

Biological Assessment of

Miller Street Wastewater Treatment Plant

Clay County

NPDES #FL0025151

Sampled December 1997

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October 1998

Biology Section
Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan No. 870346G

Department of Environmental Protection
Results of Fifth Year Inspections

Discharger:	Miller Street WWTP
County:	Clay
NPDES Number:	FL0025151
State Permit Expiration Date:	14 July 2002

Toxics Sampling Inspection (**XSI**)

Date Sampled: 9 December 1997

Results: Atrazine (0.53 µg/L) was detected in the effluent at non-problem levels. Effluent silver (0.09 µ/L) exceeded Class III water quality standards (Rule 62-302.530(60) FAC). All other metals detected in the effluent complied with Class III water quality standards.

Compliance Biomonitoring Inspection (**CBI**)

Date Sampled: 9 December 1997

Results: The sample of effluent was not toxic to either of the invertebrates, *Ceriodaphnia dubia* or *Americamysis bahia.* Similarly, the effluent was not toxic to the fish, *Cyprinella leedsi* or *Menidia beryllina.*

Impact Bioassessment Inspection (**IBI**)

Date Sampled: 9 December 1997

Results: Most differences in measures of macroinvertebrate health between the control and test site could be accounted for by differences in sediment particle size. However, taxa richness and diversity were lower at test site 1 than at either the control site or test site 2. Since test site 1 is in the direct path of the discharge plume during outgoing and low tide, it is likely the additional adverse effects observed there were related to the discharge. The effluent did not appear to have a negative effect on the algal communities. Chlorophyll *a* was undetected at all three sites.

Water Quality Inspection (**WQI**)

Date Sampled: 9 December 1997

Results: Effluent dissolved oxygen (4.1 mg/L) was in violation of the 5.0 mg/L minimum permit limit. Total phosphorus in the effluent was slightly elevated and could be responsible for the moderately elevated levels found at test site 1. Nitrate+nitrite levels were low in the effluent, yet elevated at all three study sites, suggesting nitrogen inputs from sources other than the discharge. Algal growth potential exceeded the "problem threshold" of 5 mg dry wt/L at all three sites, probably due to the elevated nitrate+nitrite concentrations throughout the study area.

These fifth year inspections provide the necessary information to evaluate the facility's impact on its receiving waters and to provide the basis for specific condition recommendations for permit renewal.

Introduction

The Miller Street wastewater treatment plant is located in Clay County, Florida (see map in Appendix). Treatment at this 5.0 MGD oxidation-ditch type activated-sludge wastewater treatment facility consists of grit removal, two 0.3 MG flow equalization basins, two 2.0 MG oxidation ditches with brush aerators, three 0.35 MG clarifiers, two 0.05 MG chlorine contact basins, and subsequent dechlorination. The treated effluent is discharged to the Class III St. Johns River. The actual mean flow of the facility during this survey was 3.45 MGD.

The state permit limits for the Miller Street WWTP are listed in Table 1. Monthly operating reports indicate that the effluent has not been acutely toxic since 1995 (see Facility Summary in Appendix).

Methods

The focus of this investigation was to determine the discharger's effects on the receiving waters. A comparison of biological community health was made between a control site (located 500 meters off Mandarin Point) and two test sites (33 meters above and below the discharge) in the St. Johns River. A habitat assessment was performed *in situ* to establish comparability between sites. Supplemental physical/chemical data were also collected on the effluent and study sites. Acute toxicity bioassays, using the invertebrates, *Ceriodaphnia dubia* and *Americamysis bahia,* and the fish, *Cyprinella leedsi* and *Menidia beryllina*, as test organisms, were performed on an effluent sample.

Benthic macroinvertebrate communities were evaluated at control and test sites. Invertebrates were collected from three replicate petite Ponar grabs. Phytoplankton were sampled at both control and test sites via subsurface grabs. Chlorophyll *a* was also determined for phytoplankton communities. *Selenastrum capricornutum* was used as the test organism for the algal growth potential tests. Sediment from control and test sites was analyzed for grain size and percent organic matter. All field and laboratory biological methods were carried out following Biology Section Standard Operating Procedures (SOP's). The latest version of the SOP's can be viewed on our web site at: 'www.dep.state.fl.us/labs/sops.htm'.

The effluent was analyzed for metals and for organic constituents (base, neutral and acid extractables, and pesticide extractables). Additionally, nutrient analyses were performed on the effluent and samples from control and test sites. Methods used for all chemical analyses are on file at the DEP Central Chemistry Laboratory in Tallahassee.

Several different measurements of macroinvertebrate and algal community health have been employed to determine the effects of the discharge. These measurements include: habitat assessment, taxa richness, number of polychaete taxa, percent pelecypods, community structure, and functional feeding groups. For a discussion of each of these measures, see *Explanation of Measurements of Community Health* in Appendix.

For graphical purposes, the percent differences between the control and test sites involving the number of taxa, the diversity, the number of polychaete taxa, and the percent pelecypods are measured as the control site minus test site divided by the control site. The percent differences between sites involving the percent tubificidae, algal density, chlorophyll *a*, and algal growth potential are determined by dividing the test site minus the control site by the control site.

The following personnel were involved in this investigation: Tim McKelvey and Pat O'Connor (DEP NE District) and Jennifer Eichelberger, Ken Espy, Marshall Faircloth, Russel Frydenborg, Joy Jackson, Scott Lashbrook, Elizabeth Miller, Urania Quintana, Johnny Richardson, Lisa Tamburello, David Whiting, Vicki Whiting, and Steve Wolfe (DEP Central Biology Laboratory in Tallahassee). The report was reviewed by the Point Source Studies Review Committee, consisting of Wayne Magley, Jan Mandrup-Poulsen, and Michael Tanski, as well as District representatives.

Results and Discussion

The study area was situated in a portion of the St. Johns River which typically has low or fluctuating salinity. During this investigation, the water was predominately fresh. Numerous pollution sources are present in the area, which is subject to tidally-induced flow reversals. The sampling for this study was performed during an outgoing tide. Habitat quality was similar at all three stations, with 55 points at the control site and 52 points at both test sites. Shorelines at all three sites consisted mainly of riprap and vertical sea-walls. All sites received "fair" scores for com-

munity types present (see Habitat Assessment Sheets in Appendix).

Physical/chemical parameters were similar at all three sites (Table 1). Specific conductance ranged from 785 µmhos/cm to 807 µmhos/cm (less than 1 ppt salinity). The pH was lower at test site 1 (6.9 SU) compared to the control site (7.5 SU) or test site 2 (7.2 SU). All three study sites were adequately oxygenated (with dissolved oxygen ranging from 8.4 mg/L to 9.3 mg/L) and similar in clarity. Dissolved oxygen in the effluent (4.1 mg/L) was in violation of the 5.0 mg/L minimum permit limit.

Due to the salinity fluctuations within this area of the St. Johns River, acute 48-hour bioassays were performed on the effluent using both freshwater and marine organisms. The sample of effluent was not toxic to the invertebrates, *Ceriodaphnia dubia* and *Americamysis bahia* or to the fish, *Cyprinella leedsi* and *Menidia beryllina* (Appendix).

The herbicide atrazine (0.53 µg/L) was detected in the effluent at a concentration below chronically toxic levels (AQUIRE 1997). The silver concentration in the effluent (0.09 µ/L) exceeded Class III water quality standards (Rule 62-302.530(60) FAC). Copper, iron, zinc, aluminum, cadmium, and lead were detected in the effluent at non-problem levels (Table 1).

Total phosphorus in the effluent (2.4 mg/L) was slightly elevated, contributing to the moderately elevated total phosphorus levels found at test site 1 (0.2 mg/L) (Table 1). The total phosphorus value at test site 1 was higher than those found in 80% of other Florida estuaries (see *Typical Values for Selected Parameters in Florida Waters* in Appendix). Nitrate+nitrite levels at all three study sites were elevated, with a concentration of 0.27 mg/L found at both the control site and at test site 2, and 0.25 mg/L measured at test site 1. These levels were higher than those found in 95% of other Florida estuaries. Since the effluent concentration of nitrate+nitrite was relatively low, the enrichment at the study sites appeared to be from sources other than the discharge.

Algal Growth Potential (AGP) exceeded the "problem threshold" of 5 mg dry wt/L at all three sites (Raschke and Schultz, 1987) (Table 2). The control site and test site 2 had identical values of 17.3 mg dry wt/L, and test site 1 had a value of 18.0 mg dry wt/L. The effluent AGP value was 26.4 mg dry wt/L.

Phytoplankton community structure was relatively similar at all three sites (Table 2). A total of 36 taxa were found at the control site, 21 taxa at test site 1, and 29 taxa at test site 2. Shannon-Weaver diversity was almost identical at all three sites (3.8 at the control site and test site 2, and 3.9 at test site 1). Algal density was low throughout the study area, ranging from 2,209 cells/mL at the control site to 1,383 cell/mL at test site 2. The phytoplankton community at the control site was dominated by *Merismopedia* sp., a blue-green alga, and the phytoplankton at the two test sites consisted mainly of diatoms. Chlorophyll *a* was undetected at all three sites.

Sediments at both test sites consisted mainly of mud, muck, and silt, while the control site contained more sand. Sediment particle size was similar at both test sites, with 97% of the substrate consisting of particles 0.25 mm or smaller. The average sediment particle size at the control site was larger, with 89% of the substrate consisting of particles 0.25 mm and larger.

Quantitative measures of benthic macroinvertebrate community health indicated moderate differences between the control and test sites, which could be accounted for, at least partially, by the differences in sediment particle size. Figure 2 indicates the degree of difference between the control and test sites. Larger differences (that is, higher percentages) correspond with greater degrees of degradation. Negative values mean that the test site is better than the control.

Taxa richness was highest at test site 2 (16 taxa), decreasing to 13 taxa at the control site and 9 taxa at test site 1 (Table 2). Shannon-Weaver diversity was highest at the control site (3.1) decreasing by 38% at test site 1 (to 1.9), and by 16% at test site 2 (to 2.6). The 38% reduction in diversity at test site 1 is a violation of the biological integrity criterion (Rule 62-302.530(11) FAC). As expected by the low salinity, polychaete taxa richness was low at all three sites, with 2 taxa recovered from the control site, 0 taxa at test site 1, and 1 polychaete taxon at test site 2. The control site was dominated by spionid polychaetes, making up 26% of the total community. Both test sites were dominated by the pollution-tolerant oligochaete, *Limnodrilus hoffmeisteri*, making up approximately 60% of the total communities sampled.

Stress-tolerant freshwater chironomids made up approximately 2% of the control site community, 10% of test site 1, and 5% of test site 2. Pelecypods made up a small portion of the total communities sampled, the control site and test site 2 contained 8% and 9%, respectively, and only 3% of the community at test site 2 (Table 2).

Table 1. Effluent limits and summary of chemistry data.

