

Biological Assessment of

Mid-County Wastewater Treatment Facility

Pinellas County

NPDES # FL0034789

Sampled March 1 and 29, 2010

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Biology Section

Bureau of Laboratories

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Fifth Year Inspection Summary

The Fifth Year Inspection of Mid-County WWTF, conducted March 1 and 29, 2010, produced the following notable results.

Organic constituents and metals detected in effluent samples were present at levels that complied with Class III Fresh Water Quality Criteria (62-302.530 F.A.C.).

The effluent samples were not toxic to the water flea, *Ceriodaphnia dubia*, during chronic and 96 hour acute screen bioassays, and complied with effluent permit limits. The chronic bioassay for the fish, *Pimephales promelas,* could not be completed. The effluent sample was not toxic to the fish, *Pimephales promelas*, during the 96 hour acute screen bioassay.

General physical/chemical parameters, microbiology, and nutrients of the effluent and receiving waters complied with fresh water quality criteria and effluent permit limits. Specific conductance of the effluent was contributing to already elevated levels in Curlew Creek as indicated by higher specific conductance at the Test Site. Effluent nitrogen values appear to be variable, and elevated levels of phosphorus at the Test Site can be attributed to the effluent. Algal Growth Potential (AGP) values of the effluent and receiving water sites were similar and above the “problem” threshold of 5.0 mg dry wt/L for fresh water (Raschke & Schulz, 1987), indicating nutrient enrichment in Curlew Creek from multiple sources, including the effluent.

Carbonaceous Biological Oxygen Demand (CBOD; mg/L) of the effluent sample exceeded the permit limit for a single 16-hour flow-proportioned composite sample.

The combination of quantitative and qualitative biological measures indicated neither the Control nor Test Site macroinvertebrate communities were robust. The quantitative sample Shannon-Weaver Diversity scores exceeded the Class III Fresh Water Quality Criterion (62-302.530(10), F.A.C.) and indicate a reduced biological condition at the Test Site. However, the qualitative sample SCI scores at the Control and Test Sites were both considered low, and the difference between them fell within the error of the SCI calculation indicating no detectable difference between the biological communities. The condition of the macroinvertebrate community is likely affected by the marginal habitat and high specific conductance in this portion of Curlew Creek.

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.

Introduction

The Mid-County Wastewater Treatment Facility is a Municipal Domestic Wastewater Treatment plant. The effluent is discharged into Curlew Creek, a Class III Fresh Water (see map Appendix A). The design flow of the wastewater treatment facility is 0.9 million gallons per day (MGD). The annual average daily flow for March, 2009 to February, 2010 was 0.68 MGD. The flow measured during this survey was 0.684 MGD (Southwest District sampling staff).

See the Facility Summary (Appendix 2) for a description of the facility, summary of permit limits, and discharge monitoring report (DMR) information.

Methods

The purpose of this investigation was to determine the discharge's effects on the biota of the receiving waters. Chemical and biological comparisons were made between a Control Site (located in Curlew Creek approximately 5 m to 105 m upstream of the point of discharge) and a Test Site (located in Curlew Creek approximately 5 m to 105 m downstream of the point of discharge). Effluent grab and 24-hour flow-proportioned composite samples were collected from EFD-01, after dechlorination and prior to discharge into Curlew Creek.

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). Explanations of specific methods and measurements can be found in Appendix C.

The following were involved in this investigation: Pete Wenner, Peggy Morgan, Michele Duggan, and Frank Fulghum (FDEP Southwest District Office, Tampa), Dawn Hart and Barb Goetting (Hillsborough County Environmental Protection Commission), and DEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Michael Tanski, Cari Butler, and Nancy Ross).

Results and Discussion

Organic Constituents (See Table 1 and Appendix E)

- Bromodichloromethane and chloroform were detected in the effluent composite and grab samples at levels that complied with Class III Fresh Water Quality Criteria (62-302.530, F.A.C.).
- Dibromochloromethane (composite and grab), bis(2-ethylhexyl)phthalate (composite), and atrazine (grab) were present in the effluent at levels between the minimum detection limit (MDL) and the practical quantitation limit (PQL), which complied with the Class III Fresh Water Quality Criteria (62-302.530, F.A.C.
- Organic constituents were not detected in the field blank.

Metals (See Table 2 and Appendix E)

- All metals detected in effluent composite and grab samples, and in Control and Test Site samples were present at levels that complied with Class III Fresh Water Quality Criteria (62-302.530, F.A.C.).
- All metals detected at levels between the MDL and PQL in effluent composite and grab samples and in Control and Test Site samples were present at levels that complied with the water quality criteria.
- Metals were not detected in the field blank.

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

Chronic Tests were performed March 2 through 8, 2010.

- The NOEC for both survival and reproduction of the water flea, *Ceriodaphnia dubia*, during the chronic screen bioassay was 100%, and therefore, complied with effluent permit limits.
- The third sample required for the completion of the *Pimephales promelas* chronic bioassay was not received. Therefore, the test was invalidated.

Acute Tests were performed March 30 through April 3, 2010.

- The effluent sample was not toxic to the water flea, *Ceriodaphnia dubia*, or to the fish, *Pimephales promelas*, during the 96 hour acute screen bioassays.

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

- Habitat Assessment scores were similar at the Control Site (90) and Test Site (79), which places both sites in the marginal category (category from Appendix C). While the Control Site had better substrate diversity, both sites had low substrate availability. The habitat at the Test Site was more affected by sand smothering than that of the Control Site. Also, both sites had decreased bank stability on both banks, poor riparian zone buffer width, and poor buffer vegetation quality.
- 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. Specific conductance of the effluent was contributing to already elevated levels in Curlew Creek, as indicated by higher specific conductance levels at the Test Site.
- The total residual chlorine concentration, as a measure of high-level disinfection, was 3.36 mg/L which complied with the effluent permit limit. The total chlorine residual concentration, as a measure of dechlorination, was <0.02 mg/L which complied with the Class III Fresh Water Quality Criterion (62-302.530(18) F.A.C.) and effluent permit limit.
- Chlorophyll *a* content estimates algal biomass. High algal biomass implies nutrient stress (Stevenson and Bahls, 1999). Chlorophyll *a* (µg/L) was undetected in the effluent sample, detected at a low level (2.1 µg/L) at the Control Site, and at a level between the MDL and PQL at the Test Site.
- Total suspended solids (mg/L) of the effluent complied with permit limits.
- Carbonaceous Biological Oxygen Demand (CBOD; mg/L) of the effluent sample exceeded the effluent permit limit for a single, 16-hour flow-proportioned composite sample. Note that although the laboratory result is reported for a grab sample, the analysis was run on a 24 hour composite sample mistakenly poured into a sample bottle labeled “grab” (personal communication, Michele Duggan, SW District Office).

Microbiology (See Table 1 and Appendix E)

- Fecal coliform analysis was performed by Advanced Environmental Laboratories Inc., Tampa, FL.
- Fecal coliforms were not detected in the effluent and therefore levels 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 nutrient levels complied with permit limits and the Class III Fresh Water Quality Criterion.
- Nitrate and nitrite measured in the effluent composite sample was approximately 7.5 times that measured in the effluent grab sample. This suggests high variability in the nitrogen content of the effluent.
- Ortho-phosphate and total phosphorus were higher at the Test Site than at the Control Site. Elevated levels at the Test Site can be attributed to phosphorus levels in the effluent.
- Nutrients were not detected in the field blank.

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) determined that AGP values above 5.0 mg dry weight/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The AGP value in the effluent sample using the freshwater species, *Pseudokirchneriella subcapitata*, was approximately two times greater than the "problem" threshold value. The analytical chemistry suggested that the effluent is nitrogen-limited.
- The AGP values for the Control and Test Sites were similar to the effluent and above the "problem" threshold, which indicates nutrient enrichment in this portion of Curlew Creek. The N:P ratio of the Control Site approached a value indicative of phosphorus limitation. It is likely that the lower N:P ratio for the Test Site was a result of the greater amount of phosphorus and ortho-phosphorus in Curlew Creek downstream of the discharge.

Bioassessment

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

- Periphyton communities at both the Control and Test Sites consisted mostly of diatoms. The diatom community at the Control Site was dominated by the *Navicula germainii* and at the Test Site by *Hippodonta hungarica*. There was a slight increase in the percent of blue-green and green algae in Curlew Creek at the Test Site downstream of the discharge compared to the Control Site.

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

- Quantitative macroinvertebrate data were collected from Hester-Dendy samplers at the Control and Test Sites. Both sites were equally dominated by dipterans (62-63%). The high percentage of trichopterans collected at the Test Site (28.8%) were of the genus *Cheumatopsyche*, a group geographically widespread, found in a variety of stream sizes, and known to be pollution tolerant. There was a higher percentage of amphipods at the Control Site (10.4%) than at the Test Site (0.6%). The Shannon–Weaver Diversity Index score was decreased by 39.4% at the Test Site (2.35) compared to the Control Site (3.88). This exceeded the Class III Fresh Water Quality Criterion (62-302.530(10), F.A.C.), which states that the Shannon-Weaver Diversity Index downstream of a permitted discharge shall not decrease more than 25% that of background condition. This reduction in diversity indicated a degraded biological condition at the Test Site when compared to the Control Site.
- Qualitative macroinvertebrate data from dipnet samples indicate that the macroinvertebrate community is similar at the Control and Test Sites. Both sites had similar numbers of ephemeroptera, trichoptera, long-lived and clinger taxa. The Control Site had a greater percentage of amphipods, bivalves, and odonates and had slightly fewer dipterans than the Test Site. Functional feeding group percentages were comparable with the exception that the Control Site had a higher percentage of predators whereas the Test Site has a higher percentage of burrowing deposit feeders. The Test Site scored 41 A on the Stream Condition Index (SCI) placing it in Category 2. The Control Site scored 34 A, which is the upper threshold of Category 3 (see Appendix C for an explanation of SCI Categories). The difference in SCI scores was within the minimal detectable difference of the SCI calculation indicating that the biological communities are not considered to be different.

Literature Cited

Karr, J.R. & E.W. Chu. 1998. Restoring life in running waters: Better biological monitoring. Island Press. Covelo, California. 200 p.

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

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

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

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

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

Stevenson, R. J. and J. P. Smol. 2003. Use of algae in environmental assessments, pp. 775-803, in: Freshwater algae of North America, edited by J. D. Wehr and R. G. Sheath, Academic Press, San Diego. 918 pp.

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

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

Mid-County WWTF	Class III Criteria	Effluent Limits	Effluent composite * 3/1/10	Effluent grab 3/1/10	Effluent grab 3/29/10	Control Site	Test Site
Organic Constituents (µg/L)							
Atrazine	-	-	0.047 U	0.11 I	-	-	-
Bis(2-ethylhexyl)phthalate	≤ 3.0	-	56 I	15 U	-	-	-
Bromodichloromethane	≤ 22 a	-	5	7	-	-	-
Chloroform	≤ 470.8 a	Report	43	56	-	-	-
Dibromochloromethane	≤ 34 a	-	0.68 I	0.8 I	-	-	-
Nutrients (mg/L)							
Ortho-phosphate	-	-	0.56	0.74	-	0.056	0.24
Total Phosphorus	-	≤ 2.0 s,p	0.69	0.86	-	0.078 A	0.19
Total Ammonia	-	-	0.054	0.054	-	0.035	0.038
Un-ionized Ammonia	≤ 0.02 s	-	-	≤ 0.02 c	-	≤ 0.02 c	≤ 0.02 c
Nitrate and Nitrite	-	-	2.6	0.13 I	-	0.19	0.17
Total Kjeldahl Nitrogen	-	-	1.1 J	1	-	0.55	0.68
Organic Nitrogen	-	-	1.046 c	0.946 c	-	0.515 c	0.642 c
Total Nitrogen	-	≤ 6.0 s,p	3.7 c	1.13 c	-	0.74 c	0.85 c
General Physical and Chemical Parameters							
Habitat Assessment	-	-	-	-	-	90	79
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 5.0 s	-	8.2	8.8	10.7	9.7
pH (SU)	6.0 - 8.5	6.0 - 8.5 s	-	7.5	6.4	7.7	7.6
Conductivity (µmhos/cm)	≤ 1,275	-	-	920	914	516	608
Temperature (°C)	-	-	-	18.5	22.8	15.2	15.1
Sample Depth (m)	-	-	-	0	0.2	0.2	0.2
Total Residual Chlorine (mg/L) - Disinfection	-	≥ 1.0 s	3.36	-	-	-	-
Total Residual Chlorine (mg/L) - Dechlorination	≤ 0.01	≤ 0.01 s	< 0.02	-	-	-	-
Chlorophyll *a* (µg/L) - Corrected	-	-	-	0.55 U	-	2.1	1.4 I
Phaeophytin (µg/L)	-	-	-	0.4 U	-	0.78 I	0.4 U
Total Suspended Solids (mg/L)	-	≤ 10.0 s,p	4 U	4 I	-	4 U	5 I
Turbidity (NTU)	< 29 t	-	1.4	1.4	-	1	1.1 A
Color (apparent) (PCU)	-	-	-	5	-	-	-
CBOD, 5 day (mg/L), N - inhibited	-	≤ 10.0 s,p	-	13	-	2.1 V	1.3 IV
Flow (MGD)	-	0.9 a	-	0.684	-	-	-
Hardness (mg $CaCO_3$)	-	-	215.98 c	210.90 c	-	157.75 c	168.39 c
Toxicity							
Chronic screen, NOEC, % effluent							
Bioassay - Water flea *(Ceriodaphnia dubia)*	-	100	100	-	-	-	-
Bioassay - Fish *(Pimephales promelas)*	-	100	No Result **	-	-	-	-
96 hour acute screen, % mortality							
Bioassay - Water flea *(Ceriodaphnia dubia)*	-	-	-	-	0	-	-
Bioassay - Fish *(Pimephales promelas)*	-	-	-	-	0	-	-
Microbiology (Number of colony forming units/100ml)							
Fecal Coliforms ¥	≤ 400s #	< 25 s	-	1 U	-	-	-

Value exceeds the Class III Water Quality Criteria or permit limits

* - 24 hour flow proprtioned composite

** - The third of three samples required for the completion of the *Pimephales promelas* chronic bioassay was not received. See NCR 3338.

a - Annual average

c - Value is calculated

p - 16 hr flow proportioned composite

s - Single sample

t - Shall not exceed 29 NTUs above background

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

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

V - Analyte was detected in both sample and method blank

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

¥ - Fecal coliform analysis performed by –Advanced Environmental Laboratories, Inc., Tampa, FL

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

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.

Mid-County WWTF	Effluent composite 3/1/10 Class III Criteria	Effluent Limits	Effluent composite* 3/1/10	Effluent grab 3/1/10 Class III Criteria	Effluent grab 3/1/10	Control Site Class III Criteria	Control Site	Test Site Class III Criteria	Test Site
Metals (µg/L unless otherwise noted)									
Aluminum	-	-	60 U	-	60 U	-	79 I	-	60 U
Arsenic	≤ 50	-	0.25 U	≤ 50	0.25 U	≤ 50	1.3	≤ 50	1.1
Cadmium	≤ 0.5 b	-	0.03 U	≤ 0.47 b	0.03 U	≤ 0.38 b	0.03 U	≤ 0.40 b	0.03 U
Calcium (mg/L)	-	-	75	-	73.1	-	53	-	56.6
Chromium-III	≤ 161.9 b	-	0.3 U	≤ 158.79 b	0.3 U	≤ 125.18 b	0.81 I	≤ 132.05 b	0.7 I
Copper	≤ 18.0 b	-	3.44	≤ 17.65 b	2.54	≤ 13.77 b	1.71	≤ 14.56 b	1.84
Iron	≤ 1,000	-	81 I	≤ 1,000	140	≤ 1,000	170	≤ 1,000	170
Lead	≤ 8.5 b	-	0.2 U	≤ 8.23 b	0.2 U	≤ 5.68 b	0.2 U	≤ 6.18 b	0.2 U
Magnesium (mg/L)	-	-	6.97	-	6.89	-	6.17	-	6.57
Nickel	≤ 100.1 b	-	2.42	≤ 98.07 b	2.32	≤ 76.71 b	0.86 I	≤ 81.06 b	1.07
Selenium	≤ 5.0	-	0.2 U	≤ 5.0	0.2 U	≤ 5.0	0.27 I	≤ 5.0	0.28 I
Silver	≤ 0.07	-	0.025 U	≤ 0.07	0.025 U	≤ 0.07	0.025 U	≤ 0.07	0.025 U
Zinc	≤ 230.1 b	-	33	≤ 225.48 b	28	≤ 176.30 b	6.3 I	≤ 186.32 b	10 I

See Table 1 for calculated hardness.

* - 24 hour flow proprtioned composite

b - Value is calculated based on hardness

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

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

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

Mid-County WWTF					
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent (grab)	14.2	7.0 ± 1.4	42.9 ± 8.6	0.2	1.3
Control Site	13.7	8.6 ± 1.7	28.1 ± 5.6	4.0	9.5
Test Site	13.9	7.9 ± 1.6	32.3 ± 6.5	0.9	4.5

Table 4. Periphyton Composition - Qualitative.

Mid-County WWTF	Control Site	Test Site
Number of Wet Taxa	17	21
Number of Wet Algal Units Identified	304	303
Percent Dominant Wet Taxon	83.2	71.3
Dominant Wet Taxon Name	Bacillariophyta (Diatoms)	Bacillariophyta (Diatoms)
Number of Diatom Taxa	40	52
Number of Diatom Algal Units Identified	503	500
Percent Dominant Diatom Taxon	16.5	13.0
Dominant Diatom Taxon Name	*Navicula germainii*	*Hippodonta hungarica*
Percentage Composition for Wet Algae		
Blue-green algae	7.9	16.8
Green algae	8.6	10.9
Diatoms	83.2	71.3
Euglenophytes	0.3	0.7
Pyrrophytes	0.0	0.3

Table 5. Macroinvertebrate Hester-Dendy Samples - Quantitative.

Mid-County WWTF	Control Site	Test Site
Summary Statistics		
Shannon-Weaver Diversity	3.88	2.35
Number of Taxa	29	21
Number of EPT Taxa	2	4
Percent Dominant Taxon	23.5	37.3
Dominant Taxon Name	*Polypedilum flavum* (Diptera)	*Polypedilum flavum* (Diptera)
Total Number of Individuals (counted)	432	712
Total Number of Individuals (#/m^2)	1,145	1,885
Community Composition: Percent of total		
Amphipoda	10.4	0.6
Bivalvia	0.7	0.0
Coleoptera	3.5	5.2
Diptera	62.9	62.1
Ephemeroptera	0.0	0.1
Gastropoda	1.6	1.4
Isopoda	0.2	0.0
Odonata	6.3	1.4
Oligochaeta	5.6	0.1
Plecoptera	0.0	0.0
Trichoptera	8.3	28.8
Other	0.5	0.3
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	5.6	0.1
Piercers	0.0	0.1
Predators	10.3	4.2
Scrapers	3.6	4.5
Shredders	23.0	19.4
Surface Deposit Feeders	41.8	43.3
Suspension Feeders	15.2	28.3
Unknown	0.2	0.0

Value exceeds the Class III Water Quality Criteria 36-302.530(10).

