Biological Assessments of

River Oaks Wastewater Treatment Plant and Northwest Regional Wastewater Treatment Plant

Hillsborough County

NPDES #FL0027821 (RO) and #FL0041670 (NW)

March 1996

July 1996

Biology Section
Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan No. 870346G

Department of Environmental Protection
Results of Fifth Year Inspections

Discharger: River Oaks and Northwest Regional WWTPs
County: Hillsborough
NPDES Number: FL0027821(RO) and FL0041670 (NW)
State Permit Expiration Date: 30 December 1996

Toxics Sampling Inspection (XSI)

Date Sampled: 4 March 1996

Results: Diazinon (0.094 µg/L) was found in the Northwest Regional effluent at a concentration which is cause for concern, since levels of 0.1 µg/L are acutely toxic to the midge, *Chironomus* sp. The metals detected in both effluents were within Class III water quality standards.

Compliance Biomonitoring Inspection (CBI)

Date Sampled: 4 March 1996

Results: Effluent samples from the River Oaks WWTP and the Northwest Regional WWTP were not acutely toxic to the invertebrate, *Ceriodaphnia dubia,* or to the fish, *Cyprinella leedsi.*

Impact Bioassessment Inspection (IBI)

Date Sampled: 4 March 1996

Results: Benthic macroinvertebrate communities were healthy at the reference site and at test site 1 (near the River Oaks discharge), but degraded at test site 2 (near the Northwest Regional discharge). The Stream Condition Index (SCI) score at the reference site (with 27 points) and at the test site 1 (with 29 points) placed these stations in the "excellent" category. The test site 2 SCI score (with 17 points) placed it into the "poor" category. Ammonia and diazinon in the Northwest Regional's effluent may have contributed to these observed effects. Phytoplankton communities in Channel A were characterized by low algal density and very low biomass (chlorophyll *a* ranged from 0.44 µg/L to 0.67 µg/L), indicating that no nuisance algal blooms were occurring. However, the decreases in taxa richness and diversity observed between the reference site and the two test sites suggest a moderate disturbance.

Water Quality Inspection (WQI)

Date Sampled: 4 March 1996

Results: Nutrients were low in the River Oaks effluent sample, and well within permit requirements, but were much higher in the Northwest Regional discharge. The total nitrogen of the Northwest Regional effluent (TKN of 4.3 mg/L plus nitrate-nitrite of 1.5 mg/L) was 5.8 mg/L, exceeding the facility's annual average total nitrogen limit of 3 mg/L. The Northwest Regional's effluent ammonia level (3.7 mg/L) was also elevated. The unionized ammonia fraction in the effluent was calculated to be 0.022 mg/L, a violation of Rule 62-302.530(3) FAC. The ammonia and nitrate-nitrite levels at test site 2 (near the Northwest Regional discharge) were higher than those found in 95% of other Florida streams. Algal growth potential (AGP) results demonstrated that there was nutrient enrichment present throughout Channel A. The AGP values at all three receiving water stations (21.5 mg dry wt/L at the reference site, 40.0 mg dry wt/L at test site 1, and 83.3 mg dry wt/L at test site 2) exceeded the 5 mg dry wt/L "problem threshold".

Introduction

The River Oaks Wastewater Treatment Plant and the Northwest Regional WWTP are both located in Hillsborough County, Florida, near Old Tampa Bay (see maps in Appendix). The outfalls for the two facilities are located within a mile of one another in Channel A, a channelized waterway with control structures installed for the prevention of tidal exchange. Both facilities were sampled during this study to determine their relative influences on receiving water conditions. Channel A is connected with Rocky Creek, and both channelized streams discharge through salinity barriers to Old Tampa Bay (see maps in Appendix).