Miller Street WWTP	Effluent Limits	Effluent Samples	Control Site	Test Site 1	Test Site 2
Organic Constituents (µg/L)					
Atrazine	–	0.53	–	–	–
Metals (µg/L)					
Aluminum	≤ 1500 **	49 I	–	–	–
Arsenic	≤ 50 **	40 U	–	–	–
Cadmium	≤ 1.3 **	0.02 I	–	–	–
Chromium	≤ 11 **	10 U			
Copper	≤ 2.9 **	1.1	–	–	–
Iron	≤ 300 **	84	–	–	–
Lead	3.7 **c	0.04 I	–	–	–
Mercury	≤ 0.012 **	0.1 U	–	–	–
Nickel	≤ 8.3 **	7 U	–	–	–
Selenium	≤ 5.0 **	50 U	–	–	–
Silver	≤ 0.07 **	0.09 I	–	–	–
Zinc	≤ 86 **	78	–	–	–
Nutrients (mg/L)					
Ortho-phosphate	Report *	2.0 A	0.044	0.14	0.055
Total phosphorus	Report *	2.4	0.096 A	0.2	0.095
Ammonia	Report *	0.69 A	0.4	0.057 A	0.036
Nitrate+Nitrite	Report *	0.029 I	0.27	0.25	0.27
TKN	Report *	1.8	0.8	0.8	0.8
Organic Nitrogen	Report *	1.11	0.4	0.74	0.76
Total Nitrogen	Report *	1.83	1.07	1.05	1.07
General Phys-Chem Parameters					
Habitat Assessment	–	–	55	52	52
D.O. (mg/L)	5.0 *	4.1	9.3	8.5	8.4
pH (SU)	6.5 - 8.5 *	6.8	7.5	6.9	7.2
Conductivity (µmhos/cm)	Report *	540	807	785	786
Temperature (°C)	Report *	20.2	14.6	14.9	14.8
C.B.O.D., 5 day (mg/L)	17.0 *a	2	< 2	< 2	< 2
Percent Removal - CBOD (5 day)	85 *b	–	–	–	–
T.S.S. (mg/L)	20.0 *a	< 1	8	5	7
Percent Removal - TSS	85 *b	–	–	–	–
Flow (MGD)	5.0 *a	3.5	–	–	–
Hardness (mg $CaCO_3$)	–	113.9	–	–	–
AGP (mg dry wt/L)	–	26.4	17.3	18 A	17.3
Toxicity					
Bioassay - Fish (freshwater)	–	Not toxic	–	–	–
Bioassay - Fish (salinity-adjusted)	Report *	Not toxic	–	–	–
Bioassay - Invertebrate	Report *	Not toxic	–	–	–
Microbiology (# counts/100mL)					
Fecal Coliforms	200 *a	–	–	–	–

* Permit Limit

** Class III water quality standard

a – Annual average

b – Monthly average

c – Value is calculated based on hardness

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

I – Value reported is less than the minimum quantitation limit, and ≥ the minimum detection limit

U – Material analyzed for but not detected; value reported is the minimum detection limit

Conclusions

The herbicide atrazine (0.53 µg/L) was detected in the effluent at a concentration below chronically toxic levels. The silver concentration in the effluent (0.09 µ/L) exceeded Class III water quality standards (Rule 62-302.530(60) FAC). Copper, iron, zinc, aluminum, cadmium, and lead were detected in the effluent at non-problem levels.

The sample of effluent was not acutely toxic to any of the four species of test organisms.

Effluent dissolved oxygen (4.1 mg/L) was in violation of the 5.0 mg/L minimum permit limit.

Total phosphorus in the effluent was slightly elevated and could be responsible for the moderately elevated total phosphorus found at test site 1. Nitrate+nitrite levels were low in the effluent, yet elevated at all three study sites, suggesting nitrogen inputs from sources other than the discharge.

Algal growth potential exceeded the "problem threshold" of 5 mg dry wt/L at all three sites, probably due to the elevated nitrate+nitrite concentrations throughout the study area.

The effluent did not appear to have a negative effect on the algal communities. Chlorophyll *a* was undetected at all three sites.

Shannon-Weaver diversity was highest at the control site (3.1) decreasing by 38% at test site 1 (to 1.9), and by 16% at test site 2 (to 2.6). The 38% reduction in diversity at test site 1 is a violation of the biological integrity criterion (Rule 62-302.530(11) FAC). These differences may be due, in part, to differences in substrate types, although the effluent would be expected to affect test site 1 on an outgoing tide as was the case during this study. Both test sites were dominated by the pollution-tolerant oligochaete, *Limnodrilus hoffmeisteri,* making up approximately 60% of the total communities sampled.

Most differences in measures of macroinvertebrate health between the control and test sites could be accounted for by differences in sediment particle size. However, taxa richness and diversity were lower at test site 1 than either the control site or test site 2. Since test site 1 is in the direct path of the discharge plume during outgoing and low tide, it is possible the additional adverse effects observed there were related to the discharge.

Literature Cited

Aquatic Toxicity Information Retrieval Data Base (AQUIRE). 1991. U.S. EPA Environmental Research Laboratory, Duluth, Mn.

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FDEP. 1994. Lake bioassessments for the determination of nonpoint source impairment in Florida. Fla. Dept. Environ. Prot. Biology Section, Tallahassee, Fla. 73 p.

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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.

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Table 2. Major characteristics of community structure of control and test sites.

Miller Street WWTP	Control Site	Test Site 1	Test Site 2
Macroinvertebrate			
Number of Taxa	13	0	16
Shannon-Weaver Diversity	3.1	1.9	2.6
No. Polychaete Taxa	2	0	1
Community Composition			
% Amphipoda	5.7	0	3.8
% Decapoda	1.9	0	0.4
% Diptera	7.6	27	15.7
% Gastropoda	3.8	13.5	3.5
% Isopoda	11.3	0	0
% Pelecypoda	7.6	2.7	9.2
% Polychaeta	34	0	0.4
% Oligochaeta	32.1	70.3	74.7
Functional Feeding Groups			
% Browsers-grazers	7.6	0	1.9
% Burrowing Deposit Feeders	32	70.3	74.7
% Predators/Carnivores	6.6	10.8	6.3
% Scavengers	8.5	0	2.1
% Scrapers	3.8	13.5	3.5
% Surface Deposit Feeders	17.9	1.4	1
% Suspension Feeders	22.6	2.7	9.4
% Unknown	1	1.3	1.1
Phytoplankton Algae			
Number of Taxa	36	21	29
Shannon-Weaver Diversity	3.8	3.9	3.8
Chlorophyll *a* (µg/L)	1.0 U	0.88 U	1.0 U
Algal Density (#/mL)	2208.7	1389.0	1383.1
% Blue-green	45	26.1	18.4
% Cryptophytes	17.4	4.4	22.6
% Diatoms	16.7	55.6	40.6
% Euglenophytes	0.4	0	0
% Dinoflagellates	0.4	0	0.4
% Green	19.5	13.9	18
AGP (mg dry wt/L)	17.3	18 A	17.3

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

U – Material analyzed for but not detected; value reported is the minimum detection limit

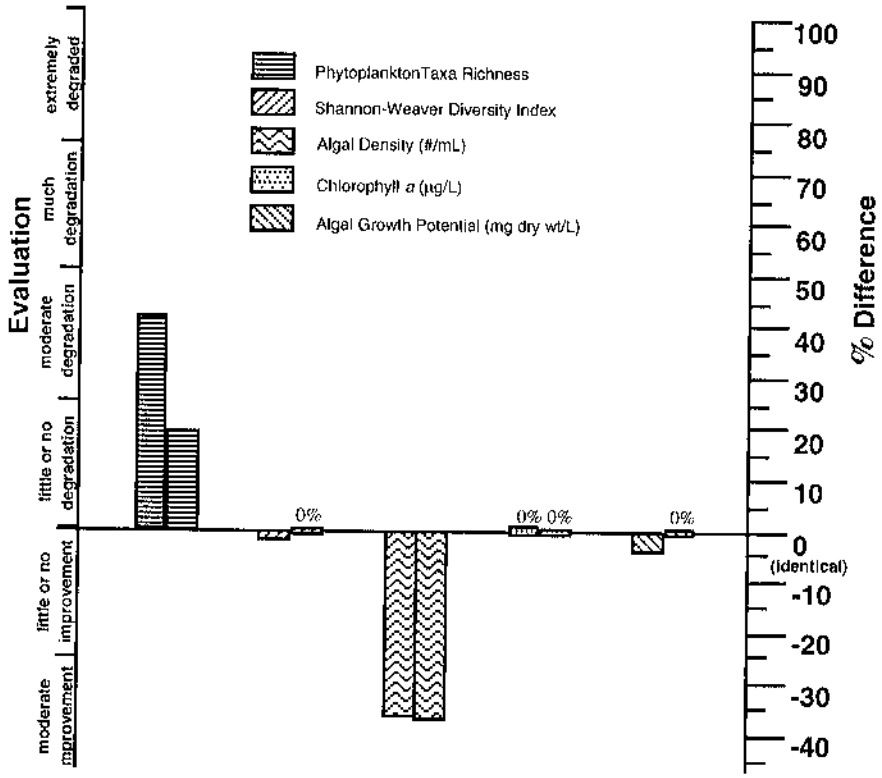


Figure 1. Effect of discharge on the algal community.

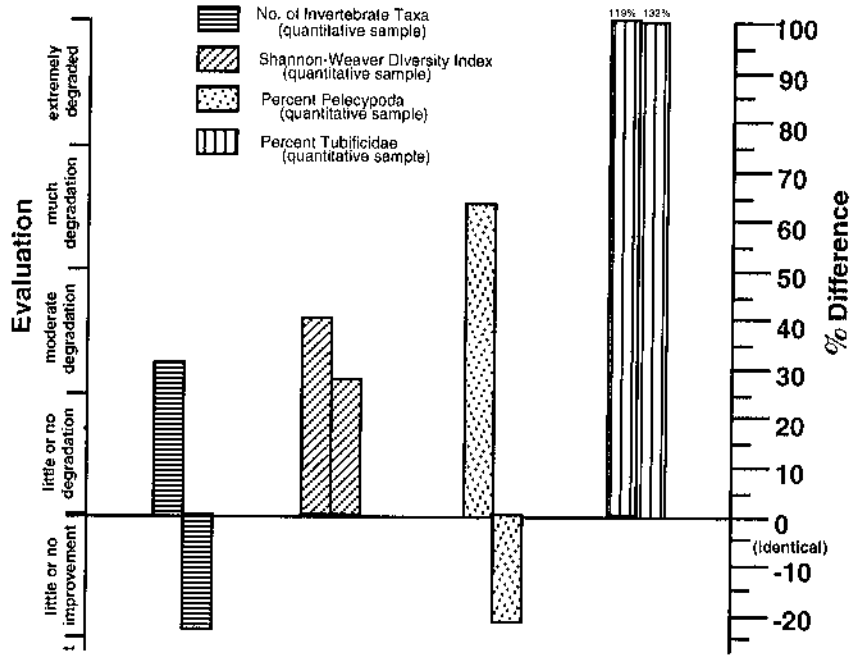


Figure 2. Effect of discharge on the benthic macroinvertebrate community.

Explanation of Measurements of Community Health

Several different measurements of macroinvertebrate and algal community health have been employed to determine the effects of a discharge. These are briefly discussed here.

Taxa richness: Stress tends to reduce the number of different types of organisms present in a system, although moderate nutrient enrichment may sometimes be correlated with increased algal taxa richness.

Shannon-Weaver diversity: This index is specified in the Florida Administrative Code as a measure of biological integrity. Low diversity scores are undesirable. They represent conditions where only a few organisms are abundant, to the exclusion of other taxa. Excessive numerical dominance of a single type of organism (a high % contribution of the dominant taxon) is a related measure which is also associated with disturbance.