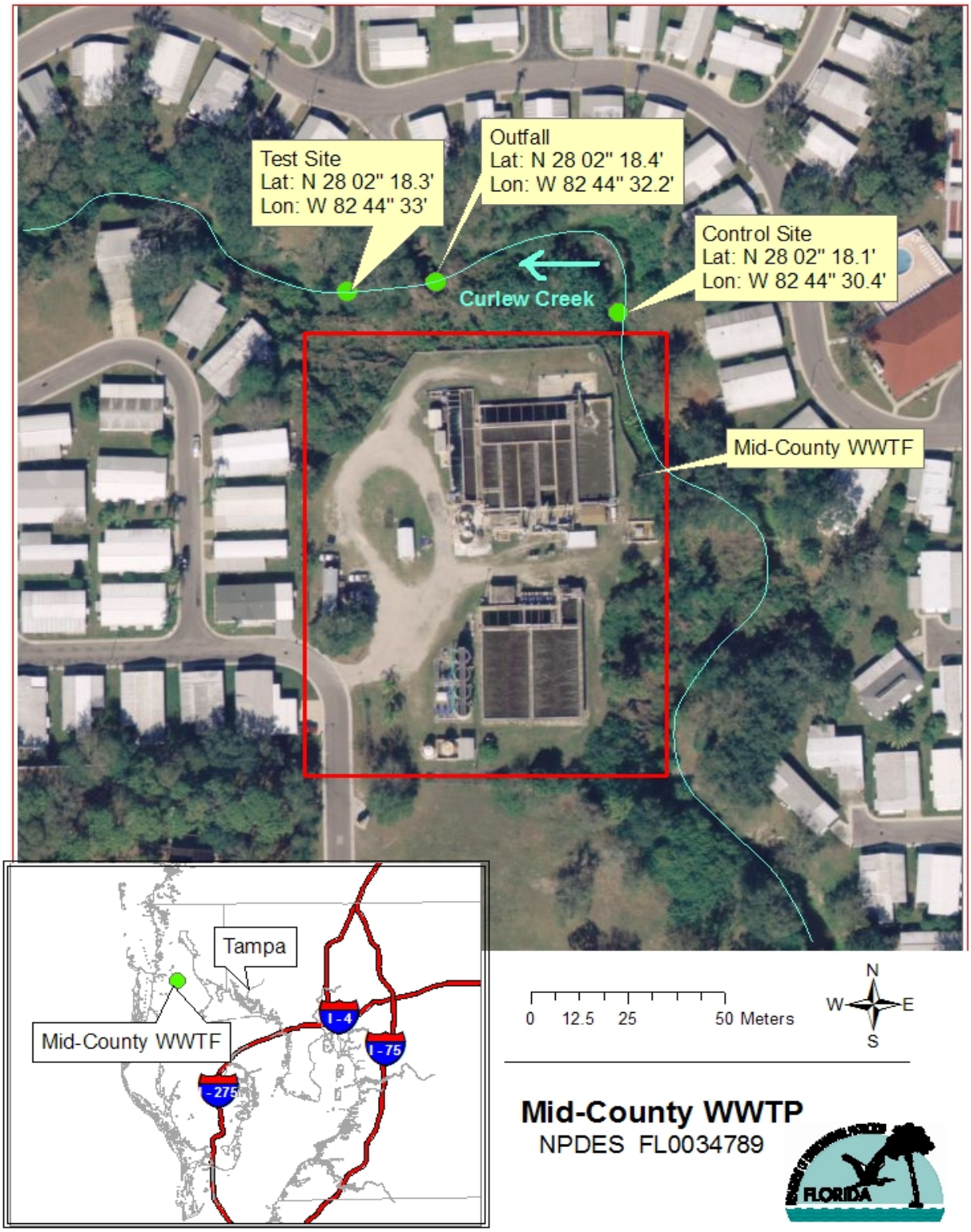
Table 6. Macroinvertebrate Dipnet Samples - Qualitative.

Mid-County WWTF	Control Site		Test Site	
Summary Statistics				
Stream Condition Index 2007 (value)	34 A		41 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	23	18	28	26
Number of Ephemeroptera Taxa	1	0	0	1
Number of Trichoptera Taxa	2	1	2	2
Number of Clinger Taxa	3	2	3	3
Number of Long-lived Taxa	1	1	1	1
Number of Sensitive Taxa	0	0	0	1
Percent of Dominant Taxon	16.6	37.4	16.8	23.1
Percent Suspension Feeders and Filterers	19.5	15.8	14.5	15.0
Percent of Tanytarsini Individuals	11.9	4.5	10.3	7.7
Percent of Very Tolerant Individuals	16.6	12.9	10.3	14.0
Total Number of Individuals	151	155	155	143
Community Composition: Percent of total				
Dominant Taxon Name	*Hyalella azteca* (Amphipoda)	*Hyalella azteca* (Amphipoda)	*Microcylloepus pusillus* (Coleoptera)	*Polypedilum flavum* (Diptera)
Amphipoda	16.6	37.4	10.3	14.7
Bivalvia	4.6	10.3	1.3	1.4
Coleoptera	18.5	16.8	19.4	15.4
Diptera	33.8	23.2	43.2	47.6
Ephemeroptera	0.7	0.0	0.0	1.4
Gastropoda	2.0	1.3	6.5	2.8
Hirudinea	0.7	0.0	0.0	0.7
Nemertea	0.0	0.0	0.6	1.4
Odonata	13.9	9.7	5.8	3.5
Oligochaeta	0.0	0.0	4.5	2.1
Plecoptera	0.0	0.0	0.0	0.0
Trichoptera	9.3	1.3	8.4	9.1
Other	0.0	0.0	0.0	0.0
Functional Feeding Groups: Percent of total				
Browser-Grazers	0.0	0.0	0.0	0.0
Burrowing Deposit Feeders	0.0	0.0	4.5	2.1
Piercers	2.0	0.0	0.0	2.8
Predators	17.2	11.9	9.0	6.3
Scavengers	0.0	0.0	0.0	0.0
Scrapers	11.6	9.7	16.8	11.2
Shredders	16.9	24.8	16.5	19.9
Surface Deposit Feeders	32.1	37.7	38.7	42.0
Suspension Feeders	19.5	15.8	14.5	15.0
Unknown	0.0	0.0	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: Pete Wenner and Michele Duggan	**Contact Number:** 813-632-7600 x442
Facility Name (as it appears on permit): Mid County WWTF	**Former Names:** Dyna-Flow Services
NPDES Permit Number: FL0034789	**Permit Expiration Date:** February 6, 2011
Physical Address: 2299 Spanish Vista Drive, Dunedin, FL 34698-9438	
District: Southwest	**County:** Pinellas
Function of Facility: Domestic Wastewater Treatment Facility	
Facility Type: Activated Sludge	**Permitted Capacity (MGD):** 0.90
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 3/2009-2/2010: 0.68 MGD	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): NA	
Description of type of Discharge: ☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	

Description of Sampling Locations - actual permit designation of permitted sampling points:

EFB-01: After filtration and prior to disinfection
EFA-01: After disinfection and before dechlorination
EFD-01: After dechlorination and prior to discharge to Curlew Creek
FLW-01: Flow meter prior to discharge to Curlew Creek

Description of Permitted Outfall:

An existing 0.9 MGD annual average daily flow (AADF) permitted discharge to Curlew Creek (Class III fresh water) and then to St. Joseph Sound (Outstanding Florida Water) at Discharge Location (D-001). The point of discharge is located approximately at latitude 28 ° 02' 20" N, longitude 82 ° 45' 20" W.

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

An existing 0.90 mgd Annual Average Daily Flow (AADF), Type I, advanced wastewater treatment plant consisting of two separate treatment trains as follow: the flow is directed through one static screen, followed by a flow equalization basin of 200,000 gallons total volume and through a flow splitter box which separates the flow into a 0.30 mgd stream and 0.60 mgd stream. The 0.30 mgd treatment train consists of one aeration basin of 349,000 gallons total volume and one clarifier of 92,000 gallons and 1025 square feet of total surface area. The 0.60 mgd treatment train consists of one aeration basin of 600,000 gallons total volume and one clarifier of 98,000 gallons and 1086 square feet of total surface area. The flow from the two trains are combined into one effluent holding tank of 16,000 gallons total volume, to three denitrification filters of 1,100,000 gallons total volume and 367 square feet of total surface area, to one chlorination/dechlorination chamber of 37,000 gallons total volume, one aerobic digester of 41,000 gallons total volume and one sludge holding tank of 43,500 gallons total volume. This facility is operated to provide advanced wastewater treatment and high level disinfection.

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)

I. RECLAIMED WATER AND EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Surface Water Discharges

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge effluent from Outfall D-001 to Curlew Creek (Class III fresh water) and then to St. Joseph Sound (Outstanding Florida Water). Such discharge shall be limited and monitored by the permittee as specified below and reported in accordance with condition I.B.8:

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow	MGD	Maximum	0.9	-	-	-	5 Days/Week	Recording flow meters and totalizers	FLW-01	See Cond.I.A.3
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	5.0	6.25	7.5	10.0	Weekly	16-hour flow proportioned composite	EFD-01	
Solids, Total Suspended	MG/L	Maximum	5.0	6.25	7.5	10.0	Weekly	16-hour flow proportioned composite	EFD-01	
Solids, Total Suspended	MG/L	Maximum				5.0	5 Days/Week	Grab	EFB-01	
Nitrogen, Total (as N)	MG/L	Maximum	3.0	3.75	4.5	6.0	Weekly	16-hour flow proportioned composite	EFD-01	
Phosphorus, Total (as P)	MG/L	Maximum	1.0	1.25	1.5	2.0	Weekly	16-hour flow proportioned composite	EFD-01	
pH	SU	Range	-	-	-	6.0 to 8.5	5 Days/Week	Meter	EFD-01	
Coliform, Fecal, % less than detection	PERCENT	Minimum	See Permit Condition I.A.4.				Monthly	Calculation	EFA-01	
Coliform, Fecal	#/100ML	Maximum	See Permit Condition I.A.4.				5 Days/Week	Grab	EFA-01	
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	1.0	5 Days/Week	Meter	EFA-01	See Cond.I.A.5
Total Residual Chlorine (For Dechlorination)	MG/L	Maximum	-	-	-	0.01	5 Days/Week	Grab	EFD-01	
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	5.0	5 Days/Week	Grab	EFD-01	
Chloroform	UG/L	Maximum	Report	Report	-	-	Weekly	Grab	EFD-01	
Whole Effluent Toxicity (Chronic)	%	Minimum	-	-	-	100	Every Six Months	24-hour flow proportioned composite	EFD-01	See Cond. I.A.6

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

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

Chronic Whole Effluent Toxicity Testing

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

Effluent Limitation

Whole effluent chronic toxicity shall not exceed a 25 percent inhibition concentration (IC25) of less than 100% effluent in any test. *[62-302.530(61) and 62-4.241(1)(b), F.A.C.]*

In the chronic toxicity test, the effluent cannot be acutely toxic, in accordance with Rules 62-4.241(1)(a), 62-302.200(1) and 62-302.500(1)(a)(4), F.A.C.

Monitoring Frequency

Routine toxicity tests shall be conducted once every six months, the first starting six months after the most recent sampling event and lasting for the duration of this permit.

Sampling Requirements

For each routine test or additional follow-up test conducted, a total of three flow proportional 24-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, or the most current edition..

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.

Samples for routine and additional follow-up tests shall not be collected on the same day.

If the duration of the discharge is less than 24-hours, the duration of discharge shall be documented on the chain of custody. Each sample shall be analyzed for total residual chlorine and pH at the time of sample collection. Should the discharge last less than 24 hours, the bioassay shall be run on the volume collected, however, three samples must be collected.

Test Requirements

Routine Tests: All routine tests shall be conducted using a control (0% effluent) and a minimum of five test dilutions: 100%, 50%, 25%, 12.5%, and 6.25% final effluent.

The permittee shall conduct a daphnid, Ceriodaphnia dubia, Survival and Reproduction Test and a fathead minnow, Pimephales promelas, Larval Survival and Growth Test, concurrently.

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 or the most current edition. Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use.

The control water and dilution water shall be moderately hard water as described in EPA-821-R-02-013, Section 7 or the most current edition.

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) or the most current edition. 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 (in cluding the control) shall be terminated with the conclusion that the test fails and constitutes non-compliance.
4. Additional follow-up tests shall be evaluated for acceptability based on the observed dose-response relationship as required by EPA-821-R-02-013, Section 10.2.6., or the most current edition, and the evaluation shall be included with the bioassay laboratory reports.

Toxicity Test Requirements (continued):

f. Reporting Requirements

1. Results from all required tests shall be reported on the Discharge Monitoring Report (DMR) as follows:

(a) Routine and Additional Follow-up Test Results: The calculated IC25 for each test species shall be entered on the DMR.

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, or the most current edition, and 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, or the most current edition, and 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 sent to:

Florida Department of Environmental Protection
Southwest District Office
13051 North Telecom Parkway
Temple Terrace, FL 33637-0926
Telephone No.: (813) 632-7600

Test Failures

1. A test fails when the test results do not meet the limits in Permit Condition I.A.6.a.(1) & (2).

2. Additional Follow-up Tests:

(a) If a routine test does not meet the chronic toxicity limitation in Permit Condition I.A.6.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 Permit Condition I.A.6.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%, 50%, 25%, 12.5%, and 6.25% 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 (0% effluent) are run. All test results shall be statistically analyzed according to the Appendices in EPA-821-R-02-013 or the most current edition.

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 period of time that the approved plan is ongoing, the permittee shall conduct routine whole effluent toxicity testing at the frequency of once every three months, but shall not be required to perform additional follow-up tests. If a routine test is invalid as established in EPA Methods, EPA-821-R-02-012, EPA-821-R-02-013, or EPA-821-R-02-014, or the most current additions, a retest must be started within 21 days for a chronic test or 14 days for an acute test after the last day of the invalid test.

(f) Following completion or termination of the plan, the frequency of monitoring for routine and additional follow-up whole effluent toxicity tests shall return to the schedule established in the facility wastewater permit. The permittee may terminate the plan at any time upon written verification by the Department that the facility has passed at least four consecutive valid routine whole effluent toxicity tests.

Facility Mixing Zone Details (if applicable): NA

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

Date	Parameter and Units	Limit	Result
2/28/2006	BOD, CARBONACEOUS 5 DAY, 20C (mg/L)	10 MAX	11
8/31/2006	BOD, CARBONACEOUS 5 DAY, 20C (mg/L)	10 MAX	12
11/30/2006	BOD, CARBONACEOUS 5 DAY, 20C (mg/L)	10 MAX	12
9/30/2007	BOD, CARBONACEOUS 5 DAY, 20C (mg/L)	10 MAX	18
2/29/2008	BOD, CARBONACEOUS 5 DAY, 20C (mg/L)	10 MAX	34
4/30/2008	BOD, CARBONACEOUS 5 DAY, 20C (mg/L)	10 MAX	27
5/31/2008	BOD, CARBONACEOUS 5 DAY, 20C (mg/L)	10 MAX	23
9/30/2009	BOD, CARBONACEOUS 5 DAY, 20C (mg/L)	10 MAX	11
7/31/2005	NITROGEN, TOTAL (mg/L)	3.75 MO AVG	10.82
7/31/2005	NITROGEN, TOTAL (mg/L)	6.0 WKLY AVG	20
8/31/2005	NITROGEN, TOTAL (mg/L)	3.75 MO AVG	4.86
8/31/2005	NITROGEN, TOTAL (mg/L)	6.0 WKLY AVG	6.3
12/31/2005	NITROGEN, TOTAL (mg/L)	3.75 MO AVG	6.68
12/31/2005	NITROGEN, TOTAL (mg/L)	6.0 WKLY AVG	13
1/31/2006	NITROGEN, TOTAL (mg/L)	3.75 MO AVG	4.56
1/31/2006	NITROGEN, TOTAL (mg/L)	3.0 ANNL AVG	3.5
1/31/2006	NITROGEN, TOTAL (mg/L)	6.0 WKLY AVG	7.0
2/28/2006	NITROGEN, TOTAL (mg/L)	3.0 ANNL AVG	3.6
3/31/2006	NITROGEN, TOTAL (mg/L)	3.0 ANNL AVG	3.6
4/30/2006	NITROGEN, TOTAL (mg/L)	3.0 ANNL AVG	3.7
6/30/2006	NITROGEN, TOTAL (mg/L)	3.0 ANNL AVG	3.9
7/31/2006	NITROGEN, TOTAL (mg/L)	3.0 ANNL AVG	3.09
2/29/2008	NITROGEN, TOTAL (mg/L)	3.75 MO AVG	3.9

Date	Parameter and Units	Limit	Result
2/29/2008	NITROGEN, TOTAL (mg/L)	6.0 WKLY AVG	11
12/31/2008	NITROGEN, TOTAL (mg/L)	6.0 WKLY AVG	8.4
12/31/2008	PHOSPHORUS, TOTAL (mg/L)	2.0 MAX	2.9
4/30/2006	COLIFORM, FECAL, % LESS THAN DETECTION	75% Less than detection	65
7/31/2006	COLIFORM, FECAL, % LESS THAN DETECTION	75% Less than detection	57
7/31/2006	COLIFORM, FECAL	25#/1000 mL	100
2/29/2008	OXYGEN, DISSOLVED (mg/L)	5.0 MIN	1.0

Describe previous FYI and WQBEL study:

March 2005 FYI Report submitted under separate attachment

Describe previous or current Enforcement Actions (including WLs):

The Department issued Warning Letter No. WL06-0022DW52SWD on November 9, 2006 for effluent quality exceedances of total nitrogen single sample maximum, monthly average and annual average limits, total phosphorus single sample maximum and monthly average limits, fecal coliform single sample maximum and percent non-detectable limits, CBOD5 single sample maximum limit and toxicity in *Ceriodaphnia dubia* reproduction. The Department and representatives of Mid-County Services, Inc. met on December 7, 2006. During the meeting, Mid-County representatives indicated that a number of facility upgrades were implemented to ensure that the facility met its effluent quality limits. These upgrades included rehabilitation of the denitrification filters, the installation of two new blowers, installation of a new chlorine pump and the replacement of simplex chlorine pumps with duplex pumps. Additionally, Mid-County representatives indicated that operational and managerial changes were also made to improve facility performance. Additional effluent limit exceedances were reported through June 2008. The permittee entered into Consent Order OGC File No. 07-1130 on July 22, 2008 to resolve the exceedances, and pay $18,025.00 in penalties and costs. The case was subsequently closed.

Describe any violations or problems noted in previous inspection:

Over the past two years, only minor operation/maintenance and record keeping deficiencies were noted.

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

Trending indicates sporadic exceedances of CBOD5, TN and total residual chlorine.

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

PART II: Sampling Event Information

Date(s) sample collected: 3/1/2010	Sampler(s): Jason Cohen, Pete Wenner
Temperature (Deg C): 18.52	pH (SU): 7.47
Dissolved Oxygen (mg/L): 8.16 mg/L	Conductivity (umhos/cm): 920
Total Residual Chlorine (mg/L): <0.02 mg/L	Total Residual Chlorine - after Disinfection (mg/L):
Method of Chlorination: Liquid Bleach	Method of De-chlorination: Bi-sulfite
Flow During Sample Collection for each outfall(MGD): 0.684	
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): See attached spreadsheet	
Describe Discharge during Sampling Event: Continuous Intermittent Seasonal Rainfall Dependent Other, please specify	

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. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

High levels of fecal coliform bacteria may constitute an 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.