The River Oaks WWTP has a design capacity of 10 MGD, while the Northwest Regional WWTP's design capacity is 5 MGD. Three month average flow values were 7.0 MGD for River Oaks and 4.2 MGD for Northwest Regional. Both facilities are Type I Advanced Wastewater Treatment Plants. Wastewater at the River Oaks WWTP receives activated sludge treatment, with denitrification, aeration, multimedia filtration, chlorination, and de-chlorination. Treatment at the Northwest Regional WWTP consists of aeration in oxidation ditches, followed by denitrification in anoxic tanks, filtration, chlorination, and de-chlorination.

Besides flow requirements, permit limits for both advanced wastewater treatment facilities (as annual averages) are identical: BOD (5 mg/L), TSS (5 mg/L), total nitrogen (3 mg/L), total phosphorus (1 mg/L), pH (6.0 to 8.5 SU), total residual chlorine (0.01 mg/L maximum at

Major characteristics of community structure of control and test sites.

	Reference Site	Test Site 1	Test Site 2
Macroinvertebrate Qualitative			
Number of Taxa	53	58	25
Florida Index	10	12	4
Stream Condition Index (SCI)	27	29	17
EPT Index	4	4	1
% Contribution of Dominant Taxon	32.9	23.8	39.0
% Oligochaeta	2.2	6.8	18.6
% Trichoptera	0.24	0	0
% Ephemeroptera	2.2	3.3	0.6
% Diptera	32.2	39.5	38.7
% Amphipoda	32.9	23.8	39.0
% Gastropoda	20.2	19.2	1.4
% Pelecypoda	4.6	1.9	0
%Other	5.5	5.5	1.7
% Predators	10.7	9.5	1.7
% Above Surface Deposit Feeders	33.7	33.1	36.4
% Below Surface Deposit Feeders	1.0	6.4	18.6
% Suspension Feeders	6.5	5.7	12.3
% Scrapers	19.2	20.5	1.7
% Shredders	25.1	22.9	21.8
% Scavenger	0.2	0	0.1
% Plant piercer	0	0	0.6
Macroinvertebrate Hester-Dendy			
Number of Taxa	53	55	
Florida Index	18	20	
Shannon-Weaver Diversity	4.39	4.34	
EPT Index	8	5	
% Oligochaeta	1.9	0	
% Diptera	61.1	64.2	
% Ephemeroptera	2.5	5.0	
% Trichoptera	0.3	0	
% Amphipoda	19.9	19.6	
% Gastropoda	10.4	9.0	
% Other	3.9	2.1	
% Predators	17.0	9.2	
% Above Surface Deposit Feeders	39.4	44.6	
% Below Surface Deposit Feeders	1.9	0	
% Suspension Feeders	11.9	13.1	
% Scrapers	11.5	11.3	
% Shredders	12.8	20.6	
% Other	0	0.7	
Phytoplankton Algae			
Number of Taxa	29	16	13
Shannon-Weaver Diversity	4.3	2.2	2.4
Algal Density (#/mL)	840	11020	3422
Chlorophyll a (µg/L)	0.50 U	0.67	0.44 UJ
% Blue-green	30	1.5	0.4
% Green	41.3	2.9	1.8
% Diatoms	16.3	19.3	43.7
% Other	10.0	72.6	46.2
Algal Growth Potential (mg dry wt/l)	21.5	40.0	83.3