Numbers of pollution sensitive taxa: Some organisms become rare or absent as the intensity or duration of disturbance increases. Species sensitivity data from other sources, such as Chang *et al.* (1992), Farrell (1992), Hudson *et al.* (1990), Hulbert (1990), Lenat (1993), and Whitmore (1989), are used as appropriate.

Community structure: Substantial shifts in proportions of major groups of organisms, compared to control conditions, may indicate degradation. In marine systems, an increase in the % tubificid oligochaetes, a decrease in the % pelecypods, and a decrease in the number of polychaete taxa are all considered indicators of disturbance (Engel *et al.* 1994).

Trophic composition/feeding guilds: Disturbance can shift the feeding strategies of invertebrates. In Florida for example, pollution may be responsible for reducing the numbers of filter-feeders (FDEP 1994) and shredders (EA Engineering 1994).

Algal biomass: High algal biomass (algal density or chlorophyll *a*) implies nutrient stress.

Typical Values for Selected Parameters in Florida Waters

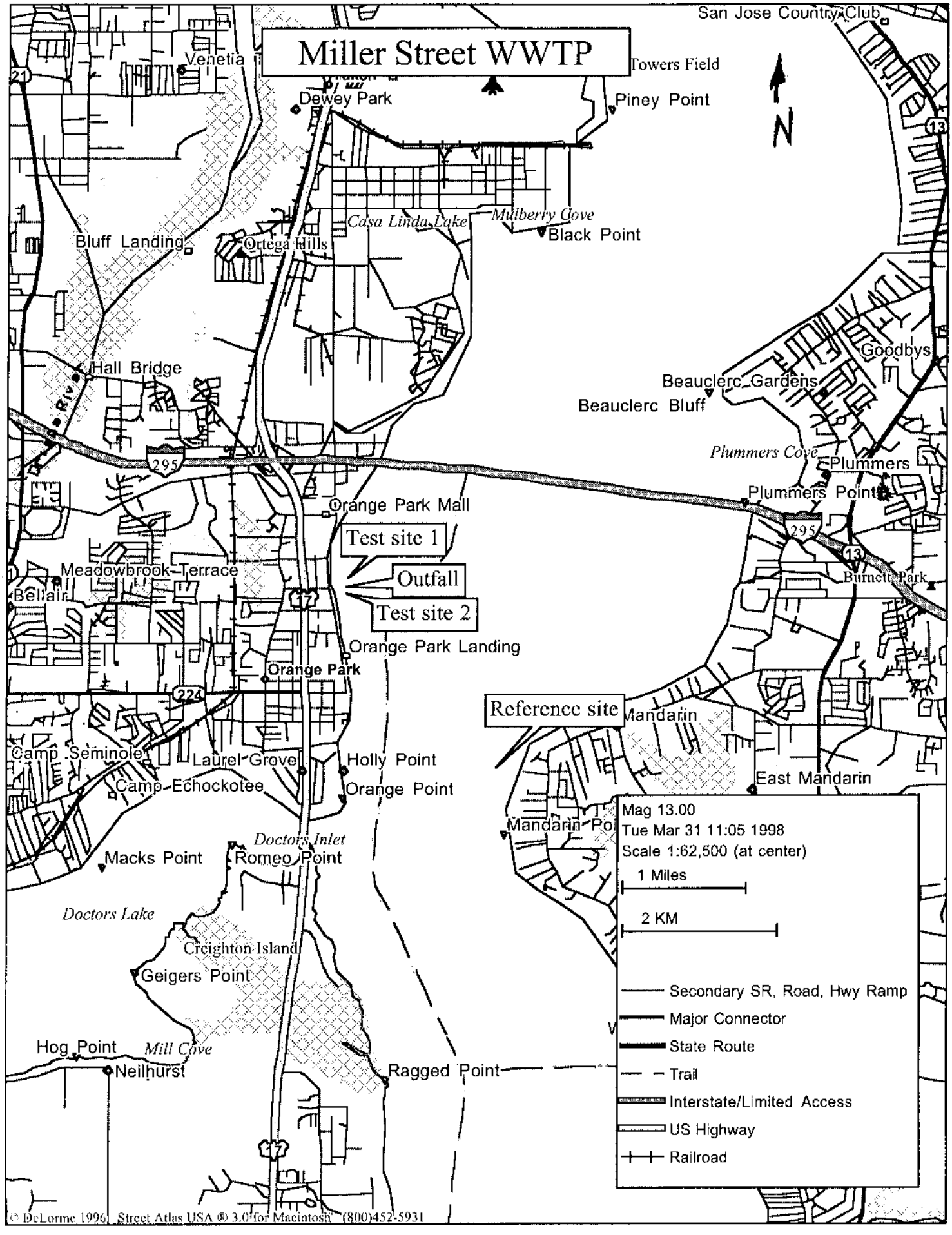
Adapted from Joe Hand, FDER, personal communication, 1991
(data was collected between 1980 and 1989)

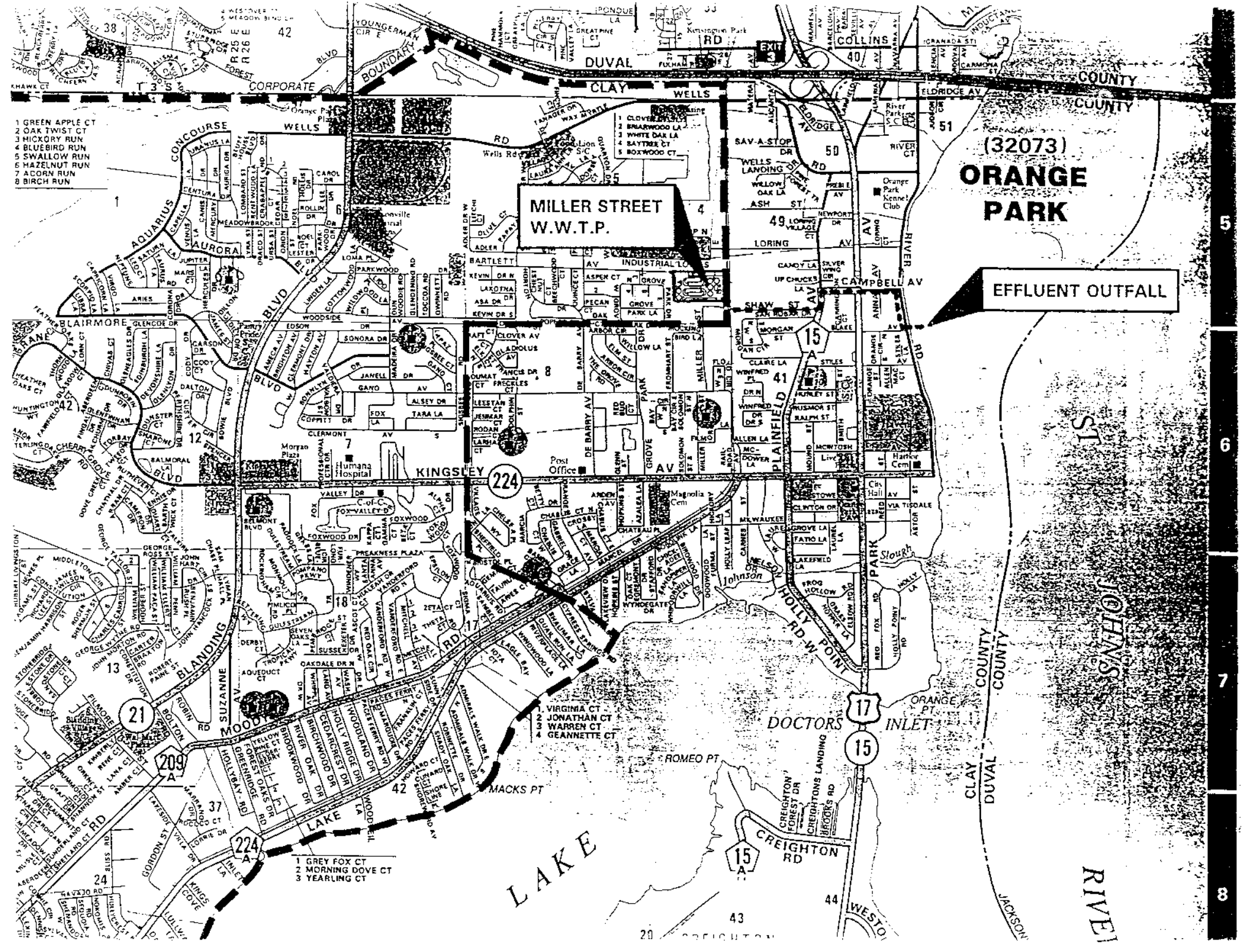
Percentile Distribution

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%
STREAMS (1617 stations)											
Phytoplankton Chlorophyll *a*	0.22	0.52	0.94	1.60	3.02	4.63	6.72	9.87	14.68	27.35	48.70
Periphyton Chlorophyll *a*	0.31	0.43	0.77	1.04	2.16	2.94	6.45	10.51	17.00	39.51	60.85
H-D Diversity	0.84	2.12	2.48	2.74	2.88	3.09	3.25	3.40	3.52	3.76	3.90
Qualitative Taxa Richness	9.00	12.00	17.00	20.00	22.00	24.50	26.00	28.00	31.00	37.00	53.00
H-D Taxa Richness	6.00	6.50	9.00	11.50	13.00	15.00	17.00	21.50	26.00	29.00	32.00
TKN	0.30	0.39	0.56	0.73	0.87	1.00	1.11	1.26	1.49	1.93	2.80
Ammonia	0.02	0.02	0.04	0.05	0.06	0.08	0.11	0.14	0.20	0.34	0.60
NO2-NO3	0.01	0.01	0.03	0.05	0.07	0.10	0.14	0.20	0.32	0.64	1.05
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	0.39	0.74	1.51
Ortho Phosphorus	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	0.59	1.37
Turbidity	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30
LAKES (477 stations)											
Phytoplankton Chlorophyll *a*	0.80	1.71	2.88	4.28	10.06	13.40	20.00	30.10	47.20	65.44	113.90
Dredge Diversity	0.71	0.97	1.43	1.74	1.98	2.12	2.21	2.59	2.85	3.15	3.17
Dredge Taxa Richness	3.00	5.00	6.50	7.00	9.00	10.00	11.00	13.00	15.00	17.00	21.00
TKN	0.36	0.49	0.67	0.83	1.08	1.26	1.40	1.51	1.68	2.11	3.46
NH3+NH4	0.01	0.02	0.02	0.03	0.04	0.06	0.08	0.12	0.15	0.21	0.28
NO2-NO3	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.05	0.10	0.14	0.23
Total Phosphorus	0.01	0.02	0.02	0.03	0.05	0.07	0.09	0.11	0.14	0.23	0.42
Ortho-Phosphorus	0.00	0.01	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.21	0.32
Turbidity	1.00	1.25	1.55	2.05	2.75	4.50	6.45	9.60	14.10	26.00	40.00
ESTUARIES (690 stations)											
Phytoplankton Chlorophyll *a*	2.14	3.28	4.49	5.13	6.00	6.93	7.94	9.60	12.40	17.60	22.20
Dredge Diversity	1.34	1.53	1.91	2.28	2.56	2.90	3.15	3.59	4.01	4.53	4.98
Dredge Taxa Richness	4.00	6.00	9.00	11.00	15.00	18.50	25.00	35.00	41.00	62.00	90.00
TKN	0.26	0.34	0.42	0.50	0.59	0.69	0.76	0.82	0.95	1.30	1.49
NH3+NH4	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.09	0.13	0.22	0.28
NO2-NO3	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.05	0.08	0.17	0.23
Total Phosphorus	0.01	0.02	0.06	0.07	0.10	0.11	0.14	0.17	0.23	0.43	0.59
Ortho-Phosphorus	0.01	0.02	0.03	0.04	0.04	0.05	0.07	0.09	0.12	0.21	0.44
Turbidity	3.50	4.00	4.50	5.05	5.40	5.60	6.30	6.80	8.00	11.40	11.75