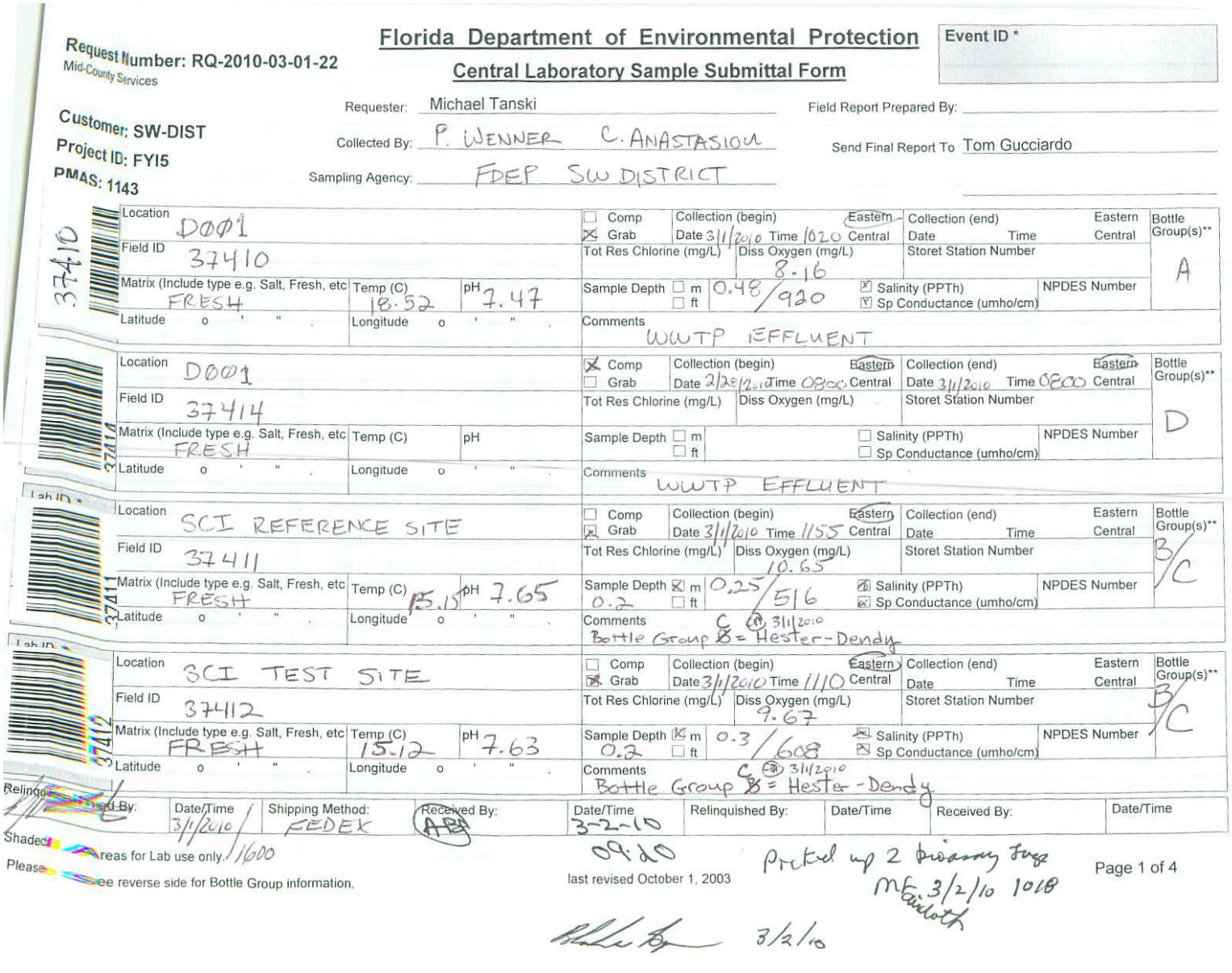
Sites in Category 2 are described as having an average of 30 species with several different taxa of Ephemeroptera and Trichoptera. A Category 2 site also has several different long-lived taxa and, on average, 5 clinger and 6 sensitive taxa. There is a slight increase in dominance by a single taxon relative 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



Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: RQ-2010-03-01-22
Mid-County Services

Event ID *

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

Requester: Michael Tanski
Collected By: P. WENNER C. ANASTASIOU
Sampling Agency: FDEP SW DISTRICT
Field Report Prepared By:
Send Final Report To Tom Gucciardo

37410	Location D001			Comp / Grab (X)	Collection (begin) Date 3/1/2010 Time 1020 Eastern / Central	Collection (end) Date Time Eastern / Central	Bottle Group(s)** A
	Field ID 37410			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 8.16	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc) FRESH	Temp (C) 18.52	pH 7.47	Sample Depth m / ft	0.48 / 920	Salinity (PPTh) (X) / Sp Conductance (umho/cm) (Y)	NPDES Number
	Latitude o ' "	Longitude o ' "		Comments WWTP EFFLUENT			
37414	Location D001			Comp (X) / Grab	Collection (begin) Date 2/28/2010 Time 0800 Eastern / Central	Collection (end) Date 3/1/2010 Time 0800 Eastern / Central	Bottle Group(s)** D
	Field ID 37414			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc) FRESH	Temp (C)	pH	Sample Depth m / ft		Salinity (PPTh) / Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' "	Longitude o ' "		Comments WWTP EFFLUENT			
37411	Location SCI REFERENCE SITE			Comp / Grab (X)	Collection (begin) Date 3/1/2010 Time 1155 Eastern / Central	Collection (end) Date Time Eastern / Central	Bottle Group(s)** B/C
	Field ID 37411			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 10.65	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc) FRESH	Temp (C) 15.15	pH 7.65	Sample Depth (X) m 0.2 / ft	0.25 / 516	Salinity (PPTh) (X) / Sp Conductance (umho/cm) (X)	NPDES Number
	Latitude o ' "	Longitude o ' "		Comments C (X) 3/1/2010 Bottle Group B = Hester-Dendy			
37412	Location SCI TEST SITE			Comp / Grab (X)	Collection (begin) Date 3/1/2010 Time 1110 Eastern / Central	Collection (end) Date Time Eastern / Central	Bottle Group(s)** B/C
	Field ID 37412			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 9.67	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc) FRESH	Temp (C) 15.12	pH 7.63	Sample Depth (X) m 0.2 / ft	0.3 / 608	Salinity (PPTh) (X) / Sp Conductance (umho/cm) (X)	NPDES Number
	Latitude o ' "	Longitude o ' "		Comments C (X) 3/1/2010 Bottle Group B = Hester-Dendy			

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[illegible]	3/1/2010 1600	FEDEX	ABB	3-2-10 09:20				

Shaded areas for Lab use only.

Please see reverse side for Bottle Group information.

last revised October 1, 2003

Picked up 2 biosamy bugs MF Faulkner 3/2/10 1018

3/2/10

Page 1 of 4

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-03-01-22
Mid-County Services

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

Requester: Michael Tanski
Collected By: P. WENNER C. ANASTASIOU
Sampling Agency: FDEP SW. DISTRICT

Field Report Prepared By:
Send Final Report To Tom Gucciardo

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
37413	FIELD BLANK	☐ Comp ☒ Grab Date 3/1/2010 Time 1040 Eastern Central	Date Time Eastern Central	E
	Field ID: 37413	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc): DI WATER	Temp (C)	pH	Sample Depth ☐ m ☐ ft
		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .	Comments	

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

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

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

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	3/1/2010 1600	FEDEX	ABB	3-2-10 09:20				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Advanced
Environmental Laboratories, Inc.

☐ 6601 Southpoint Pkwy. • Jacksonville, FL 32216 • 904.363.9350 • Fax 904.363.9354 • E82574
☑ 9610 Princess Palm Ave • Tampa, FL 33619 • 813.630.9616 • Fax 813.630.4327 • E84589
☐ 2106 NW 67th Place, Ste 7 • Gainesville, FL 32606 • 352.367.1500 • Fax 352.367.0050 • E82620
☐ 526 S. North Lake Blvd., Ste. 1016 • Altamonte Springs, FL 32701 • 407.937.1594 • Fax 407.937.1597 • E83076

LAB NUMBER:

Page _____ of _____

CLIENT NAME:	FDEP - SW District	PROJECT NAME:	MID-COUNTY SERVICES
ADDRESS:	13051 N. Telecom Pkwy	P.O. NUMBER/PROJECT NUMBER:	RQ 2010-03-01-22
	Temple Terrace, FL 33637	PROJECT LOCATION:	PINELLAS
PHONE:	813-632-7600	FAX:	
CONTACT:	Jason Cohen	SAMPLED BY:	P. Wenner, J. Cohen

TURN AROUND TIME:
☑ STANDARD
☐ RUSH _____

REMARKS/SPECIAL INSTRUCTIONS
Please run in 3 dilution volumes : 10, 20, 50

WW=waste SW=surface water GW=ground water DW=drinking water O=oil A=air SO=soil SL=sludge

Field ID	SITE NAME	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT
37378	D-001	Grab	3/1/2010	1020	WW	1

BOTTLE SIZE & TYPE	Sterile Plastic Bottle							LAB NUMBER
ARNEAQLUYISRIESD	Fecal Coliforms							
Preserv	Ice, T							
	X							

I-Ice H=(HCl) S=(H_2SO_4) N=(HNO_3) T=(Sodium Thiosulfate)

	Relinquished by:	Date	Time	Received by:	Date	Time
1		3/2/10	1440		3/1/10	1744
2						
3						
4						

Shipment
Out: _____
Ret: _____

Method
Via: _____
Via: _____

Sample Kit
RB _____ D/T _____
AB _____ D/T _____
Trip Bl. _____

Cooler # _____

Received on Ice ☐ Yes ☐ No QC ☐ sent ☐ received

revised 3/08

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-03-01-22
Mid-County Services

Requester: Michael Tanski

Field Report Prepared By:

Customer: SW-DIST

Collected By: P WENNER, J COHEN

Send Final Report To Tom Gucciardo

Project ID: FYI5

Sampling Agency: FDEP SWD

PMAS: 1143

Lab ID *	Location / Field ID	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Latitude	Longitude	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	Sample Depth m / ft	Salinity (PPTh) / Sp Conductance (umho/cm)	NPDES Number	Bottle Group(s)**	Comments
	D-001 (D-0) 37415	FRESH			o ' "	o ' "	☒ Comp ☐ Grab	3/2/10 Time 800	3/3/10 Time 800				☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		A	SAMPLE BOTTLED @ 1045
							☐ Comp ☐ Grab	Date Time	Date Time				☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)			
							☐ Comp ☐ Grab	Date Time	Date Time				☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)			
							☐ Comp ☐ Grab	Date Time	Date Time				☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)			2 biopsy, Rec'd in Tox by J.D. 1144 3.4.10

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	3/3/10 1300	FED Ex						3-4-10 / 9.15

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-03-29-24
Mulberry-Mid County Toxicity

Requester: Jason Cohen
Field Report Prepared By:

Customer: SW-DIST
Collected By: J Cohen P. Wenner
Send Final Report To Pete Wenner

Project ID: FYI3
Sampling Agency: FDEP SWD

PMAS:

Lab ID * | Location: D 001 | 37479

☐ Comp ☑ Grab | Collection (begin) Date 3/29/10 Time 1035 Eastern Central | Collection (end) Date Time Eastern Central | Bottle Group(s)**: A

Field ID | Tot Res Chlorine (mg/L) | Diss Oxygen (mg/L): 8.82 | Storet Station Number

Matrix (Include type e.g. Salt, Fresh, etc): FRESH | Temp (C): 22.83 | pH: 6.40

Sample Depth ☑ m ☐ ft: 0.2 | 0.45 / 914 ☑ Salinity (PPTh) ☑ Sp Conductance (umho/cm) | NPDES Number

Latitude o ' " . | Longitude o ' " .

Comments: MID County

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
	3/29/10 1415	FED Ex	A-BB	3-30-10 09:11			2 business @ 9:56 3-30-10 Bi Mexner	

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Appendix E

Chemical analysis of effluent and receiving water

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
3/1/2010 8:00	Effluent	37414	Toxicology	Bioassay-Chronic-Scrn-FW-C.dubia, NOEC	100		NOEC		
3/1/2010 8:00	Effluent	37414	Toxicology	Bioassay-Chronic-Scrn-FW-Fish, NOEC	No Result	O	NOEC		
3/1/2010 8:00	Effluent	37414	Metals	Calcium	75		mg/L	0.075	0.3
3/1/2010 8:00	Effluent	37414	Metals	Arsenic	0.25	U	ug/L	0.25	1
3/1/2010 8:00	Effluent	37414	Metals	Selenium	0.2	U	ug/L	0.2	0.8
3/1/2010 8:00	Effluent	37414	Metals	Aluminum	60	U	ug/L	60	240
3/1/2010 8:00	Effluent	37414	Metals	Iron	81	I	ug/L	30	120
3/1/2010 8:00	Effluent	37414	Metals	Silver	0.025	U	ug/L	0.025	0.1
3/1/2010 8:00	Effluent	37414	Metals	Chromium	0.3	U	ug/L	0.3	1.2
3/1/2010 8:00	Effluent	37414	Metals	Nickel	2.42		ug/L	0.25	1
3/1/2010 8:00	Effluent	37414	Metals	Magnesium	6.97		mg/L	0.04	0.16
3/1/2010 8:00	Effluent	37414	Metals	Zinc	33		ug/L	5	20
3/1/2010 8:00	Effluent	37414	Metals	Lead	0.2	U	ug/L	0.2	0.8
3/1/2010 8:00	Effluent	37414	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
3/1/2010 8:00	Effluent	37414	Metals	Copper	3.44		ug/L	0.5	0.5
3/1/2010 8:00	Effluent	37414	Nutrients	TSS	4	U	mg/L	4	16
3/1/2010 8:00	Effluent	37414	Nutrients	Ammonia-N	0.054		mg N/L	0.01	0.02
3/1/2010 8:00	Effluent	37414	Nutrients	Kjeldahl Nitrogen	1.1	J	mg N/L	0.08	0.2
3/1/2010 8:00	Effluent	37414	Nutrients	O-Phosphate-P	0.56		mg P/L	0.04	0.1
3/1/2010 8:00	Effluent	37414	Nutrients	Total-P	0.69		mg P/L	0.005	0.05
3/1/2010 8:00	Effluent	37414	Nutrients	Turbidity	1.4		NTU	0.1	0.1
3/1/2010 8:00	Effluent	37414	Nutrients	NO2NO3-N	2.6		mg N/L	0.08	0.2
3/1/2010 8:00	Effluent	37414	Pesticides	Azinphos Methyl	0.19	UJ	ug/L	0.19	0.76
3/1/2010 8:00	Effluent	37414	Pesticides	Chlorpyrifos Ethyl	0.047	U	ug/L	0.047	0.19
3/1/2010 8:00	Effluent	37414	Pesticides	Malathion	0.14	U	ug/L	0.14	0.56
3/1/2010 8:00	Effluent	37414	Pesticides	Metribuzin	0.095	UJ	ug/L	0.095	0.38
3/1/2010 8:00	Effluent	37414	Pesticides	Naled	0.76	U	ug/L	0.76	3
3/1/2010 8:00	Effluent	37414	Pesticides	Alachlor	0.57	U	ug/L	0.57	2.3
3/1/2010 8:00	Effluent	37414	Pesticides	Simazine	0.047	U	ug/L	0.047	0.19
3/1/2010 8:00	Effluent	37414	Pesticides	Ametryn	0.047	U	ug/L	0.047	0.19
3/1/2010 8:00	Effluent	37414	Pesticides	Metolachlor	0.47	U	ug/L	0.47	1.9
3/1/2010 8:00	Effluent	37414	Pesticides	Fenamiphos	0.19	UJ	ug/L	0.19	0.76
3/1/2010 8:00	Effluent	37414	Pesticides	Parathion Ethyl	0.14	U	ug/L	0.14	0.56
3/1/2010 8:00	Effluent	37414	Pesticides	Prometryn	0.14	U	ug/L	0.14	0.56
3/1/2010 8:00	Effluent	37414	Pesticides	Chlorpyrifos Methyl	0.095	U	ug/L	0.095	0.38
3/1/2010 8:00	Effluent	37414	Pesticides	Fonofos	0.095	U	ug/L	0.095	0.38
3/1/2010 8:00	Effluent	37414	Pesticides	Norflurazon	0.14	U	ug/L	0.14	0.56

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
3/1/2010 8:00	Effluent	37414	Pesticides	Phorate	0.047	U	ug/L	0.047	0.19
3/1/2010 8:00	Effluent	37414	Pesticides	Diazinon	0.047	U	ug/L	0.047	0.19
3/1/2010 8:00	Effluent	37414	Pesticides	Hexazinone	0.095	U	ug/L	0.095	0.38
3/1/2010 8:00	Effluent	37414	Pesticides	Metalaxyl	0.24	UJ	ug/L	0.24	0.96
3/1/2010 8:00	Effluent	37414	Pesticides	Parathion Methyl	0.095	U	ug/L	0.095	0.38
3/1/2010 8:00	Effluent	37414	Pesticides	Atrazine	0.047	U	ug/L	0.047	0.19
3/1/2010 8:00	Effluent	37414	Pesticides	Bromacil	0.19	U	ug/L	0.19	0.76
3/1/2010 8:00	Effluent	37414	Pesticides	Butylate	0.19	U	ug/L	0.19	0.76
3/1/2010 8:00	Effluent	37414	Pesticides	Ethion	0.047	U	ug/L	0.047	0.19
3/1/2010 8:00	Effluent	37414	Pesticides	Ethoprop	0.095	U	ug/L	0.095	0.38
3/1/2010 8:00	Effluent	37414	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	7.8
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Naphthalene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	56	I	ug/L	15	59
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	7.8
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Bromoform	0.5	UJ	ug/L	0.5	2
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Benzo(a)pyrene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	7.8
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Isophorone	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Benzo(a)anthracene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	U	ug/L	39	160
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	2-Chloronaphthalene	0.98	UJ	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	2,4-Dichlorophenol	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	2,4-Dinitrotoluene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	2,6-Dinitrotoluene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Benzo(b)fluoranthene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	20
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Diethyl phthalate	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Phenanthrene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Bromodichloromethane	5		ug/L	0.2	1
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	2-Nitrophenol	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Pyrene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Dibromochloromethane	0.68	I	ug/L	0.2	1
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.98	U	ug/L	0.98	3.9