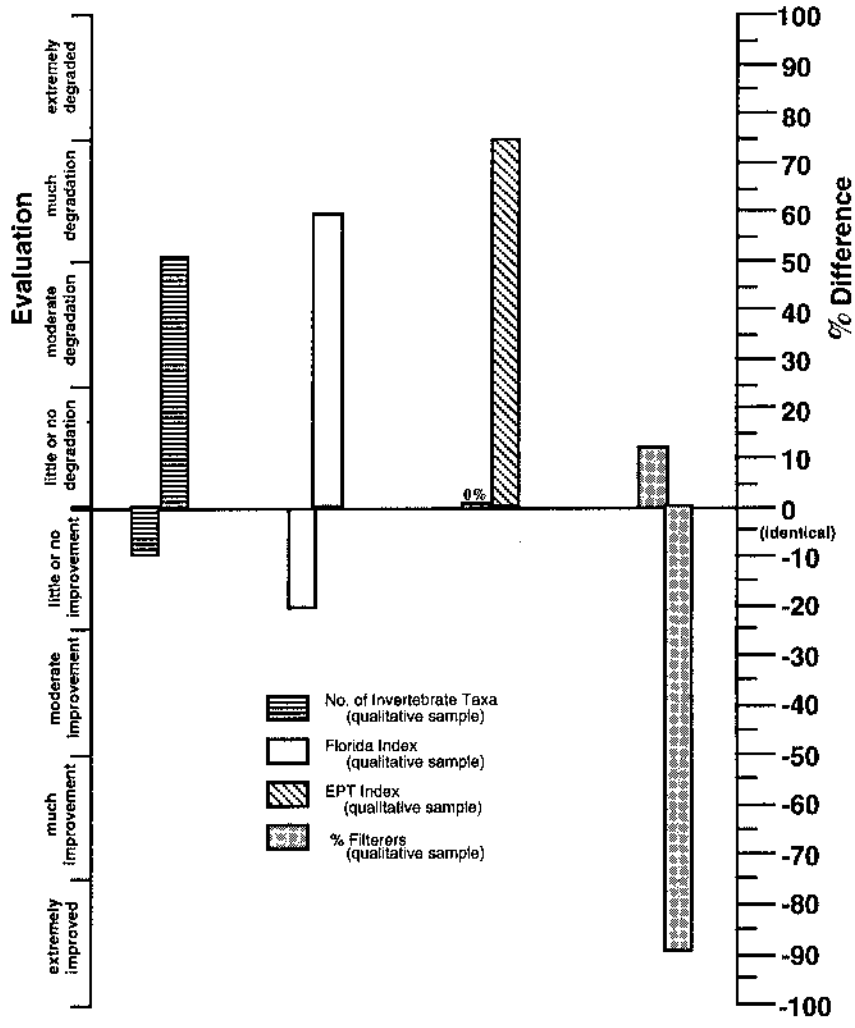
discharge), and fecal coliform bacteria (must be non-detectable in 75% of samples) (see Facility Summary in Appendix for details).

Monthly Operating Report data indicate the River Oaks facility has consistently met Advanced Wastewater Treatment limits. During a recent DEP inspection (June 1996) of the Northwest Regional facility, it received an "unsatisfactory" rating due to exceedances of permit limits of total nitrogen and flow, as well as for chronic toxicity in four of the last six tests. Approximately 1.7 MGD of the Northwest Regional facility's flow is currently directed to a reuse system. In December, 1994, the River Oaks facility was chronically toxic to *Ceriodaphnia dubia*. In June, 1995, a raw sewage spill from this plant was blamed on abnormal rainfall. A previous bioassessment (DEP 1993) determined that both chlorinated effluents were acutely toxic, and had elevated concentrations of diazinon. However, no degradation in the receiving water communities was noted at that time.

Methods

The focus of this investigation was to determine the dischargers' effects on the receiving waters. A comparison of biological community health was made between a reference site (located in Channel A, upstream of the discharge from both facilities), and two test sites. Test site 1 was located in Channel A, 35 meters "downstream" from the River Oaks facility. Test site 2 was also located in Channel A, approximately one mile southwest of test site 1, 30 meters "downstream" from the Northwest Regional outfall (see maps in Appendix). The hydrology of the area is complicated by the presence of salinity control structures and by variable flow from upstream. Consequently, flow in Channel A, which is usually in a southwesterly direction, will sometimes switch to a northeasterly direction.