Units:

Phytoplankton Chlorophyll *a* (ug/L), Periphyton Chlorophyll *a* (mg/m^2), Nutrients (mg/L), Turbidity (NTU), Taxa richness and diversity values are for macroinvertebrates


Miller Street WWTP
San Jose Country Club
Towers Field
Piney Point
Venetia
Dewey Park
N
Casa Linda Lake
Mulberry Cove
Black Point
Bluff Landing
Ortega Hills
Hall Bridge
Goodbys
Beauclerc Gardens
Beauclerc Bluff
Plummers Cove
Plummers
Plummers Point
295
Orange Park Mall
Test site 1
Outfall
Test site 2
Meadowbrook Terrace
Bellair
Burnett Park
Orange Park Landing
Orange Park
224
Reference site
Mandarin
Camp Seminole
Laurel Grove
Holly Point
Camp Echockotee
Orange Point
East Mandarin
Doctors Inlet
Macks Point
Romeo Point
Doctors Lake
Creighton Island
Geigers Point
Hog Point
Mill Cove
Neilhurst
Ragged Point
Mag 13.00
Tue Mar 31 11:05 1998
Scale 1:62,500 (at center)
1 Miles
2 KM
Secondary SR, Road, Hwy Ramp
Major Connector
State Route
Trail
Interstate/Limited Access
US Highway
Railroad
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MILLER STREET
W.W.T.P.
EFFLUENT OUTFALL
ORANGE
PARK
(32073)
1 GREEN APPLE CT
2 OAK TWIST CT
3 HICKORY RUN
4 BLUEBIRD RUN
5 SWALLOW RUN
6 HAZELNUT RUN
7 ACORN RUN
8 BIRCH RUN
1 CLOVER LA
2 BRIARWOOD LA
3 WHITE OAK LA
4 BAYTREE CT
5 BOXWOOD CT
1 VIRGINIA CT
2 JONATHAN CT
3 WARREN CT
4 GEANNETTE CT
1 GREY FOX CT
2 MORNING DOVE CT
3 YEARLING CT
DOCTORS INLET
LAKE
ROMEO PT
MACKS PT
CREIGHTON RD
HOLLY RD-W POINT
BLANDING BLVD
KINGSLEY
DUVAL COUNTY
CLAY COUNTY
ST JOHNS RIVER
Humana Hospital
Post Office
Magnolia Cem
Hatton Cem
Orange Park Kennel Club
Johnson Slough
Publix
Food Lion
SAV-A-STOP
Morgan Pizza
Orange Park Pizza
Kensington Park
Buckingham Village
Bellaire Village
Orange Park Village
Loring Village
Industrial Loop
Wells Landing
Creighton Forest
Creighton Landings
Hoods Landing
Jackson Cove
Kings Cove
Inlet Lake
Parkwood Lake
Meadowbrook
Forest Oaks
Greenridge
Hollybay
Brookwood
Woodland Dr
Holly Ridge Dr
Cedarcrest Dr
Birchwood Dr
River Oak Dr
Fox Valley Dr
Foxwood Dr
Foxhound Dr
Preakness Plaza
Pompano Pkwy
Tropical Pkwy
Seven Oaks
Oakdale Dr N
Aqueduct Ct
Derby Ct
Sussex Dr
Kerseyen Dr
Guisstream
Pacers Ferry
Admirals Walk Dr E
Admirals Walk Dr W
Squadron Ln
Eagle Bay
Windward Ln
Quarterdeck Ln
Shady Oak Ln
Robinette Ln
Howard Ct
Sharon Ct
Shorecrest Dr
Shoreline Ln
Shoreline Dr
Sandpiper Ln
Sandpiper Ct
Seagull Ct
Seagull Ln
Seagull Dr
Seagull Cir
Seagull Pl
Seagull Way
Seagull Trl
Seagull Run
Seagull Ct
Seagull Ln
Seagull Dr
Seagull Cir
Seagull Pl
Seagull Way
Seagull Trl
Seagull Run

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
FACILITY SUMMARY: Class III

Facility Name: Miller Street WWTF	Prepared by: Kathleen H. Gerard Date: December 5, 1997.	
Location (attach detailed map): 1000 Miller Street Orange Park, FLORIDA.	County Clay	District Northeast District
Federal Permit # FL0025151 and expiration date: July 14, 2002	State GMS # and 3110C04764 State expiration date: July 14, 2002	Facility Type: Industrial Municipal Federal Agricultural Other (list): County

Function of facility:
Wastewater Treatment Plant

Description of treatment process:
This Facility is permitted to operate as a 5.0 MGD oxidation ditch type activated sludge wastewater treatment plant. The Facility consists of grit removal, Two 0.307 MG flow equalization basins, Two 2.0 MG oxidation ditches with brush aerators, three 0.347MG clarifiers, Two 0.049 MG chlorine contact basins, chlorination and dechlorination. Treated effluent is discharged to the St. Johns River.

Receiving waters: St. Johns River	Classification: Class III marine
Design Flow: 5.0 MGD	Actual Mean Flow: 3.45 MG

Discharge is: (Continuous) Intermittent Seasonal Rainfall dependent
Other (describe)

therefore, the best time to sample is:

If facility has a mixing zone, give details (size, parameters affected, etc.):
- none -

List effluent limits:

Parameter	Limit (units)

Describe special permit conditions and permit modifications:
Refer to attachments for effluent limits and quarterly sampling and river monitoring requirements

Miller Street WWTP
(Facility)

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
FACILITY SUMMARY

Description of permitted outfall(s):

List permit violations (from MOR data or other source) and plant upsets that occurred within past year:

Further review of data submitted on Discharge Monitoring Reports (DMRs) is necessary To determine compliance with limitations that are stated in the permit.

Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions:

Discuss comparability of MOR results to past DER results and whether there are trends (improving, declining) in the data set:

Data that was recorded on DMRs is consistant to sampling results obtained by the Department.

Additional information:

Inconsistancies of sample results that were submitted by Miller Street WWTP to Two Contract laboratories. Spit samples had inconsistant results during 1997. This situation has since been Corrected.

Deficiencies noted on inspections have been Corrected.

FLORIDA

Department of Environmental Protection

Lawton Chiles
Governor

Northeast District
7825 Baymeadows Way, Suite B200
Jacksonville, Florida 32256-7590

Virginia B. Wetherell
Secretary

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF PERMIT REVISION

CERTIFIED MAIL - RETURN RECEIPT

September 12, 1997

In the Matter of an Application
for Permit by:

Mr. Ray O. Avery, Executive Director
Clay County Utility Authority
782 Foxridge Center Drive
Orange Park, Florida 32065

DEP File No. 292979
Clay County
Miller Street WWTF

Enclosed is a minor revision to pages 2 through 6 of Permit Number FL0025151 to incorporate the following changes:

1. Change the Total Kjeldahl Nitrogen single sample maximum limit of 30 mg/L to monitoring only. This revision is to correct a minor error of an inappropriate effluent limit. The Miller Street WWTF is an oxidation ditch process providing nitrification. Historical monitoring data show the effluent TKN concentrations are consistently well below the 30 mg/L level,
2. Reduce the ambient monitoring from five stations to two stations and to include STORET numbers for each station.
3. Revise the Whole Effluent Toxicity testing requirements from a definitive acute screen routine test followed by two definitive additional tests to allow an acute screen for the routine test followed by three definitive additional tests. The Whole Effluent Toxicity test species have also been changed from freshwater species to marine species.
4. To eliminate the un-ionized ammonia monitoring because the discharge is to predominantly marine waters for which there is no associated water quality standard.

These revisions are issued in accordance with to Chapters 62-4, 62-601 and 62-620, Florida Administrative Code and Section(s) 403.087, Florida Statutes. All other portions of this permit remain in effect and are fully enforceable.

Department of Environmental Protection

FLORIDA

Lawton Chiles
Governor

Northeast District
7825 Baymeadows Way, Suite B200
Jacksonville, Florida 32256-7590

Virginia B. Wetherell
Secretary

NOTICE OF PERMIT ISSUANCE

July 15, 1997

CERTIFIED MAIL - RETURN RECEIPT

In the Matter of an Application
for Permit by:

Mr. Ray O. Avery, Executive Director
Clay County Utility Authority
782 Foxridge Center Drive
Orange Park, Florida 32065

DEP File No. 292979
Clay County
Miller Street WWTF

Enclosed is Permit Number FL0025151 to operate the Miller Street WWTF issued under section(s) 403 of the Florida Statutes.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative hearing in accordance with sections 120.569 and 120.57 of the Florida Statutes, or all parties may reach a written agreement on mediation as an alternative remedy under section 120.573 before the deadline for filing a petition. Choosing mediation will not adversely affect the right to a hearing if mediation does not result in a settlement. The procedures for petitioning for a hearing are set forth below, followed by the procedures for pursuing mediation.

The petition must contain the information set forth below and must be filed (received) in the Department's Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any other person must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. A petitioner must mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition (or a request for mediation, as discussed below) within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 of the Florida Statutes, or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the discretion of the presiding officer upon the filing of a motion in compliance with rule 28-5.207 of the Florida Administrative Code.

A petition must contain the following information:

(a) The name, address, and telephone number of each petitioner; the Department's permit identification number and the county in which the subject matter or activity is located;

Department of
Environmental Protection

Lawton Chiles
Governor

Northeast District
7825 Baymeadows Way, Suite B200
Jacksonville, Florida 32256-7590

Virginia B. Wetherell
Secretary

STATE OF FLORIDA
DOMESTIC WASTEWATER FACILITY PERMIT

PERMITTEE:

Clay County Utility Authority
782 Foxridge Center Drive
Orange Park, FL 32065

PERMIT NUMBER: FL0025151
ISSUANCE DATE: July 15, 1997
EXPIRATION DATE: July 14, 2002
GMS I.D. NO.: 3110C04764 (Major)
APPLICATION NO.: 292979

FACILITY:

Miller Street WWTP
1000 Miller Street
Clay County
Orange Park, FL
Latitude: 30° 10' 40" N Longitude: 81° 42' 46" W

This permit is issued under the provisions of Chapter 403, Florida Statutes, and applicable rules of the Florida Administrative Code and constitutes authorization to discharge to waters of the state under the National Pollutant Discharge Elimination System. The above named permittee is hereby authorized to operate the facilities shown on the application and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

TREATMENT FACILITIES:

To operate an existing 5.0 MGD (AADF) oxidation ditch type activated sludge wastewater treatment plant. The facility consists of grit removal, two 0.307 MG flow equalization basins, two 2.0 MG oxidation ditches with brush aerators, three 0.347 MG clarifiers, two 0.049 MG chlorine contact basins, chlorination and dechlorination, one sludge gravity belt thickner, one 0.372 MG aerobic digester, two sludge belt filter presses and one lime stabilization system. Wastewater residuals are treated to Class B stabilization requirements and land applied.