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Chrysene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	U	ug/L	4.9	20
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Di-n-octyl phthalate	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Dimethyl phthalate	9.8	U	ug/L	9.8	39
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Fluoranthene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	59
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	2-Chlorophenol	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Acenaphthene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Acenaphthylene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Benzidine	98	U	ug/L	98	390
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Fluorene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Phenol	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Chloroform	43		ug/L	0.2	1
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	59
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Anthracene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Benzo(k)fluoranthene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Hexachlorobenzene	0.98	U	ug/L	0.98	3.9
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	7.8
3/1/2010 8:00	Effluent	37414	Priority Organic Pollutants	2,4-Dimethylphenol	9.8	U	ug/L	9.8	39
3/1/2010 10:20	Effluent	37410	AGP/LN	Algal Growth Potential	14.2		mg DryWt/L	0.3	0.9
3/1/2010 10:20	Effluent	37410	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	13		mg/L	0.2	2
3/1/2010 10:20	Effluent	37410	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
3/1/2010 10:20	Effluent	37410	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
3/1/2010 10:20	Effluent	37410	Overflow	Fecal Coliforms-Membrane Filter	1	U	#/100 mL		
3/1/2010 10:20	Effluent	37410	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
3/1/2010 10:20	Effluent	37410	Metals	Selenium	0.2	U	ug/L	0.2	0.8
3/1/2010 10:20	Effluent	37410	Metals	Magnesium	6.89		mg/L	0.04	0.16
3/1/2010 10:20	Effluent	37410	Metals	Nickel	2.32		ug/L	0.25	1
3/1/2010 10:20	Effluent	37410	Metals	Silver	0.025	U	ug/L	0.025	0.1
3/1/2010 10:20	Effluent	37410	Metals	Zinc	28		ug/L	5	20
3/1/2010 10:20	Effluent	37410	Metals	Calcium	73.1		mg/L	0.075	0.3
3/1/2010 10:20	Effluent	37410	Metals	Lead	0.2	U	ug/L	0.2	0.8
3/1/2010 10:20	Effluent	37410	Metals	Chromium	0.3	U	ug/L	0.3	1.2

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
3/1/2010 10:20	Effluent	37410	Metals	Iron	140		ug/L	30	120
3/1/2010 10:20	Effluent	37410	Metals	Aluminum	60	U	ug/L	60	240
3/1/2010 10:20	Effluent	37410	Metals	Copper	2.54		ug/L	0.5	0.5
3/1/2010 10:20	Effluent	37410	Metals	Arsenic	0.25	U	ug/L	0.25	1
3/1/2010 10:20	Effluent	37410	Nutrients	Total-P	0.86		mg P/L	0.005	0.05
3/1/2010 10:20	Effluent	37410	Nutrients	Ammonia-N	0.054		mg N/L	0.01	0.02
3/1/2010 10:20	Effluent	37410	Nutrients	Color (apparent)	5		PCU	5	5
3/1/2010 10:20	Effluent	37410	Nutrients	Kjeldahl Nitrogen	1		mg N/L	0.08	0.2
3/1/2010 10:20	Effluent	37410	Nutrients	TSS	4	I	mg/L	4	16
3/1/2010 10:20	Effluent	37410	Nutrients	O-Phosphate-P	0.74		mg P/L	0.04	0.1
3/1/2010 10:20	Effluent	37410	Nutrients	Organic Carbon	8.6		mg C/L	1	5
3/1/2010 10:20	Effluent	37410	Nutrients	NO2NO3-N	0.13	I	mg N/L	0.08	0.2
3/1/2010 10:20	Effluent	37410	Nutrients	Turbidity	1.4		NTU	0.1	0.1
3/1/2010 10:20	Effluent	37410	Pesticides	Ametryn	0.047	U	ug/L	0.047	0.19
3/1/2010 10:20	Effluent	37410	Pesticides	Chlorpyrifos Methyl	0.095	U	ug/L	0.095	0.38
3/1/2010 10:20	Effluent	37410	Pesticides	Naled	0.76	U	ug/L	0.76	3
3/1/2010 10:20	Effluent	37410	Pesticides	Phorate	0.047	U	ug/L	0.047	0.19
3/1/2010 10:20	Effluent	37410	Pesticides	Prometryn	0.14	U	ug/L	0.14	0.56
3/1/2010 10:20	Effluent	37410	Pesticides	Alachlor	0.57	U	ug/L	0.57	2.3
3/1/2010 10:20	Effluent	37410	Pesticides	Hexazinone	0.095	U	ug/L	0.095	0.38
3/1/2010 10:20	Effluent	37410	Pesticides	Norflurazon	0.14	U	ug/L	0.14	0.56
3/1/2010 10:20	Effluent	37410	Pesticides	Azinphos Methyl	0.19	UJ	ug/L	0.19	0.76
3/1/2010 10:20	Effluent	37410	Pesticides	Bromacil	0.19	U	ug/L	0.19	0.76
3/1/2010 10:20	Effluent	37410	Pesticides	Butylate	0.19	U	ug/L	0.19	0.76
3/1/2010 10:20	Effluent	37410	Pesticides	Atrazine	0.11	I	ug/L	0.047	0.19
3/1/2010 10:20	Effluent	37410	Pesticides	Ethion	0.047	U	ug/L	0.047	0.19
3/1/2010 10:20	Effluent	37410	Pesticides	Ethoprop	0.095	U	ug/L	0.095	0.38
3/1/2010 10:20	Effluent	37410	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
3/1/2010 10:20	Effluent	37410	Pesticides	Simazine	0.047	U	ug/L	0.047	0.19
3/1/2010 10:20	Effluent	37410	Pesticides	Chlorpyrifos Ethyl	0.047	U	ug/L	0.047	0.19
3/1/2010 10:20	Effluent	37410	Pesticides	Metribuzin	0.095	UJ	ug/L	0.095	0.38
3/1/2010 10:20	Effluent	37410	Pesticides	Parathion Methyl	0.095	U	ug/L	0.095	0.38
3/1/2010 10:20	Effluent	37410	Pesticides	Diazinon	0.047	U	ug/L	0.047	0.19
3/1/2010 10:20	Effluent	37410	Pesticides	Fenamiphos	0.19	UJ	ug/L	0.19	0.76
3/1/2010 10:20	Effluent	37410	Pesticides	Malathion	0.14	U	ug/L	0.14	0.56
3/1/2010 10:20	Effluent	37410	Pesticides	Metalaxyl	0.24	UJ	ug/L	0.24	0.96
3/1/2010 10:20	Effluent	37410	Pesticides	Metolachlor	0.47	U	ug/L	0.47	1.9
3/1/2010 10:20	Effluent	37410	Pesticides	Fonofos	0.095	U	ug/L	0.095	0.38
3/1/2010 10:20	Effluent	37410	Pesticides	Parathion Ethyl	0.14	U	ug/L	0.14	0.56
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Acenaphthylene	1	U	ug/L	1	4

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Fluoranthene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	40
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Di-n-butyl phthalate	5.1	U	ug/L	5.1	20
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Benzo(g,h,i)perylene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Acenaphthene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	61
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	61
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Fluorene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Naphthalene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Phenanthrene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Dibromochloromethane	0.8	I	ug/L	0.2	1
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	400
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Hexachlorobutadiene	3	U	ug/L	3	12
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	8.1
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Bromoform	0.5	UJ	ug/L	0.5	2
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	61
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Hexachlorocyclopentadiene	3	U	ug/L	3	12
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	8.1
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Benzo(b)fluoranthene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Benzo(k)fluoranthene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	8.1
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Pyrene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	40
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Pentachlorophenol	3	U	ug/L	3	12
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Bromodichloromethane	7		ug/L	0.2	1
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	3,3'-Dichlorobenzidine	40	U	ug/L	40	160
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Anthracene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Benzo(a)anthracene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Benzo(a)pyrene	1	U	ug/L	1	4

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Butyl benzyl phthalate	5.1	U	ug/L	5.1	20
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Chrysene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Hexachloroethane	3	U	ug/L	3	12
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	2-Chloronaphthalene	1	UJ	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3	U	ug/L	3	12
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	8.1
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3	U	ug/L	3	12
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3	U	ug/L	3	12
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	Chloroform	56		ug/L	0.2	1
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4
3/1/2010 10:20	Effluent	37410	Field Parameter	Dissolved Oxygen	8.16		mg/L		
3/1/2010 10:20	Effluent	37410	Field Parameter	Specific Conductance	920		umhos/cm		
3/1/2010 10:20	Effluent	37410	Field Parameter	Temperature	18.52		C		
3/1/2010 10:20	Effluent	37410	Field Parameter	pH	7.47				
3/29/2010 10:35	Effluent	D 001	Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	L	LC50		
3/29/2010 10:35	Effluent	D 001	Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	L	LC50		
3/29/2010 10:35	Effluent	D 001	Field Parameter	Temperature	22.83		C		
3/29/2010 10:35	Effluent	D 001	Field Parameter	pH	6.4				
3/29/2010 10:35	Effluent	D 001	Field Parameter	Sample Depth	0.2		m		
3/29/2010 10:35	Effluent	D 001	Field Parameter	Specific Conductance	914		umhos/cm		
3/29/2010 10:35	Effluent	D 001	Field Parameter	Dissolved Oxygen	8.82		mg/L		
3/1/2010 11:55	Control Site	37411	AGP/LN	Algal Growth Potential	13.7		mg DryWt/L	0.3	0.9
3/1/2010 11:55	Control Site	37411	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.78	I	ug/L	0.4	1.2
3/1/2010 11:55	Control Site	37411	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	2.1		ug/L	0.55	1.7
3/1/2010 11:55	Control Site	37411	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	2.1	V	mg/L	0.2	2
3/1/2010 11:55	Control Site	37411	Metals	Nickel	0.86	I	ug/L	0.25	1
3/1/2010 11:55	Control Site	37411	Metals	Lead	0.2	U	ug/L	0.2	0.8
3/1/2010 11:55	Control Site	37411	Metals	Magnesium	6.17		mg/L	0.04	0.16
3/1/2010 11:55	Control Site	37411	Metals	Iron	170		ug/L	30	120
3/1/2010 11:55	Control Site	37411	Metals	Silver	0.025	U	ug/L	0.025	0.1
3/1/2010 11:55	Control Site	37411	Metals	Chromium	0.81	I	ug/L	0.3	1.2
3/1/2010 11:55	Control Site	37411	Metals	Selenium	0.27	I	ug/L	0.2	0.8
3/1/2010 11:55	Control Site	37411	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
3/1/2010 11:55	Control Site	37411	Metals	Arsenic	1.3		ug/L	0.25	1
3/1/2010 11:55	Control Site	37411	Metals	Zinc	6.3	I	ug/L	5	20
3/1/2010 11:55	Control Site	37411	Metals	Copper	1.71		ug/L	0.5	0.5
3/1/2010 11:55	Control Site	37411	Metals	Calcium	53		mg/L	0.075	0.3

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
3/1/2010 11:55	Control Site	37411	Metals	Aluminum	79	I	ug/L	60	240
3/1/2010 11:55	Control Site	37411	Nutrients	Turbidity	1		NTU	0.1	0.1
3/1/2010 11:55	Control Site	37411	Nutrients	NO2NO3-N	0.19		mg N/L	0.004	0.01
3/1/2010 11:55	Control Site	37411	Nutrients	Total-P	0.078	A	mg P/L	0.004	0.01
3/1/2010 11:55	Control Site	37411	Nutrients	Kjeldahl Nitrogen	0.55		mg N/L	0.08	0.2
3/1/2010 11:55	Control Site	37411	Nutrients	O-Phosphate-P	0.056		mg P/L	0.004	0.01
3/1/2010 11:55	Control Site	37411	Nutrients	TSS	4	U	mg/L	4	16
3/1/2010 11:55	Control Site	37411	Nutrients	Ammonia-N	0.035		mg N/L	0.01	0.02
3/1/2010 11:55	Control Site	37411	Field Parameter	Temperature	15.15		C		
3/1/2010 11:55	Control Site	37411	Field Parameter	Specific Conductance	516		umhos/cm		
3/1/2010 11:55	Control Site	37411	Field Parameter	pH	7.65				
3/1/2010 11:55	Control Site	37411	Field Parameter	Dissolved Oxygen	10.65		mg/L		
3/1/2010 11:55	Control Site	37411	Field Parameter	Sample Depth	0.2		m		
3/1/2010 11:10	Test Site	37412	AGP/LN	Algal Growth Potential	13.9		mg DryWt/L	0.3	0.9
3/1/2010 11:10	Test Site	37412	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.3	IV	mg/L	0.2	2
3/1/2010 11:10	Test Site	37412	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
3/1/2010 11:10	Test Site	37412	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.4	I	ug/L	0.55	1.7
3/1/2010 11:10	Test Site	37412	Metals	Aluminum	60	U	ug/L	60	240
3/1/2010 11:10	Test Site	37412	Metals	Lead	0.2	U	ug/L	0.2	0.8
3/1/2010 11:10	Test Site	37412	Metals	Selenium	0.28	I	ug/L	0.2	0.8
3/1/2010 11:10	Test Site	37412	Metals	Magnesium	6.57		mg/L	0.04	0.16
3/1/2010 11:10	Test Site	37412	Metals	Arsenic	1.1		ug/L	0.25	1
3/1/2010 11:10	Test Site	37412	Metals	Chromium	0.7	I	ug/L	0.3	1.2
3/1/2010 11:10	Test Site	37412	Metals	Copper	1.84		ug/L	0.5	0.5
3/1/2010 11:10	Test Site	37412	Metals	Zinc	10	I	ug/L	5	20
3/1/2010 11:10	Test Site	37412	Metals	Iron	170		ug/L	30	120
3/1/2010 11:10	Test Site	37412	Metals	Nickel	1.07		ug/L	0.25	1
3/1/2010 11:10	Test Site	37412	Metals	Calcium	56.6		mg/L	0.075	0.3
3/1/2010 11:10	Test Site	37412	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
3/1/2010 11:10	Test Site	37412	Metals	Silver	0.025	U	ug/L	0.025	0.1
3/1/2010 11:10	Test Site	37412	Nutrients	Ammonia-N	0.038		mg N/L	0.01	0.02
3/1/2010 11:10	Test Site	37412	Nutrients	O-Phosphate-P	0.24		mg P/L	0.004	0.01
3/1/2010 11:10	Test Site	37412	Nutrients	Turbidity	1.1	A	NTU	0.1	0.1
3/1/2010 11:10	Test Site	37412	Nutrients	TSS	5	I	mg/L	4	16
3/1/2010 11:10	Test Site	37412	Nutrients	Kjeldahl Nitrogen	0.68		mg N/L	0.08	0.2
3/1/2010 11:10	Test Site	37412	Nutrients	Total-P	0.19		mg P/L	0.004	0.01
3/1/2010 11:10	Test Site	37412	Nutrients	NO2NO3-N	0.17		mg N/L	0.004	0.01
3/1/2010 11:10	Test Site	37412	Field Parameter	Dissolved Oxygen	9.67		mg/L		
3/1/2010 11:10	Test Site	37412	Field Parameter	pH	7.63				
3/1/2010 11:10	Test Site	37412	Field Parameter	Temperature	15.12		C		
3/1/2010 11:10	Test Site	37412	Field Parameter	Specific Conductance	608		umhos/cm		

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
3/1/2010 11:10	Test Site	37412	Field Parameter	Sample Depth	0.2		m		
3/1/2010 10:40	Field Blank	37413	Metals	Aluminum	60	U	ug/L	60	240
3/1/2010 10:40	Field Blank	37413	Metals	Selenium	0.2	U	ug/L	0.2	0.8
3/1/2010 10:40	Field Blank	37413	Metals	Copper	0.5	U	ug/L	0.5	0.5
3/1/2010 10:40	Field Blank	37413	Metals	Lead	0.2	U	ug/L	0.2	0.8
3/1/2010 10:40	Field Blank	37413	Metals	Iron	30	U	ug/L	30	120
3/1/2010 10:40	Field Blank	37413	Metals	Calcium	0.075	U	mg/L	0.075	0.3
3/1/2010 10:40	Field Blank	37413	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
3/1/2010 10:40	Field Blank	37413	Metals	Zinc	5	U	ug/L	5	20
3/1/2010 10:40	Field Blank	37413	Metals	Silver	0.025	U	ug/L	0.025	0.1
3/1/2010 10:40	Field Blank	37413	Metals	Nickel	0.25	U	ug/L	0.25	1
3/1/2010 10:40	Field Blank	37413	Metals	Arsenic	0.25	U	ug/L	0.25	1
3/1/2010 10:40	Field Blank	37413	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
3/1/2010 10:40	Field Blank	37413	Metals	Chromium	0.3	U	ug/L	0.3	1.2
3/1/2010 10:40	Field Blank	37413	Nutrients	TSS	4	U	mg/L	4	16
3/1/2010 10:40	Field Blank	37413	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
3/1/2010 10:40	Field Blank	37413	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
3/1/2010 10:40	Field Blank	37413	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
3/1/2010 10:40	Field Blank	37413	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
3/1/2010 10:40	Field Blank	37413	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
3/1/2010 10:40	Field Blank	37413	Pesticides	Naled	0.76	U	ug/L	0.76	3
3/1/2010 10:40	Field Blank	37413	Pesticides	Alachlor	0.57	U	ug/L	0.57	2.3
3/1/2010 10:40	Field Blank	37413	Pesticides	Azinphos Methyl	0.19	UJ	ug/L	0.19	0.76
3/1/2010 10:40	Field Blank	37413	Pesticides	Malathion	0.14	U	ug/L	0.14	0.56
3/1/2010 10:40	Field Blank	37413	Pesticides	Butylate	0.19	U	ug/L	0.19	0.76
3/1/2010 10:40	Field Blank	37413	Pesticides	Ethion	0.048	U	ug/L	0.048	0.19
3/1/2010 10:40	Field Blank	37413	Pesticides	Fonofos	0.096	U	ug/L	0.096	0.38
3/1/2010 10:40	Field Blank	37413	Pesticides	Ethoprop	0.096	U	ug/L	0.096	0.38
3/1/2010 10:40	Field Blank	37413	Pesticides	Diazinon	0.048	U	ug/L	0.048	0.19
3/1/2010 10:40	Field Blank	37413	Pesticides	Bromacil	0.19	U	ug/L	0.19	0.76
3/1/2010 10:40	Field Blank	37413	Pesticides	Prometryn	0.14	U	ug/L	0.14	0.56
3/1/2010 10:40	Field Blank	37413	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
3/1/2010 10:40	Field Blank	37413	Pesticides	Metolachlor	0.48	U	ug/L	0.48	1.9
3/1/2010 10:40	Field Blank	37413	Pesticides	Hexazinone	0.096	U	ug/L	0.096	0.38
3/1/2010 10:40	Field Blank	37413	Pesticides	Parathion Methyl	0.096	U	ug/L	0.096	0.38
3/1/2010 10:40	Field Blank	37413	Pesticides	Chlorpyrifos Methyl	0.096	U	ug/L	0.096	0.38
3/1/2010 10:40	Field Blank	37413	Pesticides	Chlorpyrifos Ethyl	0.048	U	ug/L	0.048	0.19
3/1/2010 10:40	Field Blank	37413	Pesticides	Ametryn	0.048	U	ug/L	0.048	0.19
3/1/2010 10:40	Field Blank	37413	Pesticides	Phorate	0.048	U	ug/L	0.048	0.19
3/1/2010 10:40	Field Blank	37413	Pesticides	Metribuzin	0.096	UJ	ug/L	0.096	0.38
3/1/2010 10:40	Field Blank	37413	Pesticides	Parathion Ethyl	0.14	U	ug/L	0.14	0.56

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
3/1/2010 10:40	Field Blank	37413	Pesticides	Metalaxyl	0.24	UJ	ug/L	0.24	0.96
3/1/2010 10:40	Field Blank	37413	Pesticides	Simazine	0.048	U	ug/L	0.048	0.19
3/1/2010 10:40	Field Blank	37413	Pesticides	Fenamiphos	0.19	UJ	ug/L	0.19	0.76
3/1/2010 10:40	Field Blank	37413	Pesticides	Atrazine	0.048	U	ug/L	0.048	0.19
3/1/2010 10:40	Field Blank	37413	Pesticides	Norflurazon	0.14	U	ug/L	0.14	0.56
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	2-Chloronaphthalene	0.97	UJ	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	58
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Anthracene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Benzo(a)pyrene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Chrysene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Naphthalene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Dibromochloromethane	0.2	U	ug/L	0.2	1
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	U	ug/L	39	160
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Fluoranthene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.8
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Bromodichloromethane	0.2	U	ug/L	0.2	1
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Benzo(k)fluoranthene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Dimethyl phthalate	9.7	U	ug/L	9.7	39
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Phenanthrene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	58
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Acenaphthene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	U	ug/L	4.9	19
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Diethyl phthalate	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Benzidine	97	U	ug/L	97	390