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 screening toxicity bioassays, using *Ceriodaphnia dubia* and *Cyprinella leedsi* as test organisms, were performed on effluent samples from both facilities (Weber 1991). The effluents were analyzed for metals and for organic constituents (base neutral and acid extractables, and pesticide extractables). Additionally, nutrient analyses were performed on both effluent samples, as well as water from the reference and test sites. Meth-

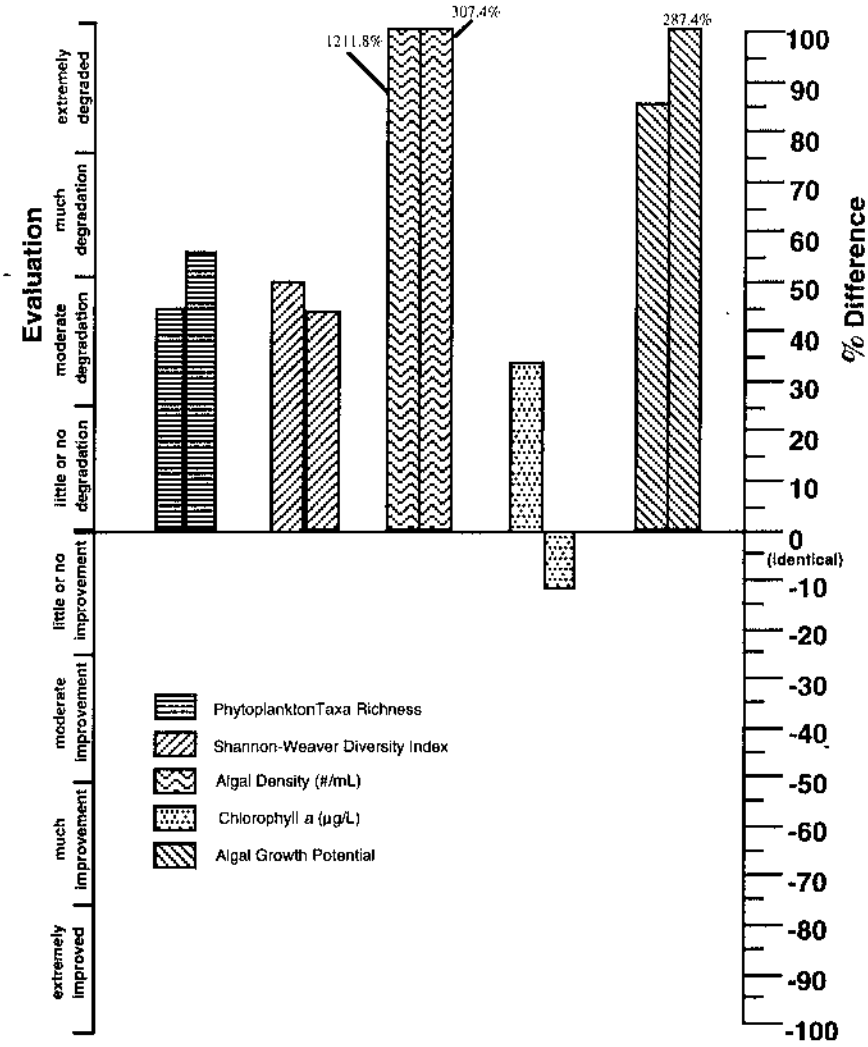


Effect of discharge on the benthic macroinvertebrate community.

The left bar for each parameter shows differences between the reference site and test site 1. The right bar shows differences between the reference site and test site 2.

ods used for all chemical analyses are on file at the Tallahassee DEP Chemistry Laboratory.

Benthic macroinvertebrate communities were evaluated at the study sites. Invertebrates were collected from multiple substrates (*e.g.*, snags, leaf packs, vegetation) using discrete dip net sweeps. Invertebrates also were collected using Hester-Dendy multiplate samplers which were incubated for 28 days (Ross 1990). Unfortunately, Hester-Dendys were not recovered from the Northwest Regional site (test site 2). Phytoplankton was sampled at the reference and two test sites via sub-surface grab samples. Chlorophyll *a* was also determined for phytoplankton communities (Ross 1990). Periphyton racks were deployed at all three receiving water sites, but were not successfully recovered from the reference site. Algal Growth Potential tests, using *Selenastrum capricornutum* as the test organism, followed Miller *et al.* (1978).