EFFLUENT DISPOSAL:

Surface Water Discharge: To operate an existing 5.0 MGD AADF permitted discharge to the St. Johns River (Class III marine) at Discharge Location (D001).

IN ACCORDANCE WITH: The limitations, monitoring requirements and other conditions as set forth in Pages 1 through 21 of this permit.

Department shall notify all parties in writing that the administrative hearing processes under section 120.569 and 120.57 remain available for disposition of the dispute, and the notice will specify the deadlines that then will apply for challenging the agency action and electing remedies under those two statutes.

This action is final and effective on the date filed with the Clerk of the Department unless a petition (or request for mediation) is filed in accordance with the above. Upon the timely filing of a petition (or request for mediation) this order will not be effective until further order of the Department.

Any party to the order has the right to seek judicial review of the order under section 120.68 of the Florida Statutes, by the filing of a notice of appeal under rule 9.110 of the Florida Rules of Appellate Procedure with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000; and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within 30 days from the date when the final order is filed with the Clerk of the Department.

Executed in Jacksonville, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Jerry M. Owen, P.E.
Water Facilities Administrator

Enclosure

Copies furnished to: Ed Hernandez, P.E.
Marshall Hyatt, EPA
Jan Mandrup-poulsen, DEP

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT REVISION and all copies were mailed by certified mail before the close of business on 9/12 1997 to the listed persons.

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

9/12/97

PERMITTEE: Clay County Utility Authority
782 Foxridge Center Drive
Orange Park, FL 32065

PERMIT NUMBER: FL0025151
EXPIRATION DATE: July 14,2002
APPLICATION NO.: 292979
REVISION DATE: September 15, 1997

I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Surface Water Discharges

1. During the period beginning upon the issuance date of the permit and lasting through the expiration date, the permittee is authorized to discharge effluent from Outfall D001 to the St. Johns River. Such discharge shall be limited and monitored by the permittee as specified below:

			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	5.0 ✓	-	-	-	Continuous	Recording flow meters and totalizers	EFD-01	See Cond.I.A.4
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	Maximum	17.0 ✓	21.25	25.5	34.0	Weekly	24-hour flow proportioned composite	EFD-01	
Percent Removal - Carbonaceous Biochemical Oxygen Demand (5 day)	%	Minimum	-	85.0 ✓	-	-	Weekly	Calculated	EFD-01	
Total Suspended Solids	mg/L	Maximum	20.0✓	30.0	45.0	60.0	Weekly	24-hour flow proportioned composite	EFD-01	
Percent Removal - Total Suspended Solids	%	Minimum		85.0 ✓			Weekly	Calculated	EFD-01	
pH	std. units	Range	-	-	-	6.5 to 8.5	Continuous	meter	EFD-01	See Cond.I.A.3
Fecal Coliform Bacteria	See Permit Condition I.A.5.						Weekly	Grab	EFD-01	
Total Residual Chlorine (For Disinfection)	mg/L	Minimum	-	-	-	0.5	Continuous	meter	EFA-01	See Cond.I.A.3, 6
Total Residual Chlorine (For Dechlorination)	mg/L	Maximum	-	-	-	0.01	Daily	Grab	EFD-01	
Oxygen, Dissolved (DO)	mg/L	Minimum	-	-	-	5.0 ✓	Daily	Grab	EFD-01	
Nutrient Monitoring	See Permit Condition I.A.7.									
Stream Monitoring	See Permit Condition I.A.8.									
Whole Effluent Toxicity	See Permit Condition I.A.10 & 11.									
Benthic Monitoring	See Permit Condition I.A.12.									

2. Effluent samples shall be taken at the monitoring site locations listed in Permit Condition I. A. 1. and as described below:

Monitoring Location Site Number	Description of Monitoring Location
EFA-01	Immediately following disinfection.
EFD-01	Effluent, After final treatment.

3. Hourly measurement of pH and total residual chlorine for disinfection during the period of required operator attendance may be substituted for continuous measurement. *[Chapter 62-601, Figure 2, Footnotes 1 and 2, 5-31-93]*

4. Recording flow meters and totalizers shall be utilized to measure flow and calibrated at least annually. *[62-601.200(17) and .500(6), 5-31-93]*

5. The arithmetic mean of the monthly fecal coliform values collected during an annual period shall not exceed 200 per 100 mL of effluent sample. The geometric mean of the fecal coliform values for a minimum of 10 samples of effluent each collected on a separate day during a period of 30 consecutive days (monthly), shall not exceed 200 per 100 mL of sample. No more than 10 percent of the samples collected (the 90th percentile value) during a period of 30 consecutive days shall exceed 400 fecal coliform values per 100 mL of sample. Any one sample shall not exceed 800 fecal coliform values per 100 mL of sample. Note: To report the 90th percentile value, list the fecal coliform values obtained during the month in ascending order. Report the value of the sample that corresponds to the 90th percentile (multiply the number of samples by 0.9). For example, for 30 samples, report the corresponding fecal coliform number for the 27th value of ascending order. *[62-600.440(4)(c), 6-8-93]*

6. A minimum of 0.5 mg/L total residual chlorine must be maintained for a minimum contact time of 15 minutes based on peak hourly flow. *[62-600.440(4)(b), 6-8-93]*

7. No later than sixty (60) days following permit date of issuance, effluent discharged by the subject facility shall be sampled and tested for the following:

   a. Organic nitrogen.
   b. Nitrite nitrogen (NO2-N) and nitrate nitrogen (NO3-N).
   c. Total ammonia (NH3-N and NH4+-N).
   d. Total nitrogen.
   e. Total phosphorus.
   f. Orthophosphorus. ? = Orthophosphate

   24-hr flow proportioned composite samples shall be taken at least once every ninety (90) days until further notice is received from the Department. Test results (showing parameters and corresponding concentrations in mg/L) shall be submitted to the Department as an attachment to the discharge monitoring report corresponding to the months in which the samples were taken.

8. The Permittee shall conduct regular monitoring of the segment of the St. Johns River near the outfall for maintaining data on the impact of the discharge to the water quality of the surface water body.

Monitoring shall be on a quarterly basis and shall coincide with the quarterly nutrient monitoring of the facility effluent discharge. The monitoring sites are described as follows taking the point of discharge to be the coordinate origin:

STORET No.	Description	Latitude	Longitude
20030502	100 yards north of Miller Street WWTP POD	301033.6	814140.7
20030503	100 yards south of Miller Street WWTP POD	301024.5	814141.3

The parameters to be measured shall include the following:

1) DO, pH, temperature, conductivity
2) CBOD5, TSS, NH_3, TKN, NO_2+NO_3, TP, chlorophyll-a
3) Fecal coliform
4) Tide stage, total stream depth

Metered parameters (1) shall be sampled below the surface, mid depth, and two feet from the bottom. All other parameters shall be sampled at mid depth. Grab samples are adequate.

The results of instream monitoring shall be submitted to the Northeast District Office. *[62-4.240(3)(c), 4-30-95]*

9. The approved analytical methods and corresponding required MDL (method detection limit) and PQL (practical quantification limit) for parameters at Outfall D001 are:

Parameter	Analytical Method	MDL (units)	PQL (units)
CBOD	405.1	0.1 (mg/l)	0.5 (mg/l)
TSS	160.2	4.0 (mg/l)	4.0 (mg/l)
pH	150.1	0.10 (SU)	0.10 (SU)
Fecal Coliform	600/8-78-017	1/100 ml	2/100 ml
TRC (disinfection)	330.5	0.2 (mg/l)	0.2 (mg/l)
TRC (dechlor.)	330.1	0.01 (mg/l)	0.01 (mg/l)
Nitrogen, Total	351.2 and 353.2	0.1 (mg/l)	0.2 (mg/l)
Phosphorus, Total	365.1	0.02 (mg/l)	0.05 (mg/l)
Ammonia, Total	350.1	0.02 (mg/l)	0.04 (mg/l)
Nitrate+Nitrite	353.2	0.05 (mg/l)	0.1 (mg/l)
Orthophosphorus	365.1	0.02 (mg/l)	0.05 (mg/l)
TKN	351.2	0.1 (mg/l)	0.2 (mg/l)
Organic Nitrogen	calculated	-	-
Dissolved Oxygen	360.1	0.10 (mg/l)	0.10 (mg/l)

The MDLs and PQLs listed above shall constitute the minimum reporting levels for the life of the permit. The Department shall not accept results for which the laboratory's MDLs or PQLs are greater than those listed above. Unless otherwise specified, sample results shall be reported as follows:

a) results greater than or equal to the PQL shall be reported as the measured quantity.
b) results less than the PQL and greater than the or equal to the MDL shall be reported as the PQL followed by the lab code "m", and shall be deemed equal to the MDL when necessary to calculate an average for that parameter.
c) results less than the MDL shall be reported as the MDL followed by the lab code "u". A value of one half the MDL or half the effluent limit, whichever is lower, shall be used for that sample when necessary to calculate an average for that parameter. Values less

than the MDL are considered to demonstrate compliance with an effluent limit or monitoring requirement.
[62-4.246, 6-13-96]

10. Mortalities of 50% or greater in any sample of 100% effluent in a test of 96 hours duration or less, or a LC50 of less than 100% effluent in any additional definitive test, will constitute a violation of Florida Administrative Code (FAC) and the terms of this permit. The testing for this requirement must conform with Permit Condition I.A.11 of this permit. [62-4.244(3)(a)FAC]

11. In accordance with Rules 62-302.500(1)(d) and 62-303.200(1) FAC , the Permittee shall initiate the series of tests described below within six months of permit issuance to evaluate whole effluent toxicity of the discharge from outfall D001. All test species, procedures and quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, EPA/600/4-90/027F (4th edition), or the most current edition. The salinity of the control water and the effluent used will be adjusted using artificial sea salts as described in EPA/600/4-90/027F, Section 9, or the most current edition. The tests salinity shall be 20ppt for the mysid shrimp and 20ppt for the inland silverside minnow. A standard reference toxicant quality assurance test shall be conducted concurrently with each species used in the toxicity tests and the results submitted with the discharge monitoring report (DMR). Alternatively, if monthly QA/QC reference toxicant tests are conducted, these results must be submitted with the DMR. Any deviation from the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use.

Routine Tests

a. The permittee shall conduct 96 hour acute static renewal toxicity tests using the mysid shrimp, Mysidopsis bahia and the inland silverside minnow, Menidia beryllina . All tests shall be conducted on four separate grab samples collected at evenly spaced 6 hour intervals over a 24 hour period and used in four separate tests in order to catch any peaks of toxicity and to account for daily variations in effluent quality. Results of the four tests are not to be combined or averaged, but are to be reported separately.

b. If control mortality exceeds 10% for either species in any test, the test(s) for that species (including the control) shall be repeated. A test will be considered valid only if control mortality does not exceed 10% for either species. If, in any separate grab sample test, 100% mortality occurs prior to the end of the test, and control mortality is less than 10% at that time, that test (including the control) shall be terminated with the conclusion that the sample demonstrates unacceptable acute toxicity.

c. The Toxicity tests specified above shall be conducted using a control (0% effluent) and a test concentration of 100% final effluent and shall be conducted once every six (6) months for the duration of the permit, unless notified otherwise by the Department. These tests are referred to as "routine tests".

d. Results from "routine" tests shall be reported according to EPA/600/4-90/027F, Section 12, Report Preparation (or the most current edition), and shall be submitted to:

Florida Department of Environmental Protection
Northeast District
7825 Baymeadows Way Suite B-200

Jacksonville, Florida 32256
Attn.: Toxicity Coordinator

The results shall be entered on the DMR in the following manner: if an LC50 of less than 100% occurs in any of the four separate grab sample tests, " <100% " shall be entered on the DMR for that species. If an LC50 of 100% 0r greater occurs in all four separate grab sample tests, " >100% " shall be entered.