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Benzo(a)anthracene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.8
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Pyrene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.8
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Benzo(b)fluoranthene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Fluorene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Acenaphthylene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	19
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.8
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Bromoform	0.5	UJ	ug/L	0.5	2
3/1/2010 10:40	Field Blank	37413	Priority Organic Pollutants	Chloroform	0.2	U	ug/L	0.2	1

Appendix F

Toxicological results

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia

Facility: Mid-County WWTF
Address: 2299 Spanish Vista Drive, Dunedin
County: Pinellas 34698-9438
NPDES Permit #: FL 0034789
Contact/District: Pete Werner-Jason Cohen / Southwest

LIMS entry: 3-16-10 MF verified: BA 3-16-10

Diluent/Batch: 20% DMW / 2-23-10 Test Days Used: 0-3
20% DMW / 3-2-10 Test Days Used: 4-5

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

Organism: *Ceriodaphnia dubia*
Organism Batch #: 4-10
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: ☑ YCT ☑ *P. subcapitata*
Food Batch: 10-30-09 12-23-09
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-2010-03-02-62	1252865	3-1-10 1020	3-2-10 1018
Test Day 2	2	TLH-2010-03-04-39	1253678	3-3-10 0800	3-4-10 1144
Test Day 4	3 (A)	TLH-			

2010-03-08-03 1255077 is Lrms # created to replace 1252865 due to log in error

Water Quality Parameters	Batch # 2-23-10	3-2-10	NA	NA	NA		Measured By:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	Not measured	not measured			—	MF
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03	<0.03	<0.03			BA	BA
Alkalinity (mg/L as $CaCO_3$):	97	78	176	188			CF/BA	BA
Hardness (mg/L as $CaCO_3$):	85	85	221	226			CF/BA	BA
Total Ammonia (mg/L as N):	<0.017	<0.017	<0.017	<0.017			MF	BA
Conductivity: (µmhos) mmhos:	185	181	1040	977			BA	BA
Salinity (ppth):	—	—	—	—			—	—

Test Incubated in: Incubator #: 2

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. 25.4 max. 27.0 mean 26.5
Room B246 min. 24.5 max. 26.1 mean 25.3
Test min. 24.0 max. 25.5 mean — MF

Loaded by: MF

Test Replicates	Loaded from culture vial
1	B9
2	A17
3	A22
4	A5
5	A12
6	B21
7	B26
8	B8
9	B15
10	A1

Results	
Control % CV:	32.1%
Dunnetts PMSD:	24.7%
Reproduction NOEC:	100%
Reproduction LOEC:	—
Survival NOEC:	100%
Survival LOEC:	—
ICP_{20}:	>100%
ICP_{25}:	>100%

Investigators' signatures
Marshall Fairbeth
Jana Daniel
Bruce Black
Chelsea French

REVIEWER

Comments: (A) the third sample for the facility was not received. The test was terminated on Day 6 and was completed (renewal) and Days 2-5 with sample #2 MF 3-12-10

Test Page 1 of 4 PAGE TO 00 Revised 07/15/2008 MF

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: Md. County

LIMS Sample # ~~1252565~~ MF ~~1252865~~ 1255077 for lab sample 1

Start Date: 3-2-10 Time: 1245

End Date: 3-8-10 Time: 14:15

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	6	5	4	0	0	4	0	0	0	0	20	10	2.0
	4	0	0	18	8	5	0	4	7	6	9	39	10	3.9
	5	0	10	12	10	10	14	8	11	10	9	~~8694~~	10	~~8~~ 69.4
	6	3	7	21	11	9	10	13	19	12	2	107	10	10.7
	7													
	8													
	Total	9	22	38	29	24	28	25	37	28	20	260	10	26.0

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	4	5	3	0	0	0	0	0	0	0	14	10	1.4
	4	0	26	0	5	0	7	6	3	6	6	33 ~~87~~	10	~~3~~ 3.3
	5	8	8	12	7	5	10	10	9	9	13	91	10	9.1
	6	18	17	20	0	6	10	13	11	8	12	115	10	11.5
	7													
	8													
	Total	30	32	35	12	11	27	29	23	23	31	253	10	25.3

Organisms loaded by: MF

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

Concentration	Mean neonates /adult	% survival
Control	26.0	100
100%	25.3	100

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

revised 7/15/2008 MF

Comments: (5) = Split Brood MF 3-2-10
Split broods counted in total of brood splits from MF 4-22-10

00 02

*Day 0 is test initiation day

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Mid-County SOP TA07_05

LIMS Sample #: 1252865MF for lab sample 1
1255077

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	8.1	24.2	7.8	184					
	1	100%	M	8.2	25.2	7.4	1040					
	Measured by:			MF	MF	MF	MF					
	Recorded by:			MF	MF	MF	MF					
Day 1	sample: Control		M	8.2	24.0	8.3	180	M	8.0	24.0	7.6	188
	1	100%	M	8.5	24.2	8.2	1021	M	8.2	24.0	7.0	1094
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 2	sample: Control		M	8.0	24.3	7.3	175	M	8.1	24.1	7.5	194
	2	100%	M	7.7	25.5	7.3	977	M	8.4	24.2	7.2	1109
	Measured by:			BA	MF	BA	BA		BA	MF	BA	BA
	Recorded by:			BA	MF	BA	BA		BA	MF	BA	BA
Day 3	sample: Control		M	8.0	24.0	7.5	177	M	8.2	24.0	7.4	185
	2	100%	M	7.9	24.5	7.6	987	M	8.4	24.0	7.2	1057
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 4	sample: Control		M	8.1	24.3	7.5	185	M	8.2	24.5	7.6	198
	3	100%	M	8.1	24.4	7.5	990	M	8.4	24.3	7.4	1010
	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	8.1	24.0	7.3	171	M	8.3	24.0	7.2	185
	3	100%	M	8.0	24.0	7.3	945	M	8.5	24.2	7.3	983
	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					M	8.0	24.9	7.2	178
	3		M	Not reviewed				M	8.4	24.9	7.1	961
	Measured by:								BA	BA	BA	BA
	Recorded by:								BA	BA	BA	BA
Day 7	sample: Control		M					M				
	3		M					M				
	Measured by:											
	Recorded by:											
Day 8	sample: Control							M				
	3							M				
	Measured by:											
	Recorded by:											

Comments:

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

00 03

FDEP Biology Laboratory - Bioassay Instrument Identification

Test ID: Mid County WWTF Dates: 3-2-10 — 3-8-10

METER / DEVICE	ID	SOP	Parameter	Method	v 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	SM 2510 B	✓
			Salinity	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	-	

SM-2530B modified to allow use electronic and non-mercury filled thermometers.
Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

Comments: Entered by: MF 3-12-10

V 1.4 8/21/08 BA 4 of 4 page 6 of 6 MF MF

FDEP Biology Laboratory - Acute Bioassay Bench Sheets

Facility: Mid county WWTF

Address: 2299 Spanish Vista Drive Dunedin

City: Dunedin **County:** Pinellas 34698-9438

Contact/District: Peter Wenner / Southwest

NPDES Permit #: FL 0034789

LIMS Job #: TLH-2010-03-30-MF **LIMS Sample #:** 1260293

Lims Data Entry: MF 4-12-10 Data Entry Verification: JD. 4.12.10

Sample Collection: Date: 3-29-10 Time: 1035

Hold Time Start: Date: 3-29-10 Time: 1035

Comments:

Initial sample handling:

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

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

Aeration : ☐ yes ☑ no Initial DO: ____mg/L Final DO: ____mg/L Duration: ____minutes Rate: ~ ____bubbles/min

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

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

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

Sample Validation:

Instructions: Check yes or no. Fill in temperatures.

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

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

Investigators' Signatures:	Initials:
Marshall Faircloth	MF
Jenna Davis	JD
Brock Abercrombie	BA
REVIEWER: Liz Miller	

Diluent/Control Batch#:	3-22-10		3-29-10 (3.30 MF)						
Water Quality Parameters	20% DMW	Well Water	Moderately Hard Water	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Other:	Original Sample	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	N/A	N/A	~~not measured~~ —	—	MF
Lab Total Residual Cl_2 (mg/L):	<0.03		<0.03				<0.03	BA	MF
Alkalinity (mg/L as $CaCO_3$):	85		90				210	BA	MF
Hardness (mg/L as $CaCO_3$):	87		95				200	BA	MF
Total Ammonia (mg/L as N):	<0.017		<0.017				<0.017	MF	JD
Conductivity: ☑ µmhos ☐ mmhos	175		327				913	BA	MF
Salinity (ppth):	—		—				—	—	—

V 1.8 1/13/10

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 126 0293 **SOP#:** TA 07 01 **Test #** 1 **of** 2

Test Species:
Batch #: 8-10 Age: < 24 hr
- [x] *Ceriodaphnia dubia*
- [ ] *Cyprinella leedsi*
- [ ] *Pimephales promelas*
- [ ] *Menidia beryllina*
- [ ] *Americamysis bahia*
- [ ] Other:______

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

Diluent (Batch # 3-22-10)
- [ ] ASW
- [x] 20% DMW
- [ ] MHW
- [ ] Well

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

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

Chamber Size 30 ml
Test Volume: 20 ml

Test Started: Date 3-30-10 Time 1245

Test Ended: Date 4.3.10 Time 130

Concentration	Replicate	Chamber #	Test Hour: 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	A1	5	5	5	5	5	5
	B	B2	5	5	5	5	5	5
	C	C3	5	5	5	5	5	5
	D	D4	5	5	5	5	5	5
100%	A	A5	5	5	5	5	5	5
	B	B6	5	5	5	5	5	5
	C	C7	5	5	5	5	5	5
	D	D8	5	5	5	5	5	5
		Checked or Verified by:	JD	MF	MF	MF	BA	JD

Food
- [x] YCT Batch# 10-30-09
- [x] P. subcapitata Batch# 12-23-09
- [ ] Artemia Lot#______

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

Temperature Range (°C):

Incubator # 2
min. 25.5 max. 27.4 mean 26.5

Incubator #___
min.______max.______mean______

Waterbath #___
min.______max.______mean______

Room B246
min. 25.5 max. 25.8 mean 25.7

Light intensity (ft. candles): 50-100

Photoperiod (hours): 16 light, 8 dark

Loaded/ Verified by: BA / JD

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

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

Comments:

V. 2.5 1-13-10

Pg 38

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

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

[redacted] 3 [redacted] [redacted]

Test Species [redacted]
Batch #: 3-30-10 Age: 13 days

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

Test Validation
Control Survival ≥ 90%: ☑ Yes ☐ No
Temperature Range ≤ 3° C: ☑ Yes ☐ No

Diluent [redacted]
☐ ASW ☐ 20% DMW
☑ MHW ☐ Well

Test Type: ☑ Acute ☐ Definitive
☐ Static ☑ Static Renewal ☐ Flow-Through

Test Duration
☐ 48 hr
☑ 96 hr
☐ __hr

[redacted]

Test Started
Date 3-30-10 Time 1315

Test Ended
Date 4.3.10 Time 1300

Concentration	Replicate	Chamber #	0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
ctrl	A	A1	5	5	5	5	5	5
	B	A2	5	5	5	5	5	5
	C	A3	5	5	5	5	5	5
	D	A4	5	5	5	5	5	5
100%	A	A5	5	5	5	5	5	5
	B	A6	5	5	5	5	5	5
	C	A7	5	5	5	5	5	5
	D	A8	5	5	5	5	5	5
Checked or Verified by:			BA	JD	JD	JD	JD	JD

Feed
- ☐ YCT Batch# ______
- ☐ P. subcapitata Batch# ______
- ☑ Artemia Lot# 23613

Feeding and Artemia Batch #
- ☑ 0 hr 62-10 ☑ Prior to Test
- ☐ 24 hr____
- ☑ 48 hr 64-10 ☑ Prior to Renewal
- ☐ 72 hr____

Temperature Range (°C)

Incubator # 2
min. 25.5 max. 27.4 mean 26.5

Incubator #___
min.______max.______mean______

Waterbath #___
min.______max.______mean______

Room B246
min. 25.5 max. 25.8 mean 25.7

Light Intensity (ft. candles): 50-100

Photoperiod (hours): 16 light, 8 dark

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

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

Comments:

V. 2.5 1-13-10

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

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 1260293 Test # 1 of 2

Test Species

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

Test Aerated? (If DO is < 4.0 mg/L)
☐ Yes ☒ No

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☒ µmhos ☐ mmhos	Salinity* (ppth)
	M	0 hr	8.0	24.0	7.9	175	
		24 hr					
ctrl	A	48 hr BR	8.4	24.4	7.8	200	
	M	48 hr AR	8.3	24.9	8.0	177	
		72 hr					
	A	96 hr	8.2	24.7	8.7	277	
	M	0 hr	7.5	26.0	7.5	913	
		24 hr					
100%	A	48 hr BR	8.6	24.6	8.2	938	
	M	48 hr AR	7.7	24.9	8.1	885	
		72 hr					
	A	96 hr	8.5	24.5	8.7	820	
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

*Measure/ record salinity for marine tests

Comments:

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

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 1260293 **Test #** 2 of 2

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

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

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☑ µmhos ☐ mmhos	Salinity* (ppth)
	A	0 hr	8.0	25.2	6.8	327	—
	B	24 hr	8.0	25.0	7.6	383	
Ctrl	C	48 hr BR	7.9	25.5	7.3	349	
	C	48 hr AR	8.1	24.0	8.0	341	
	D	72 hr	7.7	25.1	7.2	342	
	A	96 hr	7.9	24.9	8.4	388	
	A	0 hr	7.5	26.0	7.2	909	—
	B	24 hr	7.8	24.6	7.5	878	
100%	C	48 hr BR	8.3	25.1	7.5	903	
	C	48 hr AR	7.8	24.1	7.8	885	
	D	72 hr	8.0	25.0	7.0	868	
	A	96 hr	8.3	25.2	8.1	891	
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

*Measure/ record salinity for marine tests

Comments:
① D.H. 100% 24 hr 8.2, S.D.

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

Bioassay Instrument ID

Test ID: Mid County WWTF Dates: 3-30-10 — 4-3-10

METER / DEVICE	ID	SOP	Parameter	Method	v 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	-	

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 MF 4-12-10

V 1.1 6/12/08 MF

Appendix G

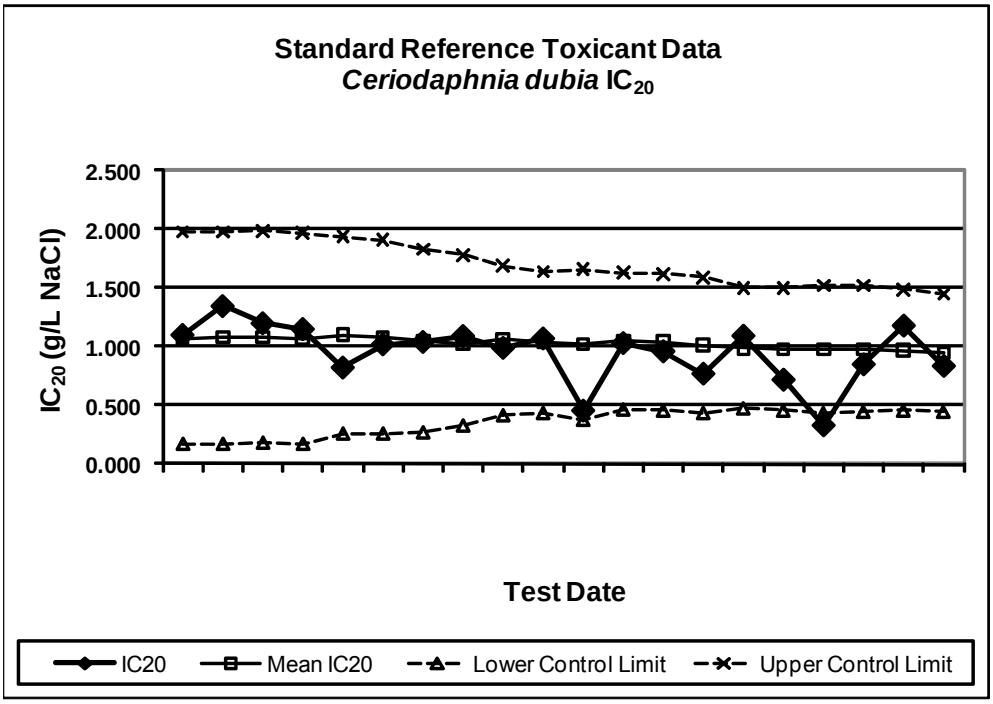
Standard Reference Toxicant Data

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
05/14/07	1.100	1.07	0.45	0.17	1.98
06/08/07	1.347	1.08	0.45	0.17	1.98
07/24/07	1.200	1.08	0.45	0.18	1.99
08/07/07	1.150	1.07	0.45	0.17	1.97
10/30/07	0.821	1.10	0.42	0.26	1.94
1/29/08	1.020	1.08	0.41	0.26	1.91
3/18/08	1.040	1.05	0.39	0.27	1.83
6/17/08	1.090	1.02	0.36	0.33	1.78
10/21/08	0.989	1.06	0.32	0.42	1.69
1/27/09	1.070	1.04	0.30	0.44	1.64
2/24/09	0.452	1.02	0.32	0.38	1.66
3/10/09	1.030	1.05	0.29	0.47	1.63
6/16/09	0.960	1.04	0.29	0.46	1.62
7/14/09	0.768	1.01	0.29	0.44	1.59
8/11/09	1.093	0.99	0.26	0.48	1.50
9/22/09	0.716	0.98	0.26	0.46	1.50
10/06/09	0.325	0.98	0.27	0.44	1.52
11/18/09	0.848	0.98	0.27	0.45	1.52
2/23/10	1.180	0.97	0.26	0.46	1.49
3/2/10	0.834	0.95	0.25	0.45	1.45

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



FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia

Diluent/ Batch: 20% DMW / 2-23.10 Test Days Used: 0-4
20% DMW / 3-1-10 Test Days Used: 4-6
Toxicant/ Batch: NaCl / 2.23.10

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

Organism: *Ceriodaphnia dubia*
Organism Batch #/ Age: 4-10 / <24 hr.
Feeding: Prior to Test and Daily
Food: ☑ YCT ☑ *P. subcapitata*
Food Batch: 10-30-09 12-23-09
Chamber size: 30 mL
Test Volume: 20 mL

Start Date: 3-2-10 Time: 1230
End Date: 3-8-10 Time: 14:45

Batch 3-1-10 20% DMW

Batch:	2-23-10	3-1-10			
Water Quality Parameters	20% DMW	20% DMW	Other	Measured by:	Verified by:
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03		MF/CF	✓
Alkalinity (mg/L as $CaCO_3$):	97	78		BA/CF	✓
Hardness (mg/L as $CaCO_3$):	85	85		BA/CF	✓
Total Ammonia (mg/L as N):	<0.017	<0.017		MF	✓
Conductivity (umhos-cm) mmhos-cm :	185	181		MF/MK	✓