Effect of discharge on the algal community.

The left bar for each parameter shows differences between the reference site and test site 1. The right bar shows differences between the reference site and test site 2.

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.

Habitat Assessment: Seven attributes known to have potential effects on the stream biota were evaluated and scored, with 20 possible points for each factor. Based on the sum of these individual scores, overall habitat quality is assigned to one of four categories: Optimal (105-140 points); Suboptimal (70-104 points); Marginal (35-69 points); and Poor (0-34 points).

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. For example, the Florida Index assigns points to stream-dwelling macroinvertebrates based on their sensitiv-

ity to pollution (see Ross 1990). A site with a high Florida Index score is considered healthy. Species sensitivity data from other sources, such as Hudson *et al.* (1990), Lenat (1993), Chang *et al.* (1992), and Whitmore (1989), are used as appropriate.

Ephemeroptera/Plecoptera/Trichoptera Index: This index is the sum of the number of EPT taxa present. Higher EPT values are associated with healthier systems.

Community structure: Substantial shifts in proportions of major groups of organisms, compared to reference 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).

Algal biomass: High algal biomass (algal density or chlorophyll *a*) implies nutrient stress. A decreased diatom to blue-green algae ratio (calculated by dividing the number of individuals in the Bacillariophyta by the number of individuals in the Bacillariophyta + Cyanophyta) is often indicative of nutrient enriched conditions in flowing streams.

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).

The Stream condition Index for Florida (SCI) is a composite macroinvertebrate metric (Barbour *et al.* 1996). The SCI assigns points to a variety of parameters, depending on how closely each parameter approaches an expected reference condition (see SCI calculation table in Appendix).

For graphical purposes, the percent differences between the reference and test sites involving the number of taxa, the diversity index, the Florida Index, the EPT Index, the diatom to blue-green algae ratio, and the % filter-feeders are measured as the reference site minus test site divided by the reference site. The percent differences between sites involving algal density, chlorophyll *a*, and algal growth potential are measured as the test site minus reference site divided by the reference site.

The following personnel were involved in this investigation: Lisa Carter and Andrea Grainger (DEP Southwest District) and Lyn Burton-Hupp, Russel Frydenborg, Joy Jackson, Kathleen Lurding, Elizabeth Miller, Urania Quintana, Bart Richard, Todd Space, and Lisa Tamburello (Tallahassee Biology Laboratory). 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

As might be expected from a man-made canal system, habitat quality was similarly depressed at all three receiving water sites, with habitat scores of 29 at the reference site, 38 at test site 1, and 28 at test site 2 (Appendix). All three sites received low scores for water velocity, degree of artificial channelization, silt deposition, bank stability, and riparian buffer zone width. Viable in-stream substrates consisted of submerged and emergent macrophytes, predominantly *Nuphar* sp. (spatterdock), *Ruppia maratima* (widgeon grass), *Myriophyllum* sp. (water milfoil), *Salvinia rotundifolia* (water spangles), and *Lemna* sp. (duckweed). Periphyton, another potential habitat, was commonly observed growing upon submerged surfaces.

The pH at the study sites (7.3 SU at the reference site and at test site 1, 7.4 SU at test site 2) was near neutral. Specific conductance increased from 283 µmhos/cm at the reference site to 585 µmhos/cm at test site 1, and to 724 µmhos/cm at test site 2. The increased conductivity at test site 2 coincided with the elevated specific conductance of the Northwest Regional facility's effluent, which was 810 µmhos/cm. Dissolved oxygen was adequate to support aquatic life at all three sites, ranging from 8.5 mg/L at the reference site to 7.1 mg/L at test site 2. Water temperature ranged from 18.4° C at the reference site to 20.1° C at test site 2.