Additional Tests

a. If acute toxicity (defined as greater than 20% mortality in 100% effluent) is determined in a routine test, the permittee shall conduct a minimum of three (3) valid additional 96 hour acute static renewal definitive tests on each specie(s) indicating toxicity. The first test shall begin within 7 days of the failed routine test and be conducted weekly thereafter until three valid additional tests are complete. The additional tests sample collection requirements and test acceptability criteria specified in paragraphs 'a' and 'b' above must be met for the tests to be considered valid. All additional definitive tests shall be conducted with a control (0% effluent) and effluent concentrations of 6.25%, 12.5%, 25%, 50%, and 100%. The dilution series may be modified in the second and third tests to more accurately identify the toxicity, such that at least two dilutions above and two dilutions below the target toxicity and a control (0% effluent) are run. The additional tests will be used to determine if the toxicity found in the routine test is still present

b. Results for each additional test will include the determination of LC50 values with 95% confidence limits. Results from the additional tests, required due to acute toxicity in the "routine" tests, shall be submitted in a single report prepared according to EPA/600/4-90/027F, Section 12, Report Preparation (or the most current edition) and submitted within 45 days of completion of the third additional valid test. If the additional tests demonstrate acute toxicity, the permittee will meet with the Department within 30 days of the report submittal to identify corrective actions necessary to remedy the acute toxicity.

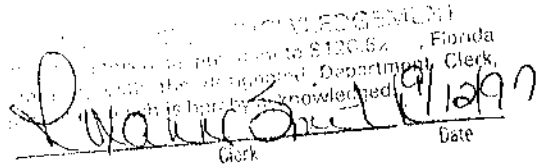
[Rule 62-302.500(1)(d), FAC]

12. The Permittee shall conduct a reconnaissance sediment sampling event to include up to six with a minimum of three transects located (1) along the outfall and (2 & 3) approximately 300 feet upstream and 300 feet downstream of the outfall for the purpose of establishing final sampling locations for permit monitoring. Sediment samples shall be collected with a Ponar grab and visual observations made of sediment texture and organic content, water depth, and current velocity. The final selected reference sampling locations shall be similar to the outfall location. The reconnaissance sampling event shall be conducted within 90 days of permit issuance and a report submitted to establish the final sampling locations submitted to the Department within 120 days of permit issuance.

Upon approval of the sampling locations by the Department, the Permittee shall initiate regular monitoring of the segment of the St. Johns River near the outfall for maintaining data on the impact of the discharge to the river sediments and associated benthic communities near the outfall to the surface water body. Monitoring shall be on a yearly basis and shall coincide with the 1st quarterly nutrient and stream monitoring events for the facility effluent discharge. The monitoring sites are described as follows:

Transect #1
#1 approximately 300 feet upstream of the outfall and 20 feet from the shoreline
#2 approximately 300 feet upstream of the outfall and 1000 feet from the shoreline
Transect #2
#3 approximately 300 feet downstream of the outfall and 20 feet from the shoreline
#4 approximately 300 feet downstream of the outfall and 1000 feet from the shoreline

Three replicate sediment samples will be collected at each site noted above using a Ponar dredge and combined to form one composite sample. The sample shall be screened using a U.S. Standard No. 30 sieve and benthic macroinvertebrates shall be identified. The composite sample shall be analyzed for total solids, volatile solids and particle size distribution. An annual report of the analyses shall be submitted to the Department along with the 1st quarter nutrient and stream monitoring results. The laboratory analyses shall also include field notes describing the color, texture, or any other qualitative description of the sediments, and other pertinent information. The results of the benthic monitoring shall be submitted to the Northeast District Office. *[62-302.530(11), 8-8-94]*



STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

SUBMITTING AGENCY CODE: 5037 / SUBMITTING AGENCY NAME: NED	STORET STATION NUMBER: 20030507	DATE (M/D/Y): 12-9-97	TIME: 1345	RECEIVING BODY OF WATER: St Johns River

REMARKS:	COUNTY: DUVAL	LOCATION: 500 YARDS OFF MANDARIN POINT.	FIELD ID/NAME: Reference Site

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
				100			

Local Watershed Erosion (check box): None [✓] Slight [ ] Moderate [ ] Heavy [ ]

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

Width of riparian vegetation (m) on least buffered side: 2 18m

List & map dominant vegetation on back

Artificially Channelized [✓] no [ ] [ ] [ ]
recent, severe some recovery mostly recovered, more sinuous

Artificially Impounded [ ] yes

High Water Mark: 1.5 (m above present water level) + 2.5 (present depth in m) = 3.0 (m above bed)

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

m wide

m/s m/s m/s

m deep m deep m deep

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

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: [✓] Sewage: [ ] Petroleum: [ ] Chemical: [ ] Anaerobic: [ ] Other: [ ]

Sediment Oils: Absent: [✓] Slight: [ ] Moderate: [ ] Profuse: [ ]

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

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)				Sand			
Leaf Packs or Mats				Mud/Muck/Silt	70	2	prev
Aquatic Vegetation				Other:			
Rock or Shell Rubble	30	1	prev	Other:			
Undercut banks/Roots				*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (ft):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):	SAL		Secchi (m):
Top								
Mid-depth	3.6 FT.	14.64	7.49	9.32	807	0.4		.6
Bottom								

System Type : Stream: [✓] 1st - 2nd order 3rd - 4th order 5th - 6th order 7th order or greater) Lake: [ ] Wetland: [ ] Estuary: [ ] Other: [ ]

Water Odors (check box): Normal: [✓] Sewage: [ ] Petroleum: [ ] Chemical: [ ] Other: [ ]

Water Surface Oils (check box): None: [✓] Sheen: [ ] Globs: [ ] Slick: [ ]

Clarity (check box): Clear: [✓] Slightly turbid: [ ] Turbid: [ ] Opaque: [ ]

Color (check box): Tannic: [✓] Green (algae): [ ] Clear: [ ] Other: [ ]

Weather Conditions/Notes:

Same reference site for Orange Park WWTP & Miller Street WWTP Events. Done on same day.

Abundance:	Absent	Rare	Common	Abundant
Periphyton	[ ]	[ ]	[✓]	[ ]
Fish	[ ]	[ ]	[ ]	[✓]
Aquatic Macrophytes	[ ]	[ ]	[✓]	[ ]
Iron/sulfur Bacteria	[✓]	[ ]	[ ]	[ ]

SAMPLING TEAM:	SIGNATURE:	DATE:
Tim McKelvey Pat O'Connor	Tim McKelvey	12/9/97

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER: 20030504	DATE (M/D/Y): 12-9-97	RECEIVING BODY OF WATER: St. Johns River

REMARKS:	LOCATION: 500 YARDS OFF MANDARIN POINT	FIELD ID/NAME: Reference Site

Habitat Parameter / SCORE	Excellent	Good	Fair	Poor
Littoral Alterations 2	None—Unaltered shoreline. 9-10 points	Mostly natural shoreline, but with occasional riprap. 6-8 points	Shoreline consisting mostly of riprap and vertical seawalls. 3-5 points	Shoreline consisting almost entirely of vertical seawalls. 0-2 points
Community Types Observed 15	At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. 38-50 points	Two or three communities observed from those listed. 26-37 points	One community observed from those listed. 13-25 points	No communities observed from those listed. 0-12 points
Tidal Fluctuation 3	>0.75 m. 4-5 points	0.5 - 0.75 m. 3 points	0.25 - 0.5 m. 2 points	<0.25 m. 0-1 point
Freshwater Discharges/ Alterations 8	Only natural runoff.. 9-10 points	Mostly natural runoff, but with a few, small stormwater sources. 6-8 points	Considerable stormwater discharge from local roads, parking lots, etc. 3-5 points	Extensive manmade discharges, especially from canals draining large tracts of land. 0-2 points
Flow and Wave Action 10	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. 8-10 points	———	———	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. 0-2 points
Sediment Type 7	Combination of sand, gravel, and shell. 12-15 points	Primarily sand, with small areas of mud. 8-11 points	Mixture of sand and mud, or well-aerated mud only. 4-7 points	Anaerobic mud. 0-3 points

TOTAL SCORE 55

COMMENTS: Same reference site for FQIS's for Orange Park & Miller Street. Done on same day.

ANALYSIS DATE: 12-9-97	ANALYST: Tim McKelvey	SIGNATURE: Tim McKelvey

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
	20030502	12-9-97	1215	ST. JOHNS RIVER

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
100 FT NORTH of P.O.D.	Clay	MILLER STREET POD	TEST SITE #1

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
				100			

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

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

Width of riparian vegetation (m) on least buffered side: ~15m

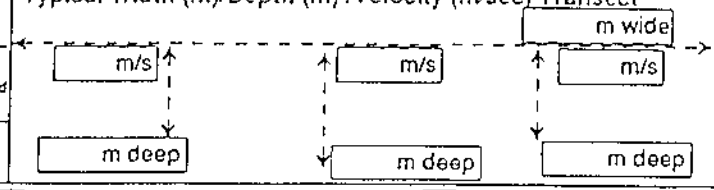
List & map dominant vegetation on back

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

Artificially Impounded ☐ yes

High Water Mark: .7 (m above present water level) + 3.1 (present depth in m) = 3.8 (m above bed)

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



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

SEDIMENT/SUBSTRATE

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

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

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

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)				Sand			
Leaf Packs or Mats				Mud/Muck/Silt	80	2	ponar
Aquatic Vegetation				Other:			
Rock or Shell Rubble	20	1	ponar	Other:			
Undercut banks/Roots				*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):			Secchi (m):
Top								
Mid-depth	5.0 ft	14.94	6.91	8.54	755	0.4		.6
Bottom								

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

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

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

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

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

Weather Conditions/Notes:

Cloudy, Overcast, Rain, Cool 60-70°F

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

SAMPLING TEAM:	SIGNATURE:	DATE:
Tim McKelvey Pat O'Connor	Timothy McKelvey	

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
	20030502	12-9-97	St. Johns River