Results	
Control % CV:	23.0 %
Dunnetts PMSD:	23.4 %
Reproduction NOEC:	0.59 g/L
Reproduction LOEC:	0.89 g/L
Survival NOEC:	2g/L
Survival LOEC:	3g/L
ICP_{20}:	0.834
ICP_{25}:	0.902

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

Loaded by: MF

Test Replicate	Loaded from culture vial
1	B9
2	A17
3	A22
4	A5
5	A12
6	B21
7	B26
8	B8
9	B15
10	A1

Comments:

Investigators' signatures

Marshall Faircloth
Brad Alexander
James Daniel
Chelsea French
Loretta C. Wolfe
REVIEWER

Test Incubated in: Incubator: # 2
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min. 25.1 max. 27.6 mean 26.5
Room B246 ____ min. 24.5 max. 26.1 mean 25.3
Test min._____ max._____ mean_____

Ceriodaphnia dubia Survival and Reproduction

Start Date: 3-2-10 Time: 1230 Loaded by: MF
End Date: 3-8-10 Time: 14.45 Verified by: BH

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	5	2	5	0	0	0	0	0	0	0	12	10	1.2
	4	0	0	0	7	4	6	6	6	3	6	38	10	3.8
	5	12	0	11	16	10	9	13	12	14	11	108	10	10.8
	6	9	13	21	12	8	11	11	7	12	10	114	10	11.4
	7													
	8													
	Total	26	15	37	35	22	26	30	25	29	27	272	10	27.2
0.59 ppth	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	4	0	0	2	0	0	0	0	15	10	1.5
	4	0	0	0	5	5	0	6	6	5	6	33	10	3.3
	5	12	8	10	14	10	6	11	12	8	10	101	10	10.1
	6	18	5	19	2	12	13	13	16	12	15	125	10	12.5
	7													
	8													
	Total	34	18	33	21	27	21	30	34	25	31	274	10	27.4
0.89 ppth	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	6	3	0	0	0	0	0	0	0	0	9	10	0.9
	4	0	0	0	6	4	5	0	6	6	6	33	10	3.3
	5	11	10	1	7	9	7	9	8	6	9	77	10	7.7
	6	6	13	X	16	11	7	14	0	8	12	87	9	9.66
	7													
	8													
	Total	23	26	1	29	24	19	23	14	20	27	206	9(10)	20.6

for STATS mf 3/5/10

Comments:

00 02

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	5	5	4	0	0	0	0	0	0	0	14	10	1.4
	4	0	0	0	3	3	3	4	4	1	3	21	10	2.1
	5	6	3	2	7	7	6	5	8	0	8	52	10	5.2
	6	10	0	4	8	13	X	13	10	11	7	76	9	8.44
	7						|						
	8						|						
	Total	21	8	10	18	23	9	22	22	12	18	163	10	16.3
2.0 ppth	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	3	0	0	0	0	0	0	0	3	10	0.2
	4	0	2	0	2	0	2	0	0	0	0	6	10	0.6
	5	3	6	4	1	0	3	2	0	X	0	19	9	2.11
	6	7	5	6	0	0	2	0	0	|	0	20	9	2.22
	7									|				
	8									|				
	Total	10	13	13	3	0	7	2	0	0	0	48	10	4.8
3.0 ppth	0												10	
	1	0	0	X	X	0	0	X	X	X	0		5	
	2	0	X	|	|	X	X	|	|	|	X	0	1	0
	3	X	|	|	|	|	|	|	|	|		0	0	0
	4	|	|	|	|	|	|	|	|	|	|				
	5	|	|	|	|	|	|	|	|	|	|				
	6	|	|	|	|	|	|	|	|	|	|				
	7	|	|	|	|	|	|	|	|	|	|				
	8	|	|	|	|	|	|	|	|	|	|				
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments:

00 03

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	8.1	24.2	7.8	0.185					
	0.59 ppth	M	8.1	24.3	7.8	1.30					
	0.89 ppth	M	8.1	24.7	7.8	1.85					
	1.3ppth	M	8.0	24.6	7.7	2.65					
	2.0 ppth	M	8.1	24.6	7.7	3.85					
	3.0 ppth	M	8.1	24.7	7.7	5.54					
	Measured by:		MF	MF	MF	MF					
	Recorded by:		MF	MF	MF	MF					
Day 1	Control	M	8.1	24.0	8.6	0.181	A	8.1	24.0	8.7	0.222
	0.59 ppth	M	8.1	24.6	8.4	1.40	A	8.2	24.0	8.8	1.55
	0.89 ppth	M	8.1	25.0	8.2	1.94	A	8.2	24.1	9.0	1.99
	1.3ppth	M	8.1	25.0	8.3	2.74	A	8.2	24.1	9.0	2.93
	2.0 ppth	M	8.1	24.7	8.3	3.92	A	8.2	24.0	9.0	4.31
	3.0 ppth	M	8.1	24.4	8.4	5.69	A	8.2	24.1	9.0	6.13
	Measured by:		BA	BA	BA	BA		CF	CF	CF	CF
	Recorded by:		BA	BA	BA	BA		CF	CF	CF	CF
Day 2	Control	M	7.9	24.0	7.5	0.175	A	8.1	24.8	7.4	0.206
	0.59 ppth	M	8.0	25.6	7.4	1.29	A	8.1	24.6	7.4	1.39
	0.89 ppth	M	8.1	25.5	7.4	1.81	A	8.1	24.8	7.4	1.95
	1.3ppth	M	8.1	25.4	7.5	2.62	A	8.0	24.5	7.4	2.78
	2.0 ppth	M	8.1	25.6	7.5	3.77	A	8.1	24.3	7.3	4.06
	3.0 ppth	M	8.1	25.4	7.5	5.45	A	8.1	24.5	7.3	5.66
	Measured by:		BA	JO	BA	BA		BA	MF	BA	BA
	Recorded by:		BA	CF	BA	BA		BA	MF	BA	BA
Day 3	Control	M	8.0	24.0	6.9	0.179	A	8.0	24.4	6.9	0.188
	0.59 ppth	M	8.1	24.0	7.1	1.30	A	8.0	24.2	6.8	1.37
	0.89 ppth	M	8.1	24.0	7.4	1.85	A	8.1	24.2	6.9	1.90
	1.3ppth	M	8.1	24.0	7.4	2.63	A	8.1	24.4	7.0	2.74
	2.0 ppth	M	8.1	24.0	7.4	3.83	A	8.0	24.4	6.9	3.90
	3.0 ppth	M	8.1	24.2	7.6	5.63	A	8.0	24.8	6.8	5.68
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA

Comments:

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

00 04

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 4	Control	M	8.2	24.1	7.5	0.185	A	8.2	24.2	7.5	0.195
	0.59 ppth	M	8.1	24.2	7.6	1.29	A	8.1	24.4	7.5	1.32
	0.89 ppth	M	8.1	24.2	7.6	1.83	A	8.1	24.4	7.5	1.86
	1.3ppth	M	8.1	24.3	7.5	2.64	A	8.1	24.5	7.5	2.67
	2.0 ppth	M	8.1	24.2	7.4	3.81	A	8.1	24.4	7.5	3.84
	3.0 ppth	M					A				
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 5	Control	M	7.9	24.0	7.7	0.170	A	8.3	24.0	7.7	0.188
	0.59 ppth	M	7.9	24.0	7.6	1.25	A	8.2	24.0	7.5	1.35
	0.89 ppth	M	8.1	24.0	7.6	1.77	A	8.2	24.0	7.5	1.81
	1.3ppth	M	8.1	24.0	7.6	2.54	A	8.2	24.0	7.6	2.57
	2.0 ppth	M	8.1	24.0	7.6	3.68	A	8.2	24.0	7.6	3.71
	3.0 ppth	M					A				
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA
Day 6	Control	M					A	8.1	24.0	6.9	0.175
	0.59 ppth	M					A	8.1	24.0	7.0	1.26
	0.89 ppth	M					A	8.1	24.0	7.2	1.81
	1.3ppth	M					A	8.1	24.3	7.3	2.60
	2.0 ppth	M					A	8.1	24.5	7.4	3.73
	3.0 ppth	M	Not renewed								
	Measured by:							BA	BA	BA	BA
	Recorded by:							BA	BA	BA	BA
Day 7	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:										
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:										

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

FDEP Biology Laboratory - Bioassay Instrument Identification

Test ID: Chronic C. dubia - SRT Dates: 3/2/10-3/8/10

METER / DEVICE	ID	SOP	Parameter	Method	v 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	-	

SM-2530B modified to allow use electronic and non-mercury filled thermometers.
Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

Comments: Entered by: BA 3-15-10

V 1.4 8/21/08 BA Pg 6 of 6

00 06

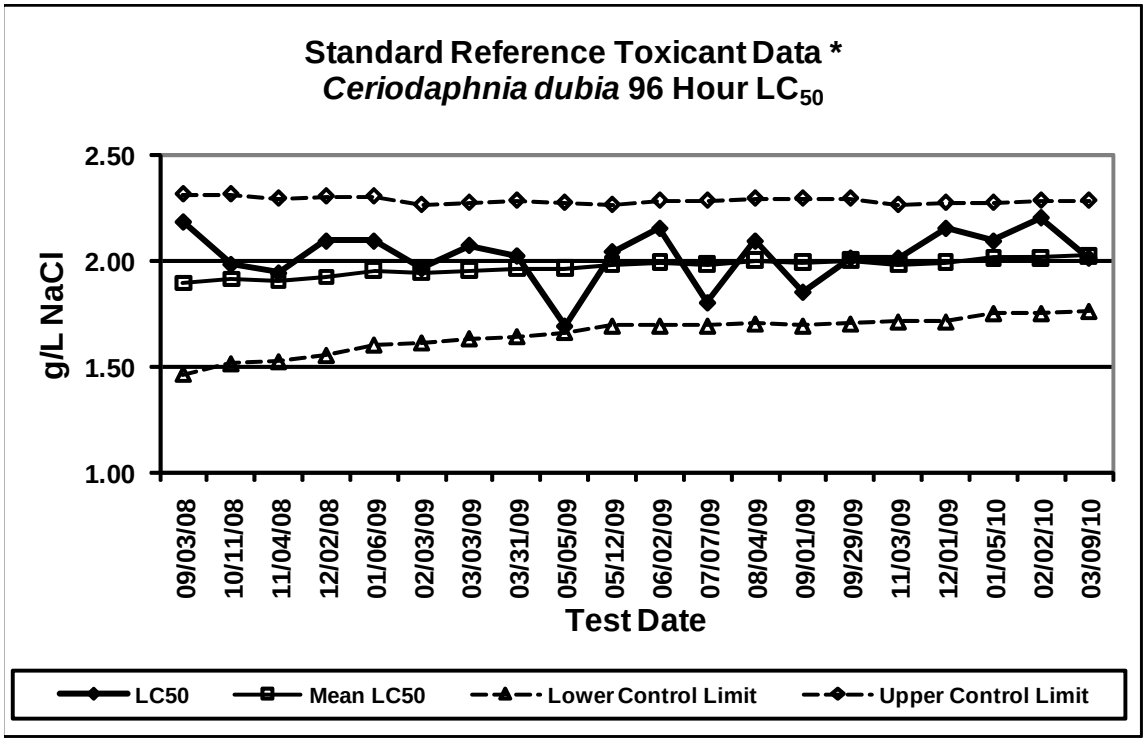
Florida Department of Environmental Protection
Bureau of Laboratories

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

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
09/03/08	2.18	1.89	0.21	1.46	2.31
10/11/08	1.98	1.91	0.20	1.51	2.31
11/04/08	1.94	1.90	0.19	1.52	2.29
12/02/08	2.09	1.92	0.19	1.55	2.30
01/06/09	2.09	1.95	0.17	1.60	2.30
02/03/09	1.96	1.94	0.16	1.61	2.26
03/03/09	2.07	1.95	0.16	1.63	2.27
03/31/09	2.02	1.96	0.16	1.64	2.28
05/05/09	1.69	1.96	0.15	1.66	2.27
05/12/09	2.04	1.98	0.14	1.69	2.26
06/02/09	2.15	1.99	0.15	1.69	2.28
07/07/09	1.80	1.98	0.15	1.69	2.28
08/04/09	2.09	2.00	0.15	1.70	2.29
09/01/09	1.85	1.99	0.15	1.69	2.29
09/29/09	2.01	2.00	0.15	1.70	2.29
11/03/09	2.01	1.98	0.14	1.71	2.26
12/01/09	2.15	1.99	0.14	1.71	2.27
01/05/10	2.09	2.01	0.13	1.75	2.27
02/02/10	2.20	2.01	0.13	1.75	2.28
03/09/10	2.01	2.02	0.13	1.76	2.28

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

CV = 6.34
EPA reference 75th quartile CV = 29%



FDEP Biology Laboratory - Acute SRT Bench Sheet

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

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

Test Type: ☐ non-renewal ☒ renewal

Test Page 1 of 2

Diluent/ Batch #: 2MM / 3-1-10
Toxicant/ Batch#: NaCl / 13-7-10
Organism Batch: 5-10 Age: <24hr
Test Beginning: Date: 3-9-10 Time: 12:40
Test Ending: Date: 3-13-10 Time: 0900

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	BA
Alkalinity (mg/L as $CaCO_3$):	78	TA06_08	CF
Hardness (mg.L as $CaCO_3$):	3885	TA06_09	CF
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity ~~µmhos~~ mmhos	0.171	TA06_25	BA
(A) Salinity (ppth):	—	TA06_25	—

Food:	Batch
☒ YCT	10-30-09
☒ *P. subcapitata*	11-9-09
☐ Artemia Lot #	Artemia Batch:

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

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

Concentrations prepared by: BA
Temperature Range °C:(if used)
Test Incubated in: Incubator # 2 Waterbath # ____
Incubator # 2 min 26.5 max 27.9 mean 27.2
Light Intensity: 50-100 Ft. candles
Waterbath # ___ min. ____ max. ____ mean ____
Photoperiod: 16 hours Light / 8 hours dark
Room B246 min. 25.2 max. 26.0 mean 25.6

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

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

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

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

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

Comments: (A) Transcription error BA

Investigators' Signatures
Bruce Alexander
Marshall Faircloth
John Travers
Mary Daniel
Chelsea French
Reviewer: Walter Wolfe

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 2.168	1.056	2.287
96 hour: ~~2.013~~ 1.013	1.889	2.196

Revised 7/15/2008 mf

FDEP Biology Laboratory - Acute SRT Bench Sheet

0-96 hour parameters

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

Test Page 2 of 2

Test Organism: (check one)

- ☐ *Americamysis bahia* Method 2007.0 TA07.03
- ☐ *Menidia Beryllina* Method 2006.0 TA07.04
- ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
- ☒ *Ceriodaphnia dubia* Method 2002.0 TA07.01
- ☐ *Cyprinella leedsi* Method 2000.0 TA07.02
- ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Beginning: Date: 3-9-10 Time: 1240

Test Ending: Date: 3-13-10 Time: 0900

Test Type: ☐ non-renewal ☒ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L g/L	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☒ mmhos	Salinity (ppth)
Control	M	0 hr	8.0	24.5	7.2	0.171	—
	—	24 hr	—	—	—	—	—
	A	48 hr BR	8.0	24.0	7.1	0.206	—
	M	48 hr AR	8.0	24.6	6.9	0.177	—
	—	72 hr	—	—	—	—	—
	A	96 hr	8.1	24.7	7.4	0.178	—
1.5	M	0 hr	8.1	24.8	7.3	2.93	—
	—	24 hr	—	—	—	—	—
	A	48 hr BR	8.1	24.0	7.2	3.43	—
	M	48 hr AR	8.0	25.2	6.9	3.05	—
	—	72 hr	—	—	—	—	—
	A	96 hr	8.1	24.3	7.6	3.30	—
2.0	M	0 hr	8.1	24.8	7.4	3.80	—
	—	24 hr	—	—	—	—	—
	A	48 hr BR	8.1	24.0	7.3	4.45	—
	M	48 hr AR	8.0	25.3	7.0	3.98	—
	—	72 hr	—	—	—	—	—
	A	96 hr	8.1	24.4	7.7	4.49	—
2.5	M	0 hr	8.1	24.7	7.3	4.65	—
	—	24 hr	—	—	—	—	—
	A	48 hr BR	8.1	24.0	7.3	5.46	—
	M	48 hr AR	8.1	25.3	7.0	4.84	—
	—	72 hr	—	—	—	—	—
	A	96 hr	8.1	24.4	7.7	5.03	—
3.0	M	0 hr	8.1	25.2	7.4	5.59	—
	—	24 hr	—	—	—	—	—
	A	48 hr BR	8.1	24.0	7.4	6.39	—
	M	48 hr AR	8.1	25.0	7.0	5.74	—
	—	72 hr	—	—	—	—	—
	—	96 hr	—	—	—	—	—
4.6	M	0 hr	8.0	24.3	7.4	7.28	—
	—	24 hr	—	—	—	—	—
	A	48 hr BR	8.1	24.0	6.9	9.48	—
	—	48 hr AR	—	—	—	—	—
	—	72 hr	—	—	—	—	—
	—	96 hr	—	—	—	—	—

Investigators Signatures

Marshall Faircloth

Jessica Strickland

Brie Alexander

Chelsea Francis

Reviewed By: Laurie Wolfe

Measured by:

0 hr:	BA
24 hr:	—
48 hr BR:	BA
48 hr AR:	BA
72 hr:	—
96 hr:	MF

Measure/record salinity for marine tests

Comments:

