusca				
Bivalvia				
Sphaeriidae(mollusca)	-	-	4	1
Gastropoda				
Ancylidae	3	4	8	8
Micromenetus sp.	-	-	16	13
Physa sp.	-	-	-	2
Nemertea				
Enopla				
Prostoma sp.	-	-	1	-
Platyhelminthes				
Platyhelminthes				
Undetermined Platyhelminthes	-	1	-	-

The Bioassay of the Macclenny WWTP effluent sampled on January 26, 2009, NPDES #FL0040495

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 FL0040495 11	12 090126	18 B	19 S	20 1

Remarks

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The Priority Pollutants Analysis for Bioassay of the Macclenny WWTP effluent sampled on January 26, 2009, NPDES #FL0040495

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 FL0040495 11	12 090126	18 X	19 S	20 1

Remarks

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Biological Analyses of the Macclenny WWTP effluent sampled on January 28, 2009, NPDES #FL0040495

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 FL0040495 11	12 090128	18 S	19 S	20 1

Remarks

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