REMARKS:	LOCATION:	FIELD ID/NAME:
MILLER ST. WWTP 100 FT NORTH OF POD	MILLER STREET WWTP POD,	TEST SITE #1

Habitat Parameter / SCORE	Excellent	Good	Fair	Poor
Littoral Alterations — 5	None—Unaltered shoreline. 9-10 points	Mostly natural shoreline, but with occasional riprap. 6-8 points	Shoreline consisting mostly of riprap and vertical seawalls. 3-5 points	Shoreline consisting almost entirely of vertical seawalls. 0-2 points
Community Types Observed — 25	At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. 38-50 points	Two or three communities observed from those listed. 26-37 points	One community observed from those listed. 13-25 points	No communities observed from those listed. 0-12 points
Tidal Fluctuation — 3	>0.75 m. 4-5 points	0.5 - 0.75 m. 3 points	0.25 - 0.5 m. 2 points	<0.25 m. 0-1 point
Freshwater Discharges/ Alterations — 4	Only natural runoff.. 9-10 points	Mostly natural runoff, but with a few, small stormwater sources. 6-8 points	Considerable stormwater discharge from local roads, parking lots, etc. 3-5 points	Extensive manmade discharges, especially from canals draining large tracts of land. 0-2 points
Flow and Wave Action — 10	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. 8-10 points	———	———	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. 0-2 points
Sediment Type — 3	Combination of sand, gravel, and shell. 12-15 points	Primarily sand, with small areas of mud. 8-11 points	Mixture of sand and mud, or well-aerated mud only. 4-7 points	Anaerobic mud. 0-3 points

TOTAL SCORE 52

COMMENTS:

ANALYSIS DATE:	ANALYST:	SIGNATURE:
12-9-97	Tim McKelvey	Tim McKelvey

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (5-10-90)

SUBMITTING AGENCY CODE: 503 / SUBMITTING AGENCY NAME: DEP	STORET STATION NUMBER: 20030503	DATE (M/D/Y): 12-9-97	TIME: 1300	RECEIVING BODY OF WATER: ST. JOHNS RIVER

REMARKS: 160 FT SOUTH of POD	COUNTY: Clay	LOCATION: MILLER STREET POD	FIELD ID/NAME: TEST SITE #2

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
				100			

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

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

Width of riparian vegetation (m) on least buffered side: <8m

List & map dominant vegetation on back

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

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

Artificially Impounded ☐ yes ☐ more sinuous

m/s	m/s	m/s
m deep	m deep	m deep

High Water Mark: .7 (m above present water level) + 3.1 (present depth in m) = 3.8 (m above bed)

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

SEDIMENT/SUBSTRATE

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

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

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

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)				Sand			
Leaf Packs or Mats				Mud/Muck/Silt	95	2	poner
Aquatic Vegetation				Other:			
Rock or Shell Rubble	5	1	poner	Other:			
Undercut banks/Roots				*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (ft):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):	SAL.		Secchi (m):
Top								
Mid-depth	5.0 ft.	14.13	7.20	8.40	784	0.4		.6
Bottom								

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

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

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

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

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

Weather Conditions/Notes:

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

SAMPLING TEAM:	SIGNATURE:	DATE:
Tim McKelvey PAT O'Connor	Tim McKelvey	

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
	20030503	12-9-97	ST. JOHNS RIVER

REMARKS:	LOCATION:	FIELD ID/NAME:
100 FT. SOUTH OF POD	MILLER STREET POD	TEST SITE #2

Habitat Parameter / SCORE	Excellent	Good	Fair	Poor
Littoral Alterations 5	None—Unaltered shoreline. 9-10 points	Mostly natural shoreline, but with occasional riprap. 6-8 points	Shoreline consisting mostly of riprap and vertical seawalls. 3-5 points	Shoreline consisting almost entirely of vertical seawalls. 0-2 points
Community Types Observed 25	At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. 38-50 points	Two or three communities observed from those listed. 26-37 points	One community observed from those listed. 13-25 points	No communities observed from those listed. 0-12 points
Tidal Fluctuation 3	>0.75 m. 4-5 points	0.5 - 0.75 m. 3 points	0.25 - 0.5 m. 2 points	<0.25 m. 0-1 point
Freshwater Discharges/ Alterations 6	Only natural runoff.. 9-10 points	Mostly natural runoff, but with a few, small stormwater sources. 6-8 points	Considerable stormwater discharge from local roads, parking lots, etc. 3-5 points	Extensive manmade discharges, especially from canals draining large tracts of land. 0-2 points
Flow and Wave Action 10	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. 8-10 points	———	———	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. 0-2 points
Sediment Type 3	Combination of sand, gravel, and shell. 12-15 points	Primarily sand, with small areas of mud. 8-11 points	Mixture of sand and mud, or well-aerated mud only. 4-7 points	Anaerobic mud. 0-3 points

TOTAL SCORE 52

COMMENTS:

ANALYSIS DATE:	ANALYST:	SIGNATURE:
12-9-97	Tim McKelvy	Tim McKelvy

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Miller St. WWTP
County: Clay
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL0025151
LIMS Sample #: 202862 LIMS Job #: 97-DEC-09-06
sample log: 12/12/97 DW

Sample Collection: Date 12-8-97 Time 13:00
Test Beginning: Date 12-9-97 Time 15:15
Test Ending: Date 12-11-97 Time 1520
Organism Batch #: 94 Diluent Batch #: well
Organism Age: 12 days
Test Organism: Cyprinella leedsi

Test Type: ~~Screening~~ | Definitive
~~Static~~ | Static Renewal | Flow-through
Temperature range: room 24.0-25.0°C
incubator 25.0-26.5°C
Test Number: 2 of 4
Remarks: D = dead, M = missing

Instrument Calibrations:	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 7.0 @ 7.0	22.3 @ 22.3	8.3 @ 24.8 °C	101.3 @ 103.6 977 @ 1005 @ 24.5 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.8 @ 23.8	8.2 @ 25.1 °C	5,810 @ 10,377 103.0 @ 103.6 989 @ 1005 @ 25.0 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.8 @ 22.9	8.3 @ 24.8 °C	102.4 @ 103.6 976 @ 1005 @ 24.2 °C

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
Ctr A	E1	5	5	5	8.0	8.3	8.4	24.4	24.4	25.1	7.9	7.8	7.4	265	265	280
Ctr B	E2	5	5	5	8.0	8.3	8.4	24.4	26.7	24.8	7.9	7.8	7.4	255	270	260
Ctr C	E3	5	5	5	8.0	8.3	8.4	24.4	25.7	24.9	8.0	7.5	7.5	255	265	265
Ctr D	E4	5	5	5	8.0	8.4	8.4	24.4	24.6	25.5	8.0	7.4	7.5	255	255	265
100% A	E5	5	5	5	7.2	8.1	8.3	24.7	25.8	24.0	6.1	7.3	7.5	530	550	545
100% B	E6	5	5	5	7.2	8.1	8.3	24.7	25.3	24.4	6.1	7.3	7.5	530	540	540
100% C	E7	5	5	5	7.2	8.1	8.3	24.7	24.7	24.5	6.1	7.4	7.4	530	535	545
100% D	E8	5	5	5	7.2	8.1	8.3	24.7	25.9	24.1	6.1	7.4	7.3	530	555	550
Measured/Loaded by:		DW	DW	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by:		DW	DW	MF	DW	DW	MF	DW	DW	MF	DW	DW	MF	DW	DW	MF

Investigators' Signatures

Marshall Faulds

Water Quality Parameters verified by MF

	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			Not measured		
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	CR100	DW
Alkalinity (mg/L as $CaCO_3$):	120		115	Hach	MF
Hardness (mg/L as $CaCO_3$):	125		125	Hach	MF
Total ammonia (mg/L as N):	<0.017		0.446	Orion	MF

Ammonia Meter #98136 Meter Slope: -58.4 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Miller St. WWTP
County: Clay
Contact / District: Tim McKelvey/Northeast
PDES Permit #: FL0025151
LIMS Sample #: 20286? LIMS Job #: 97-DEC-09-06
sample log: 12/12.15? 00W

Sample Collection: Date 12-8-97 Time 13:05
Test Beginning: Date 12-9-97 Time 1525
Test Ending: Date 12-11-97 Time 1530
Organism Batch #: 340 Diluent Batch #: 24 NSW
Organism Age: 4 days
Test Organism: Americamysis bahia

Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through
Temperature range: room 24.0-25.0°C
incubator 25.0-26.5°C
Test Number: 3 of 4
Remarks: D = dead, M = missing
Sample salt-adjusted up to 6‰ for 24 hr NOEC request. All other test species per NOEC request.

Instrument Calibrations:	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
	meter # 7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	22.3 @ 22.3	8.3 @ 24.8 °C	101.3 @ 103.6 977 @ 1005 @ 24.5 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.8 @ 23.8	8.2 @ 25.1 °C	1030 @ 103.6 984 @ 1005 @ 25.0 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.8 @ 22.9	8.3 @ 24.8 °C	101.1 @ 103.6 976 @ 1005 @ 24.2 °C

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) 0 hr	UNCORRECTED Cond. (mmhos/cm) 24 h	UNCORRECTED Cond. (mmhos/cm) 48 h
0‰ ASW A	D13	5	5	5	8.1	8.3	8.2	25.2	24.8	24.2	7.5	7.6	7.0	10.58	10.57	10.64
6‰ ASW B	D14	5	5	5	8.1	8.3	8.2	25.2	24.9	25.0	7.5	7.6	7.1	10.61	10.62	10.55
6‰ ASW C	D15	5	5	5	8.1	8.3	8.2	25.2	24.9	24.7	7.6	7.7	7.1	10.61	10.73	10.87
6‰ ASW D	D16	5	5	5	8.1	8.3	8.2	25.1	24.5	24.5	7.6	7.7	7.1	10.57	10.62	10.88
well wpb6 A	D17	5	5	5	8.2	8.4	8.3	25.8	24.4	24.5	7.6	7.6	7.1	10.65	10.55	10.81
well wpb6 B	D18	5	5	5	8.2	8.4	8.3	25.9	24.4	24.8	7.6	7.6	7.1	10.65	10.52	10.81
well wpb6 C	D19	5	5	5	8.2	8.4	8.3	25.7	24.4	24.8	7.5	7.7	7.1	10.65	10.52	10.79
well wpb6 D	D20	5	5	5	8.2	8.4	8.3	25.8	24.1	24.8	7.4	7.6	7.0	10.63	10.54	10.87
12‰ wpb6 A	D21	5	5	5	7.5	8.1	8.1	25.1	24.4	24.9	6.4	7.1	6.8	10.48	10.52	10.86
12‰ wpb6 B	D22	5	5	5	7.5	8.1	8.2	25.1	23.7	25.5	6.4	7.3	6.8	10.48	10.56	11.26
12‰ wpb6 C	D23	5	5	5	7.5	8.1	8.2	25.1	24.4	24.8	6.1	7.2	6.6	10.48	10.51	10.86
12‰ wpb6 D	D24	5	5	5	7.5	8.1	8.2	25.0	24.5	25.2	6.3	7.3	6.5	10.47	10.50	11.00
Measured/Loaded by:		DW	DW	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by:		DW	DW	MF	DW	DW	MF	DW	DW	MF	DW	DW	MF	DW	DW	MF

Investigators' Signatures
Marshall Faircloth

Water Quality Parameters verified by MF

	Salt Water / Well Water / 20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):		Not measured	Lab Sample	
Lab Total Residual Cl2 (mg/L):	<0.03	<0.05	AR100	DW
Alkalinity (mg/L as $CaCO_3$)	115 A 125 B (A 6‰ ASW, B wpb6)	145	Hach	MF
Hardness (mg/L as $CaCO_3$)	Not measured			
Total ammonia (mg/L as N)	<0.01	0.422	Orion	MF

Ammonia Ammonia Control / ppt Sample / ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Miller St. WWTP
County: Clay
Contact / District: Tim McCloy / Northeast
NPDES Permit #: FL0025151
LIMS Sample #: 202862 LIMS Job #: 97-DEC-09-06
sample log: 12/4/97 EH

Sample Collection: Date 12-8-97 Time 13:00
Test Beginning: Date 12-9-97 Time 1530
Test Ending: Date 12-11-97 Time 1530
Organism Batch #: 48 Diluent Batch #: 21 NSW
Organism Age: 10 days
Test Organism: Menidia beryllina

Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through
Temperature range: room 24.0-25.0 °C
incubator 25.0-26.5 °C
Test Number: 4 of 4
Remarks: D = dead, M = missing
Sample salt-adjusted up to 6‰ with salt water test species per NEA request.