Revised 07/15/2008 MF

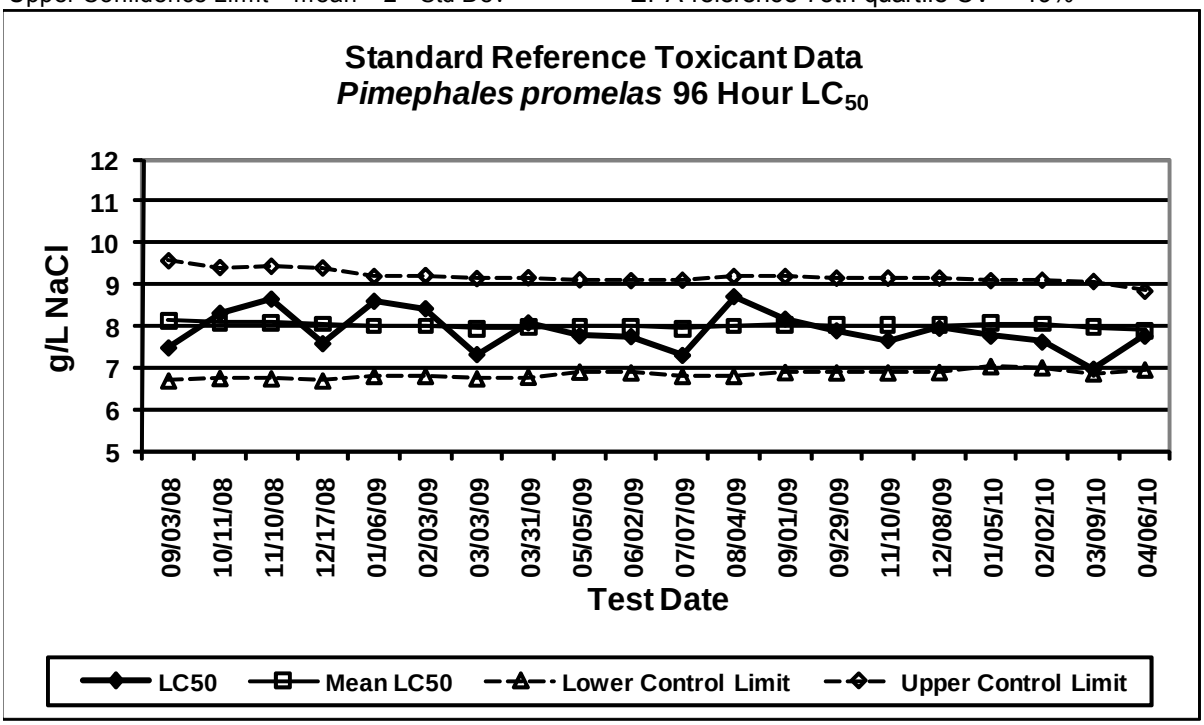
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Pimephales promelas (fathead minnow) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
09/03/08	7.48	8.12	0.72	6.68	9.56
10/11/08	8.31	8.07	0.67	6.74	9.4
11/10/08	8.65	8.08	0.67	6.73	9.43
12/17/08	7.58	8.04	0.68	6.68	9.39
01/06/09	8.60	7.99	0.6	6.79	9.19
02/03/09	8.42	8	0.6	6.79	9.21
03/03/09	7.32	7.94	0.6	6.73	9.14
03/31/09	8.08	7.96	0.6	6.77	9.16
05/05/09	7.77	8	0.55	6.89	9.11
06/02/09	7.75	7.98	0.56	6.87	9.09
07/07/09	7.30	7.94	0.58	6.79	9.10
08/04/09	8.71	7.99	0.60	6.79	9.19
09/01/09	8.17	8.03	0.58	6.88	9.19
09/29/09	7.89	8.01	0.57	6.87	9.15
11/10/09	7.66	8.01	0.57	6.87	9.15
12/08/09	7.95	8.02	0.57	6.88	9.15
01/05/10	7.76	8.06	0.52	7.02	9.09
02/02/10	7.62	8.04	0.53	6.99	9.10
03/09/10	6.97	7.96	0.56	6.85	9.07
04/06/10	7.76	7.89	0.48	6.94	8.84

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

CV = 6.04
EPA reference 75th quartile CV = 19%



FDEP Biology Laboratory - Acute SRT Bench Sheet

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

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

Test Type: ☐ non-renewal ☒ renewal

Test Page 1 of 2

Diluent/ Batch #: MHW 1.3.10
Toxicant/ Batch#: NaCl 1.3.10
Organism Batch: 3.9.10 Age: 8 days
Test Beginning: Date: 3-13-10 Time: 3:30
Test Ending: Date: 3-13-10 Time: 0850

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	2003	TA06_22	BA
Alkalinity (mg/L as $CaCO_3$):	74	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	90	TA06_09	BA
Total Ammonia (mg/L as N):	20.017	TA06_17	MF
Conductivity: µmhos (mmhos)	0.35	TA05_25	JV
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☐ YCT	
☐ *P. subcapitata*	
☒ Artemia Lot # 25613	

Artemia Batch:
- 0 hr: 47-10
- 24 hr:
- 48 hr: 49-10
- 72 hr:

Chamber size: 1000 mL
Test volume: 500 mL per replicate

Concentrations prepared by: JV/JV
Temperature Range °C:(if used)
Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min 26.5 max 27.6 mean 26.7
Light Intensity: 50-100 Ft. candles Waterbath # ___ min ____ max ____ mean ____
Photoperiod: 16 hours Light / 8 hours dark Room B246 min 25.2 max 26.0 mean 25.6

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

all species 2 hrs prior to test

mysids daily

all species except *H. azteca* 2 hr prior to renewal

H. azteca 0 hr and 48 hr

Concentration µg/L mg/L (circle)	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	A12	10	10	10	10	10	10
	B	A13	10	10	10	10	10	10
6	A	A14	10	10	10	10	4 2D	8
	B	A15	10	10	10	10	9 1D	8 1D
7	A	A16	10	10	10	10	7 3D	7
	B	A17	10	8 2D	7 1D	7	4 3D	4
8	A	A18	10	6 4D	2 4D	2	0 2D	—
	B	A19	10	6 4D	1 5D	1	1	1
9	A	A20	10	1 4D	0 1D	—	—	—
	B	A21	10	1 4D	0 1D	—	—	—
10	A	A22	10	0 10D	—	—	—	—
	B	A23	10	0 10D	—	—	—	—
Organisms loaded by: JV		Checked by:	JV	JV	JV	JV	BA	MF

Loading Verified by: BA AR = after renewal
m = missing d = dead BR = before renewal hr = hour

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

Investigators' Signatures
Jessica Daniels
Marshall Faircloth
Brett Alexander
Reviewer: Loretta Wolfe

Comments:

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 7.463	7.239	7.694
96 hour: 6.966	6.585	7.369

Revised 7/15/2008 mf

FDEP Biology Laboratory - Acute SRT Bench Sheet

0-96 hour parameters

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

Test Page 2 of 2

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

Test Beginning: Date: 3-9-10 Time: 13:30

Test Ending: Date: 3-13-10 Time: 0850

Test Type: ☐ non-renewal ☒ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L g/L	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☒ mmhos	Salinity (ppth)
Control	A	0 hr	8.2	24.0	7.4	0.315	—
	B	24 hr	7.9	24.8	7.2	0.343	—
	A	48 hr BR	7.9	25.4	7.1	0.371	—
	A	48 hr AR	8.1	24.0	7.5	0.556	—
	B	72 hr	7.7	24.3	6.4	0.601	—
	A	96 hr	8.1	25.2	7.6	0.348	
6	A	0 hr	8.0	24.9	7.1	11.10	—
	B	24 hr	7.8	24.8	6.9	11.21	—
	A	48 hr BR	7.7	25.2	6.9	11.3	—
	A	48 hr AR	7.9	24.4	7.1	11.28	—
	B	72 hr	7.5	24.6	6.5	11.4	—
	A	96 hr	7.7	25.2	7.2	11.7	
7	A	0 hr	8.0	25.2	7.2	12.81	—
	B	24 hr	7.8	24.8	6.9	13.10	—
	A	48 hr BR	7.8	25.1	7.0	13.2	—
	A	48 hr AR	7.9	24.5	7.0	13.03	—
	B	72 hr	7.6	24.7	6.7	13.1	—
	A	96 hr	7.4	25.1	7.0	13.3	
8	A	0 hr	8.0	25.3	7.1	14.51	—
	B	24 hr	7.8	24.9	6.9	14.76	—
	A	48 hr BR	7.8	25.0	7.0	1511	—
	A	48 hr AR	7.9	24.5	7.1	14.33	—
	B	72 hr	7.9	24.8	6.8	14.5	—
	B	96 hr	7.8	24.8	7.0	14.8	
9	A	0 hr	8.0	25.3	7.2	16.13	—
	B	24 hr	7.7	24.8	6.6	16.37	—
	A	48 hr BR	7.8	24.8	7.2	17.0	—
	—	48 hr AR	—	—	—	—	—
	—	72 hr	—	—	—	—	—
	—	96 hr	—	—	—	—	—
10	A	0 hr	8.0	25.5	7.2	17.73	—
	B	24 hr	7.7	24.7	6.6	18.47	—
	—	48 hr BR	—	—	—	—	—
	—	48 hr AR	—	—	—	—	—
	—	72 hr	—	—	—	—	—
	—	96 hr	—	—	—	—	—

Investigators Signatures

Measured by:
- 0 hr: JW
- 24 hr: JW
- 48 hr BR: JB
- 48 hr AR: JW
- 72 hr: JW
- 96 hr: MF

Measure/record salinity for marine tests

Comments:

Reviewed By: Lorette Wolfe

Revised 07/15/2008 MF

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 3/1/10

Ship to: FDEP

P.O. No:

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	150	3DAYS	MS100226	25	8.0	20
Menidia beryllina	150	12DAYS	SS100219	25	8.0	20
						Hardness mg/L
Cyprinella leedsi						
Pimephales promelas	450	<24	FM100228-1600	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: FedEx P.O.

Notes: MS & SS acute age on 3/3

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

Physical/Chemical and Habitat Assessment field sheets

DEP-SOP-001/01: Form FD 9000-3 — ELFS

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

SAMPLE ID : 67801 — ORG ID : — COUNTY : Pinellas — STORET # : 24040114 — DATE : 3-1-10 — TIME : ~~1300~~ 1230 fm

Latitude : (degrees) (minutes) (seconds) — Longitude : (degrees) (minutes) (seconds)

SITE NAME : Mudcreek — SAMPLE COMPLETE ? ✓

FIELD ID/NAME: — RECEIVING BODY OF WATER :

RIPARIAN ZONE / STREAM FEATURES above Mud Country WWTP discharge

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

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

Local Watershed Erosion (select one) : ☐ None ☐ Slight ☐ Moderate ☐ Heavy

Local Watershed NPS Pollution : ☐ No evidence ☐ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side — Left Bank : 2 — Right Bank : 1

High Water Mark: 3 (m) + 1.3 (above present water level) = 3.3 (present depth) (above bed)

Artificially Impounded ☐ Yes ☒ No

Typical Width (m) Depth (m)/Velocity (m/sec) Transect — 2 m wide

m/s	0.29 m/s	m/s
m deep	0.3 m deep	m deep

Artificially Channelized : ☒ NO ☐ Some recovery ☐ Mostly recovered, more sinuous ☐ Recent, severe

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

SEDIMENT / SUBSTRATE

Sediment Oils ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse

Sediment Odors ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify) :

Sediment Deposition ☐ Sludge — Sand Smothering : None Slight Moderate Severe — Silt Smothering : None Slight Moderate Severe ☐ Other (Specify) :

SUBSTRATE TYPE

Assessment Tool: ☐ SCI ☐ BioRecon ☐ LCI ☐ LVI (13/10)

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)	~~100~~	0	
Undercut Banks / Roots	3	4	
Leaf Packs or Mat	3	4	
Aquatic Vegetation	2	4	
Rock or Shell Rubble..	70	4	
Sand.....		4	
Mud / Muck / Silt			
Other Shell Rubble			
Other			

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top :							0.2
Mid-Depth :							☒ VOB
Bottom :							

Water Surface Oils : ☒ None ☐ Sheen ☐ Globs ☐ Slick

Water Odors : ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Other (Specify) : → air?

Water Sample Taken ? ☒ Yes ☐ No Chuck + Pete

Algae Sample Taken ? ☒ Yes ☐ No

SYSTEM TYPE ☒ Stream ☐ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify) :

Clarity ☐ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque

Color ☒ Tannic ☐ Green (Algae) ☒ Clear ☐ Other (Specify) :

WEATHER CONDITIONS / NOTES :

Sunny, Clear, Cool (60's)

large snag at top of segment - samplers didn't see, no snags sampled.

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

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

ABUNDANCE

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

SAMPLING TEAM : Peggy Morgan

SIGNATURE : Peggy Morgan

DATE : 3-1-10

Revision Date: September 5, 2008

Barb Goering, Dawn Hart } EPC trainees

at top of segments in vicinity of pipes in H2O

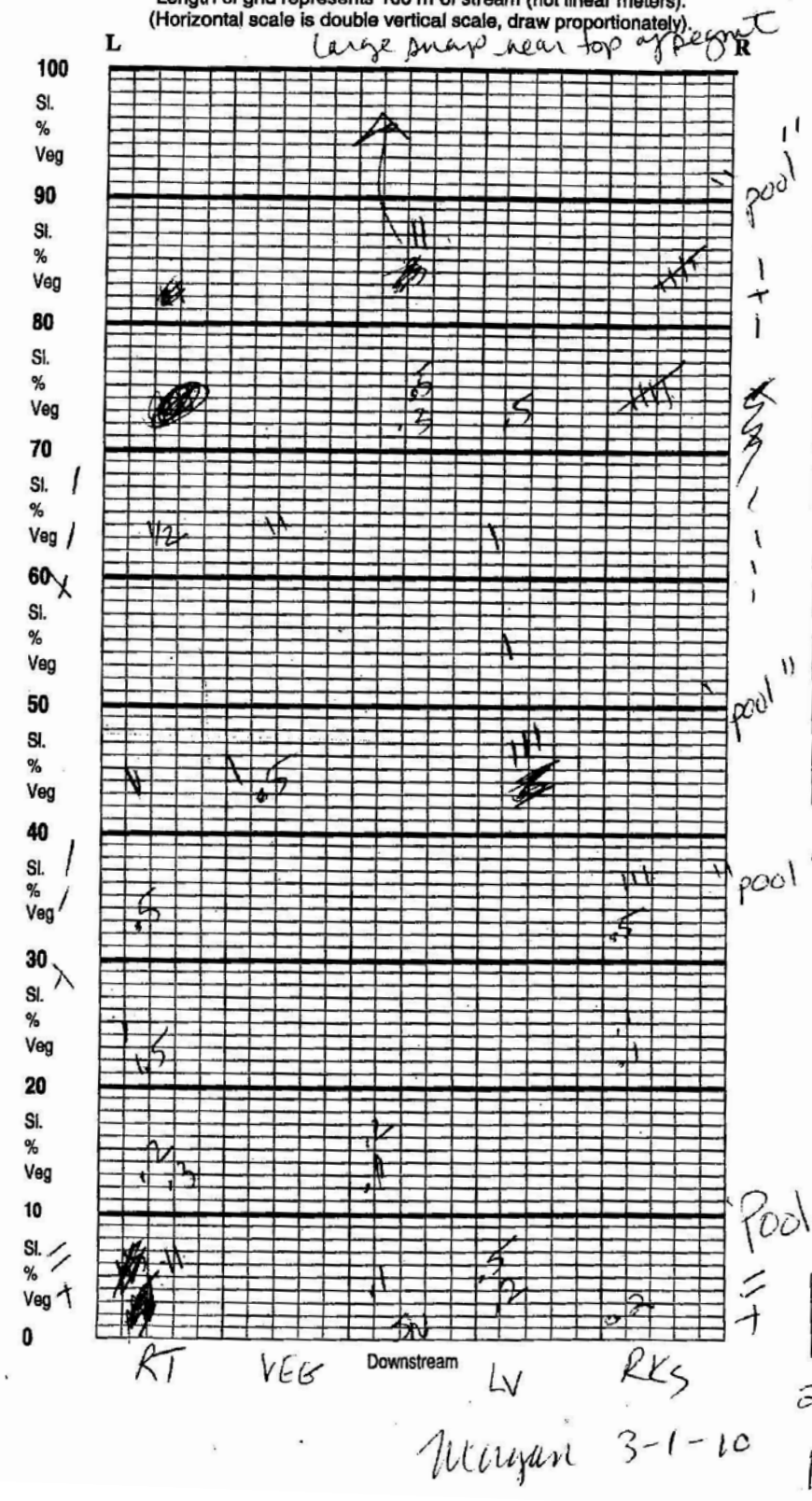
Red ludwigia
Ornamental stuff
Cairs
elephant ears
Brar. pepper
Popash
P. maximum
Hydrilla
Coontail
Palmetto
ferns

Air Stench -
Can't separate water
Smells from air smells

Arpotato - a lot of it dead off.
Castor bean
C. alternaflorus

More habitat upstream
Less sand upstream
More smothering downstream - Scour effects

Stream/River Habitat Sketch Sheet, Form FD 9000-4 (December 11, 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.

- 19% Snags <4"c <2mm²
- 3% Roots/undercut banks
- 3½ Leaf Packs (or mats)
- 29½ Macrophytes
- ~~59~~ Rock
- ☐ _____
- ☐ _____

Velocity:
Note where velocity measures were taken.

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

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

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

Plants observed/other notes:

d = 2 m
03
200 6.00
6.00
02
~~700~~ 14.88
200 35.00
200
~~dc~~ 15.00
200 3.500

Prod. hab	1	2	3	4
Sweeps (Maj)	10	7	5	4
Sweeps (Min)	10	6	5	4

07
200 14.00

Morgan 3-1-10

Mid Creek

SID 67801

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:
	21040114	3/1/10	

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Pinellas	Curlew Cr. Midcounty NWTP Reference	MIDCOREF

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity 18	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16 fifty	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 9	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 17	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering 13 Primary Score 59 57 PM	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 16 17	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth. 5 4 3 2 1
Bank Stability Right Bank 4 Left Bank 5	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 2 PM Left Bank 2	Width of vegetation greater than 18 m 10 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 2 PM Left Bank 2 Secondary Score 2 3 PM	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

90 90 9 8 PM **TOTAL SCORE**

Date: 3-1-10	Analyst: Peggy Morgan	Signature: Peggy Morgan

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

Receives Copious amt of Stormwater from Imperv.