Effluent samples from the River Oaks Wastewater Treatment Plant and the Northwest Regional WWTP were not acutely toxic to the invertebrate, *Ceriodaphnia dubia,* or to the fish, *Cyprinella leedsi* (Appendix).

Diazinon (0.094 µg/L) was found in the Northwest Regional effluent at a concentration which is cause for concern, since levels of 0.1 µg/L are acutely toxic to the midge, *Chironomus* sp. (AQUIRE 1991). Atrazine was detected in the Northwest Regional effluent (at 0.32 µg/L) and in the River Oaks effluent (at 0.15 µg/L).

These concentrations of atrazine were below chronically toxic levels.

The metals aluminum (106 µg/L), iron (26 µg/L), and zinc (24 µg/L) were found in the River Oaks effluent. Iron (52 µg/L) and zinc (24 µg/L) were detected in the Northwest Regional effluent sample. All of these values complied with Class III water quality standards.

Nutrients were very low in the River Oaks effluent sample, and well within the permit requirements (see Chemistry Summary Table in Appendix). Consequently, only minor increases in nutrient concentrations were observed between the reference site and test site 1, except for nitrate-nitrite, which increased from 0.2 mg/L to 0.46 mg/L. At the time of sampling, only 0.072 mg/L of nitrate-nitrite was found in the River Oaks effluent, suggesting that it was not responsible for the increase. Other nearby agricultural activities observed during sampling (dairy farming, etc.) may have also contributed nitrate-nitrite to the system.

Nutrient concentrations were much higher in the Northwest Regional discharge than they were in the River Oaks sample. The total nitrogen of the Northwest Regional effluent (TKN of 4.3 mg/L plus nitrate-nitrite of 1.5 mg/L) was 5.8 mg/L. This exceeded the facility's annual average total nitrogen limit of 3 mg/L. The effluent ammonia level (3.7 mg/L) was also elevated. The unionized ammonia fraction in the effluent was calculated to be 0.022 mg/L, a violation of Rule 62-302.530(3) FAC. Receiving water nutrient levels at test site 2 were elevated when compared with those of test site 1, indicating the influence of the Northwest Regional facility's discharge on Channel A. Total phosphorus increased from 0.15 mg/L at test site 1 to 0. 27 mg/L at test site 2. Comparing these same two stations, ammonia increased from 0.20 mg/L to 0.85 mg/L, nitrate-nitrite increased from 0.46 mg/L to 1.1 mg/L, and TKN rose from 0.81 mg/L to 1.8 mg/L. The ammonia and nitrate-nitrite levels at the Northwest Regional test site (test site 2) were higher than those found in 95% of other Florida streams.

Algal growth potential (AGP) results demonstrated there was nutrient enrichment present throughout Channel A. The AGP values at all three receiving water stations (21.5 mg dry wt/L at the reference site, 40.0 mg dry wt/L at test site 1, and 83.3 mg dry wt/L at test site 2) exceeded the 5 mg dry wt/L "problem threshold" (Raschke and Schultz 1987). Interestingly, the River Oaks effluent AGP (11.0 mg dry wt/L) was lower than those observed in all three receiving water stations. It appeared that the Northwest Regional WWTP, with an AGP of 60.8 mg dry wt/L, contributed to the elevated AGP at test site 2, although the potentially toxic unionized ammonia present in the effluent may have actually inhibited algal growth in the sample.

Benthic macroinvertebrate communities appeared to be healthy at the reference site and at test site 1 (near the River Oaks discharge), but degraded at test site 2 (near the Northwest Regional discharge). The Figure on p. 2 indicates the degree of difference between the reference and test sites. The left-hand bar represents the reference site compared to the River Oaks test site (test site 1) and the right-hand bar represents the comparison between the reference site and the Northwest Regional test site (test site 2). Larger differences (that is, higher percentages) correspond with greater degrees of degradation. Negative values mean the test site is better than the reference site. The relative abundance of each individual taxon appears in the Appendix.