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	22.3 @ 22.3	8.3 @ 24.8 °C	101.3 @ 102.6 977 @ 1031 @ 24.3 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.8 @ 23.3	8.2 @ 25.1 °C	989 @ 1005 @ ___ °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.8 @ 22.9	8.3 @ 24.8 °C	102.9 @ 102.6 976 @ 1005 @ 24.2 °C

Conc.	Chamber #	Number Live 0 hr	24 h	48 h	pH 0 hr	24 h	48 h	Temperature (°C) 0 hr	24 h	48 h	D.O. (mg/L) 0 hr	24 h	48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
6‰ NSW A	D1	5	5	5	8.1	8.3	8.3	25.5	25.5	25.0	7.6	7.7	6.9	10.61	~~11.52~~	11.41
6‰ NSW B	D2	5	5	5	8.1	8.3	8.3	25.5	24.0	24.7	7.6	7.7	7.0	10.68	10.55	10.90
6‰ NSW C	D3	5	5	5	8.1	8.3	8.3	25.5	24.9	24.1	7.6	7.6	7.0	10.66	10.55	11.94
6‰ NSW D	D4	5	5	5	8.1	8.3	8.3	25.3	24.6	25.1	7.6	7.6	7.0	10.63	10.70	11.06
well wtr 6‰ A	D5	5	5	5	8.2	8.4	8.3	25.7	24.6	25.1	7.6	7.8	7.1	10.64	10.60	10.90
well wtr 6‰ B	D6	5	5	5	8.2	8.4	8.3	25.8	25.0	24.5	7.6	7.8	7.1	10.65	10.69	10.84
well wtr 6‰ C	D7	5	5	5	8.2	8.4	8.3	25.9	24.5	24.6	7.6	7.9	7.1	10.64	10.53	10.84
well wtr 6‰ D	D8	5	5	5	8.2	8.4	8.3	25.8	24.9	25.0	7.5	7.8	7.1	10.65	10.61	10.94
10‰ salt A	D9	5	5	5	7.5	8.1	8.2	25.1	25.5	25.3	6.4	7.5	7.0	10.45	10.57	11.10
10‰ salt B	D10	5	5	5	7.5	8.1	8.2	25.1	24.9	24.8	6.4	7.4	6.9	10.47	10.45	10.90
10‰ salt C	D11	5	5	5	7.5	8.1	8.2	25.1	24.7	25.8	6.4	7.3	6.9	10.47	10.51	11.38
10‰ salt D	D12	5	5	5	7.5	8.1	8.2	25.0	24.7	25.3	6.4	7.2	6.9	10.45	10.50	11.11
Measured/Loaded by:		DW	DW	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by:		DW	DW	MF	DW	DW	MF	DW	DW	MF	DW	DW	MF	DW	DW	MF

Investigators' Signatures
Marshall Faircloth

Water Quality Parameters (verified by MF)

	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):					
Lab Total Residual Cl2 (mg/L):	<0.02		<0.03	DR 15	DW
Alkalinity (mg/L as $CaCO_3$):	115 A, 125 B		145	Hach	MF
Hardness (mg/L as $CaCO_3$):	A 6‰ NSW made up with well water; B well water 6‰		NOT measured		
Total ammonia (mg/L as N):	<0.017		0.422	Orion	MF

Ammonia Meter #90126 Meter Slope: -58.4 Ammonia Blank: <0.017 Control Salinity: 6 ppt Sample Salinity: 6 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Miller St. WWTP
County: Clay
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL0025151
LIMS Sample #: 202862 LIMS Job #: 97-DEC-09-06
sample log: 12/22/97 DW

Sample Collection: Date 12-8-97 Time 13:00
Test Beginning: Date 12-9-97 Time 15:30
Test Ending: Date 12-11-97 Time 1520
Organism Batch #: 48 Diluent Batch #: 55
Organism Age: < 24 hours
Test Organism: Ceriodaphnia dubia

Test Type: ~~Screening~~ | Definitive
(Static) | Static Renewal | Flow-through
Temperature range: room 24 ~~25.5~~ °C MF
incubator ~~25 25.5~~ 24.0 25.5 °C
Test Number: 1 of 4
Remarks: D = dead, M = missing

Instrument Calibrations:	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	22.3 @ 22.3	8.3 @ 24.8 °C	101.3 @ 103.6 977 @ 1005 @ 24.5 °C 989.0 @ 1005.7
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.8 @ 23.8	8.2 @ 25.1 °C	103.0 @ 103.6 989 @ 1005 @ 25.0 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.8 @ 22.9	8.3 @ 24.8 °C	103.9 @ 103.6 976 @ 1005 @ 24.2 °C

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) 0 hr	UNCORRECTED Cond. (mmhos/cm) 24 h	UNCORRECTED Cond. (mmhos/cm) 48 h
Ctr	A	5	5	5	8.1		8.1	23.5		24.3	7.6		7.9	190		165
Ctr	B	5	5	5			8.1			24.2			7.9			175
Ctr	C	5	5	5			8.2			24.0			7.9			170
Ctr	D	5	5	5			8.2			23.9			7.9			170
100%	A	5	5	5	7.4		8.5	23.7		23.9	6.7		7.9	505		520
100%	B	5	5	5			8.5			23.8			7.8			540
100%	C	5	5	5			8.5			23.7			7.9			540
100%	D	5	5	5			8.5			23.5			7.9			570
Measured/Loaded by:		MF	MF	MF	MF		MF	MF		MF	MF		MF	MF		MF
Recorded by:		DW	MF	MF	DW		MF	DW		MF	DW		MF	DW		MF

Investigators' Signatures
Marshall Faircloth

Water Quality Parameters Verified by MF

	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			Not measured		
Lab Total Residual Cl2 (mg/L):		< 0.03	< 0.03	DR/100	DW
Alkalinity (mg/L as $CaCO_3$):		65	115	Hach	MF
Hardness (mg/L as $CaCO_3$):		80	125	Hach	MF
Total ammonia (mg/L as N):		< 0.017	0.446	orion	MF

Ammonia -584 Ammonia Blank < 0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

Phytoplankton taxa list and densities (#/mL) for Miller Street WWTP, collected via subsurface grabs in St. Johns River on 9 December, 1997.

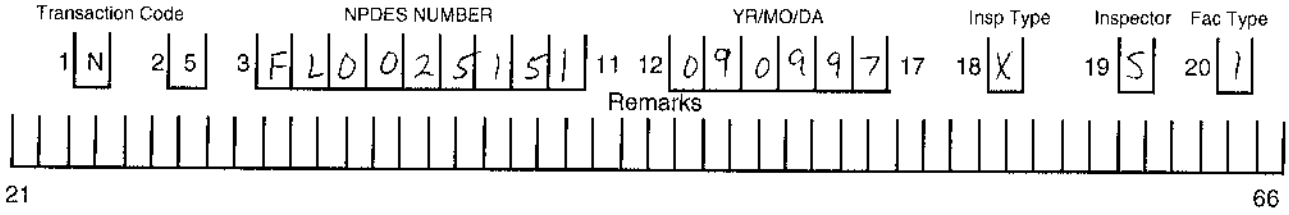
	Control Site	Test Site 1	Test Site 2
Bacillariophyceae			
Chaetoceros sp.	31	–	–
Cocconeis sp.	8	–	–
Coscinodiscus sp.	23	46	41
Cyclotella sp.	123	239	179
Eunotia sp.	8	–	6
Fragilaria sp.	15	77	87
Gomphonema sp.	–	–	6
Melosira sp.	8	100	17
Navicula sp.	15	69	46
Nitzschia sp.	123	116	98
Synedra sp.	8	–	6
Undetermined centric diatom	–	8	–
Undetermined Diatomaceae	–	8	–
Undetermined pennate diatom	8	108	75
Chlorophyceae			
Ankistrodesmus sp.	8	–	6
Chlamydomonas sp.	8	8	52
Chlorococcum sp.	–	8	6
Cosmarium sp.	8	–	–
Crucigenia sp.	–	–	6
Elakatothrix sp.	8	–	–
Oocystis sp.	15	–	–
Pediastrum sp.	23	–	–
Scenedesmus sp.	316	100	156
Selenastrum sp.	8	–	–
Spermatozoopsis sp.	8	–	–
Staurastrum sp.	–	8	–
Tetraedron sp.	15	–	6
Tetrastrum sp.	23	15	6
Undetermined Chlorophyceae	–	54	12
Chrysophyceae			
Mallomonas sp.	8	–	–
Cryptophyceae			
Chroomonas sp.	316	62	307
Cryptomonas sp.	69	–	6
Cyanophyceae			
Anabaenopsis sp.	23	–	–
Aphanocapsa sp.	–	31	29
Chroococcus sp.	–	–	12
Cylindrospermopsis sp.	62	–	–
Dactylococcopsis sp.	38	46	52
Gloeocapsa sp.	15	–	6
Gloeothece sp.	38	–	–
Lyngbya contorta	246	–	–
Lyngbya sp.	85	23	6
Merismopedia sp.	477	100	64

Microcystis sp.	8	162	81
Oscillatoria sp.	–	–	6
Dinophyceae			
Peridinium sp.	8	–	6
Euglenophyceae			
Euglena sp.	8	–	–

Benthic macroinvertebrate taxa list for Miller Street WWTP, collected via Ponar grab samples in St. Johns River, on 9 December, 1997. Densities, in number/m^2, represent the mean of three replicates.

	Control Site	Test Site 1	Test Site 2
Amphipoda			
Corophium sp.	14	-	-
Gammarus sp.	28	-	111
Undetermined Oedicerotidae	-	-	28
Decapoda			
Undetermined Xanthidae	14	-	14
Diptera			
Chaoborus albatus	-	-	14
Chironomus sp.	-	28	28
Coelotanypus sp.	14	83	181
Cryptochironomus sp.	-	14	28
Polypedilum halterale grp.	14	-	28
Procladius sp.	-	14	-
Undetermined Chironomidae	-	-	14
Gastropoda			
Littoridinops sp.	28	139	125
Isopoda			
Cyathura sp.	69	-	-
Cyathura polita	14	-	-
Oligochaeta			
Aulodrilus pigueti	-	83	375
Limnodrilus hoffmeisteri	111	639	2167
Undetermined Tubificidae	125	-	167
Pelecypoda			
Rangia sp.	56	14	83
Undetermined Dreissenidae	-	14	250
Polychaeta			
Laeonereis culveri	56	-	-
Undetermined Spionidae	194	-	14

Fill Out This Section For All Surface Water Discharger Inspections (CEI, CSI, CBI, PAI, XSI - RI Optional)



Fill Out This Section For All Surface Water Discharger Inspections (CEI, CSI, CBI, PAI, XSI - RI Optional)