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

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

SAMPLE ID : 67802 ORG ID : 24040115
COUNTY : STORET # : 24040622
DATE : 3-1-10 TIME : 1000

Latitude : (degrees) (minutes) (seconds) Longitude : (degrees) (minutes) (seconds)

SITE NAME : SAMPLE COMPLETE ? ✓
FIELD ID/NAME : ~~Mid Cove Run~~ MIDTST RECEIVING BODY OF WATER : Curlew Creek

RIPARIAN ZONE / STREAM FEATURES Mid Cumberland WWTP Test Site

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

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

Local Watershed Erosion (select one) : ☐ None ☐ Slight ☒ Moderate ☐ Heavy
Local Watershed NPS Pollution : ☐ No evidence ☐ Slight ☐ Moderate ☒ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
Left Bank : 2 Right Bank : 2

Functioning as Stormwater conduit

High Water Mark: 2 (m) + 0.2 (above present water level) = 2.2 (present depth) (above bed)

Artificially Impounded ☐ Yes ☒ No

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

0.2 m/s	0.27 m/s	0.2 m/s
0.2 m deep	0.4 m deep	0.2 m deep

Artificially Channelized : ☒ No ☐ Mostly recovered, more sinuous ☐ Some recovery ☐ Recent, severe

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

SEDIMENT / SUBSTRATE

Sediment Oils : ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse

Sediment Odors : ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify) :

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

SUBSTRATE TYPE

Assessment Tool: ☒ SCI ☐ BioRecon ☐ LCI ☐ LVI

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)	1%	½	1
Undercut Banks / Roots	2%	7	4
Leaf Packs or Mat	1%	2½	1
Aquatic Vegetation		[illegible]	1
Rock or Shell Rubble..	4%	7	3
Sand.....		3	
Mud / Muck / Silt			
Other ..... Shell		1	
Other			

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top :							0.3
Mid-Depth :		[illegible]					☒ VOB
Bottom :							

Water Surface Oils : ☒ None ☐ Sheen ☐ Globs ☐ Slick

Water Odors : ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Other (Specify) : > air / water

Water Sample Taken ? ☒ Yes ☐ No Pete + Chris D

Algae Sample Taken ? ☒ Yes ☐ No Pete

SYSTEM TYPE ☒ Stream ☐ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify) :

Clarity : ☒ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque

Color : ☐ Tannic ☐ Green (Algae) ☒ Clear ☐ Other (Specify) :

WEATHER CONDITIONS / NOTES :
Sunny, cool (50-60)

ABUNDANCE

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

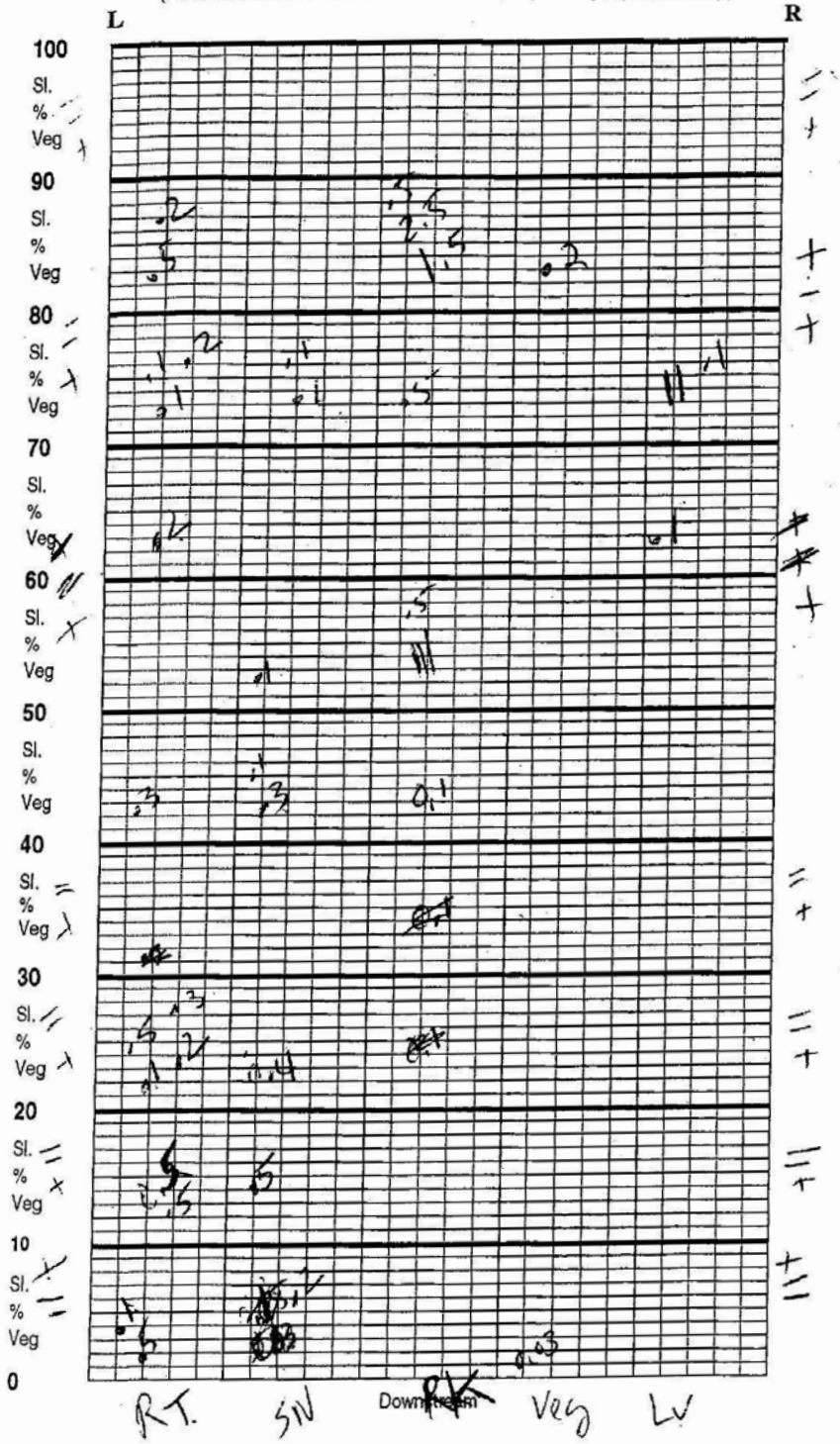
☐ The antecedent hydrologic conditions have been met to my best knowledge.
Water samples preserved ? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved ? ☐ Yes ☐ No

SAMPLING TEAM : Peggy Morgan Barb Goethling Dawn Hart
SIGNATURE : Peggy Morgan
DATE : 3/1/10

Revision Date: September 5, 2008

mex. petunia
B. Pepper
ferns
lots of ornamental stuff.
wandering jew
citrus
air potato
Castor bean
C. alternifloras
oaks
palmetto

Stream/River Habitat Sketch Sheet, Form FD 9000-4 (December 11, 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
- 2% Roots/undercut banks
- 1% Leaf Packs (or mats)
- Macrophytes
- 4% Rock
- ~~Undercut~~ veg < 1%

Velocity:
Note where velocity measures were taken.

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

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

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

Plants observed/other notes:

1 1/2 pool
2.5 dp

2.5 / 1.7 / 4.2

250 | 4.20 .015 / 2.50 / 1700

250 | 2.000 .100 / .035

250 | 8.90 / 750 / 1400

250 | 2.200 .10

Prod. hab	1	2	3	4	5
Sweeps (Maj)	10	7	5	4	3
Sweeps (Min)	10	6	5	4	5

Mungum 3-1-10 MIDTST

SID 67802

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

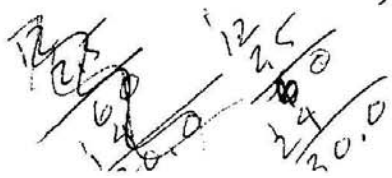
SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER: 24040115	DATE (MM/DD/YY): 3/1/10	RECEIVING BODY OF WATER:
REMARKS:	COUNTY: Pinellas	LOCATION: Curlew Creek Downstream LOST	FIELD ID/NAME: MIDTST

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity 16	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 7	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 17	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 6 Primary Score 46	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 16	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth. 5 4 3 2 1
Bank Stability Right Bank 5 Left Bank 4	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 2 Left Bank 2	Width of vegetation greater than 18 m 10 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 2 Left Bank 2 Secondary Score 3 3	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

4-23-10 CA (79) ~~77~~ **TOTAL SCORE**

Date: 3-1-10	Analyst: Peggy Morgan	Signature: Peggy Morgan

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



Appendix I-1

Wet ID taxa list and number of algal units counted to a target of 300 natural units for qualitative natural periphyton collections made upstream and downstream from Mid-County WWTP facility on 3/1/10.

	Control Site	Test Site
Bacillariophyta		
Bacillariophyta	253	216
Chlorophyceae		
Ankistrodesmus falcatus	-	1
Apatococcus lobatus	12	14
Chlamydomonas sp.	3	1
Chlorella sp.	1	3
Closterium gracile elongatum	1	-
Cosmarium sp.	-	4
Microspora stagnorum	3	-
Microthamnion kuetzingianum	1	-
Oedogonium sp.	1	-
Oocystis sp.	1	-
Pediastrum obtusum	-	1
Pediastrum simplex	1	1
Scenedesmus bijuga	-	1
Scenedesmus quadricauda	2	3
Selenastrum sp.	-	1
Staurastrum sp.	-	1
Staurastrum leptocladum cornutum	-	2
Cyanophyceae		
Cyanobium parvum	4	3
Jaaginema sp.	6	4
Oscillatoria limosa	-	1
Phormidium sp.	1	-
Planktothrix sp.	-	1
Pseudanabaena sp.	2	3
Schizothrix calcicola	5	36
Synechocystis sp.	6	3
Euglenophyceae		
Euglena polymorpha	1	2
Dinophyceae		
Prorocentrum lima	-	1

Appendix I-2

Diatom taxa list and number of valves counted to a target of 500 valves for qualitative periphyton collected upstream and downstream from Mid-County WWTP facility on 3/1/10.

	Control Site	Test Site
Bacillariophyceae		
Achnanthes rupestoides	2	-
Achnanthidium exiguum	43	43
Achnanthidium minutissimum	-	8
Achnanthidium sp.	1	-
Amphora veneta	-	1
Caloneis bacillum	2	-
Caloneis sp.	2	3
Capartogramma crucicula	1	-
Chamaepinnularia sp.	1	-
Cocconeis placentula	57	43
Craticula sp.	-	2
Diadesmis confervacea	6	4
Eunotia pectinalis	-	9
Eunotia sp.	4	5
Gomphonema parvulum	5	10
Gomphonema sp.	-	1
Hantzschia amphioxys	-	1
Hippodonta capitata	10	5
Hippodonta hungarica	46	65
Luticola sp.	-	1
Mayamaea sp.	-	3
Navicula cryptocephala	3	-
Navicula cryptotenella	1	-
Navicula germainii	83	51
Navicula minima	23	41
Navicula rostellata	7	6
Navicula seminulum hustedtii	-	12
Navicula sp.	29	20
Navicula symmetrica	4	2
Naviculaceae	1	5
Nitzschia acicularis	9	9
Nitzschia amphibia	2	27
Nitzschia frustulum	-	2
Nitzschia intermedia	1	-
Nitzschia linearis	-	1
Nitzschia palea	6	3
Nitzschia sp.	4	11
Nupela sp.	9	-

Appendix I-2 (continued)

	Control Site	Test Site
Pinnularia sp.	-	3
Placoneis clementis	-	1
Placoneis elginensis	3	-
Placoneis gastrum	-	2
Placoneis sp.	-	1
Planothidium delicatulum	23	5
Planothidium frequentissimum	60	51
Planothidium lanceolatum	2	6
Planothidium rostratum	22	4
Planothidium sp.	3	-
Psammothidium daonense	-	1
Sellaphora laevissima	-	1
Sellaphora pupula	9	6
Sellaphora seminulum	-	7
Sellaphora sp.	-	1
Surirella angusta	-	1
Surirella sp.	1	1
Coscinodiscophyceae		
Cyclotella meneghiniana	6	2
Discostella pseudostelligera	-	1
Discostella stelligera	1	-
Hydrosera whampoensis	-	2
Stephanodiscus minutulus	-	1
Fragilariophyceae		
Fragilaria capucina	-	1
Fragilaria martyi	-	4
Fragilariaceae	7	2
Staurosirella pinnata	3	-
Synedra ulna	1	2

Appendix J-1

Benthic macroinvertebrates collapsed taxa list and density (average number of individuals/m^2 rounded to the nearest individual, n = 3 samples) from Hester-Dendy artificial substrates incubated for 28 days upstream and downstream of the Mid-County WWTP facility and collected on 3/1/10. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Annelida		
Hirudinea		
Helobdella triserialis	3	-
Oligochaeta		
Dero sp.	3	-
Naididae	-	3
Nais communis complex	19	-
Slavina appendiculata	41	-
Arthropoda		
Crustacea		
Amphipoda		
Hyalella azteca	119	11
Isopoda		
Vandeloscia sp.	3	-
Insecta		
Coleoptera		
Microcylloepus pusillus	27	82
Stenelmis sp.	13	16
Diptera		
Corynoneura sp.	17	8
Cricotopus bicinctus	58	11
Dicrotendipes neomodestus	47	3
Paratanytarsus sp.	72	-
Pentaneura inconspicua	44	48
Polypedilum flavum	269	703
Polypedilum illinoense grp.	29	3
Polypedilum scalaenum grp.	52	3
Rheotanytarsus pellucidus	9	-
Tanytarsus sp. C Epler	12	-
Thienemanniella xena	112	391
Ephemeroptera		
Baetis intercalaris	-	3
Odonata		
Argia sedula	52	23
Enallagma coecum	16	-
Ischnura sp.	3	3
Trichoptera		
Cheumatopsyche sp.	93	532
Hydroptila sp.	-	3
Neotrichia sp.	3	8

Appendix J-1 (continued)

		Control Site	Test Site
Mollusca			
Bivalvia			
	Corbicula fluminea	5	-
	Sphaeriidae	3	-
Gastropoda			
	Ancylidae	16	24
	Physa sp.	-	3
	Planorbella sp.	3	-
Nemertea			
	Prostoma sp.	3	5

Appendix J-2

Benthic macroinvertebrates taxa list and counts (number of individuals counted) collected from Hester-Dendy artificial substrates (n= 3 samples) incubated upstream and downstream of the Mid-County WWTP facility for 28 days and collected on 3/1/10.

	Control Site	Test Site
Annelida		
Hirudinea		
Helobdella triserialis	1	-
Oligochaeta		
Dero sp.	1	-
Naididae	1	1
Nais communis complex	7	-
Slavina appendiculata	15	-
Arthropoda		
Crustacea		
Amphipoda		
Hyalella azteca	45	4
Isopoda		
Vandeloscia sp.	1	-
Insecta		
Coleoptera		
Microcylloepus pusillus	10	31
Stenelmis sp.	5	6
Diptera		
Chironomidae	23	23
Corynoneura sp.	6	3
Cricotopus bicinctus	20	4
Dicrotendipes neomodestus	16	1
Paratanytarsus sp.	25	-
Pentaneura inconspicua	15	17
Polypedilum flavum	93	252
Polypedilum illinoense grp.	10	1
Polypedilum scalaenum grp.	18	1
Rheotanytarsus pellucidus	3	-
Tanytarsus sp. C Epler	4	-
Thienemanniella xena	39	140
Ephemeroptera		
Baetis intercalaris	-	1
Odonata		
Argia sedula	13	4
Argia sp.	3	3
Coenagrionidae	5	2
Enallagma coecum	4	-
Enallagma sp.	1	-
Ischnura sp.	1	1

Appendix J-2 (continued)

	Control Site	Test Site
Trichoptera		
Cheumatopsyche sp.	33	198
Hydroptila sp.	-	1
Neotrichia sp.	1	3
Unidentified Trichoptera	2	3
Mollusca		
Bivalvia		
Corbicula fluminea	2	-
Sphaeriidae	1	-
Gastropoda		
Ancylidae	5	8
Physa sp.	-	1
Planorbella sp.	1	-
Unidentified Gastropoda	1	1
Nemertea		
Prostoma sp.	1	2

Appendix K-1

Qualitative benthic macroinvertebrate collapsed taxa list and number of individuals counted from 20-discrete-dipnet sweeps conducted upstream and downstream of Mid-County WWTP facility on 3/1/10. 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				
Helobdella triserialis	1	-	-	1
Oligochaeta				
Bratislavia unidentata	-	-	1	-
Dero digitata complex	-	-	1	-
Nais communis complex	-	-	2	2
Tubificidae	-	-	3	1
Arthropoda				
Crustacea				
Amphipoda				
Crangonyx sp.	-	-	-	2
Hyalella azteca	25	58	16	19
Insecta				
Coleoptera				
Microcylloepus pusillus	22	23	26	21
Stenelmis sp.	6	3	4	1
Diptera				
Ablabesmyia mallochi	-	1	-	-
Chironomus sp.	1	-	-	-
Cricotopus bicinctus	4	-	5	3
Cricotopus sp. or *Orthocladius* sp.	-	-	1	-
Cryptochironomus sp.	1	-	-	-
Dicrotendipes neomodestus	-	5	1	10
Nanocladius sp.	-	-	1	-
Paracladopelma sp.	1	1	-	-
Paratanytarsus sp.	9	6	12	9
Pentaneura inconspicua	4	3	4	1
Polypedilum flavum	18	9	23	33
Polypedilum illinoense grp.	1	5	2	1
Polypedilum scalaenum grp.	3	5	4	1
Psychodidae	-	-	1	-
Rheotanytarsus pellucidus	5	1	-	-
Tanytarsus sp. C Epler	4	-	4	2
Thienemanniella sp. C Epler	-	-	-	1
Thienemanniella xena	-	-	9	7
Ephemeroptera				
Baetidae	-	-	-	2
Baetis intercalaris	1	-	-	-

Appendix K-1 (continued)

	Control Site		Test Site	
Odonata				
Argia sp.	-	-	7	1
Argia sedula	17	10	-	-
Enallagma sp.	4	5	2	4
Trichoptera				
Cheumatopsyche sp.	11	2	12	9
Hydroptila sp.	3	-	-	4
Neotrichia sp.	-	-	1	-
Mollusca				
Bivalvia				
Corbicula fluminea	7	16	2	2
Gastropoda				
Ancylidae	2	1	7	3
Micromenetus sp.	-	-	1	-
Physa sp.	1	1	-	-
Pyrgophorus platyrachis	-	-	2	1
Nemertea				
Prostoma sp.	-	-	1	2

Appendix K-2

Qualitative benthic macroinvertebrate taxa list and number of individuals counted from 20-discrete-dipnet sweeps conducted upstream and downstream of Mid-County WWTP facility on 3/1/10.

	Control Site		Test Site	
	Rep 1	Rep 2	Rep 1	Rep 2
Annelida				
Hirudinea				
Helobdella triserialis	1	-	-	1
Oligochaeta				
Bratislavia unidentata	-	-	1	-
Dero digitata complex	-	-	1	-
Nais communis complex	-	-	2	2
Tubificidae	-	-	3	1
Arthropoda				
Crustacea				
Amphipoda				
Crangonyx sp.	-	-	-	2
Hyalella azteca	25	58	16	19
Insecta				
Coleoptera				
Elmidae	-	-	1	-
Microcylloepus pusillus	22	23	25	21
Stenelmis sp.	6	3	4	1
Diptera				
Ablabesmyia mallochi	-	1	-	-
Chironomidae	11	8	12	9
Chironomus sp.	1	-	-	-
Cricotopus sp.	1	-	-	-
Cricotopus bicinctus	2	-	4	3
Cricotopus sp. or *Orthocladius* sp.	-	-	1	-
Cryptochironomus sp.	1	-	-	-
Dicrotendipes neomodestus	-	4	1	9
Nanocladius sp.	-	-	1	-
Paracladopelma sp.	1	1	-	-
Paratanytarsus sp.	7	5	10	8
Pentaneura inconspicua	3	2	3	1
Polypedilum flavum	14	6	19	27
Polypedilum illinoense grp.	1	4	2	1
Polypedilum scalaenum grp.	2	4	3	1
Psychodidae	-	-	1	-
Rheotanytarsus pellucidus	4	1	-	-
Tanytarsus sp. C Epler	3	-	3	2
Thienemanniella sp. C Epler	-	-	-	1
Thienemanniella xena	-	-	7	6
Ephemeroptera				
Baetidae	-	-	-	2
Baetis intercalaris	1	-	-	-
Odonata				
Argia sp.	8	6	7	1
Argia sedula	1	1	-	-
Coenagrionidae	10	5	-	1
Enallagma sp.	2	3	2	3

Appendix K-2 (continued)

		Control Site		Test Site	
		Rep 1	Rep 2	Rep 1	Rep 2
	Trichoptera				
	Cheumatopsyche sp.	11	2	12	9
	Hydroptila sp.	3	-	-	4
	Neotrichia sp.	-	-	1	-
Mollusca					
	Bivalvia				
	Corbicula fluminea	7	16	2	2
	Gastropoda				
	Ancylidae	2	1	7	3
	Micromenetus sp.	-	-	1	-
	Physa sp.	1	1	-	-
	Pyrgophorus platyrachis	-	-	2	1
Nemertea					
	Prostoma sp.	-	-	1	2

The Bioassay of the Mid-County Wastewater Treatment Facility effluent sampled on March 1 2010, NPDES #FL0034789

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 FL0034789 11 12	100301	# B	# S	# 1

Remarks

#

The Priority Pollutants Analysis for Bioassay of the Mid-County Wastewater Treatment Facility effluent sampled on March 1 2010, NPDES #FL0034789

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 FL0034789 11 12	100301	# X	# S	# 1

Remarks

#

Biological Analyses of the Mid-County Wastewater Treatment Facility effluent sampled on March 1 2010, NPDES #FL0034789

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 FL0034789 11 12	100301	# I	# S	# 1

Remarks

#