Based upon dip net collections, taxa richness was very good at the reference site (with 53 taxa) and at test site 1 (with 58 taxa), but reduced at test site 2 (with 25 taxa). The Florida Index was normal for a Peninsular stream at the reference site (with 10 Florida Index points), increasing to 12 points at test site 1. Again, the Florida Index at test site 2 (with only 4 points) decreased to a level associated with impaired conditions. The EPT Index at the reference site (4 EPT taxa) and test site 1 (also with 4 EPT taxa) met regional expectations. The test site 2 EPT Index (with only 1 EPT taxon) was indicative of impairment. The amphipod, *Hyallela azteca*, was the dominant organism at all three stations, accounting for 32.9% of the total population at the reference site, 23.8% of the total community at test site 1, and 39% of the test site 2 population. *Hyallela azteca* is very common in Peninsular systems with slow water velocity, and can occur in a variety of water quality conditions, including situations with nutrient and organic enrichment.

The Stream Condition Index (SCI) score at the reference site (with 27 SCI points) and at test site 1 (with 29 SCI points) placed

these stations in the "excellent" category. The test site 2 SCI score (with 17 points) placed it into the "poor" category (see SCI calculation sheets in Appendix). The SCI results confirm the previously noted community impairment, showing test site 2 to be adversely affected by the discharge, compared to the reference site or to test site 1. Effluent ammonia, diazinon, and chronic toxicity probably contributed to these observed effects.

Hester-Dendy samplers were recovered from the reference site and from test site 1, but were lost at test site 2. The Hester-Dendy results at the two stations successfully sampled were consistent with those using the 20 dip net sweep method. Again, taxa richness (from 53 taxa at the reference site to 55 taxa at test site 1), Florida Index (ranging from 18 to 20 points), and the EPT Index scores (with 8 at the reference site and 5 at test site 1) were indicative of good water quality. Shannon-Weaver diversity (4.4 at the reference site and 4.3 at test site 1) was excellent.

Phytoplankton communities in Channel A were characterized by low algal density (ranging from 840 organisms/mL at the reference site to 11,020 organisms/mL at test site 1) and very low biomass (chlorophyll *a* ranged from 0.44 µg/L to 0.67 µg/L). While 29 phytoplankton taxa were collected at the reference site, 16 taxa were represented at test site 1, and 13 taxa were found at test site 2 (see taxa list in Appendix). Most of the taxa which were found at the reference site but not the test sites were cyanophytes or euglenophytes. While the reference site was dominated by chlorophytes (41.3% of the total population), cryptophytes were most abundant at test site 1 (72.6%) and test site 2 (46.2%). Diversity was highest at the reference site (4.3), decreasing to 2.2 at test site 1 and 2.4 at test site 2. The density and chlorophyll *a* values at the test sites indicated no nuisance blooms of phytoplankton were occurring. However, the decreases in taxa richness and diversity observed between the reference site and the two test sites suggest a moderate disturbance.

Conclusions

Effluent samples from the River Oaks Wastewater Treatment Plant and the Northwest Regional WWTP were not acutely toxic to the invertebrate, *Ceriodaphnia dubia,* or to the fish, *Cyprinella leedsi.*

Diazinon (0.094 µg/L) was found in the Northwest Regional effluent at a concentration which is cause for concern, since levels of 0.1 µg/L are acutely toxic to the midge, *Chironomus* sp. (AQUIRE 1991).

The metals detected in both effluents were within Class III water quality standards.

Nutrients were low in the River Oaks effluent sample, well within permit requirements, but were much higher in the Northwest Regional discharge. The total nitrogen of the Northwest Regional effluent (TKN of 4.3 mg/L plus nitrate-nitrite of 1.5 mg/L) was 5.8 mg/L, exceeding the facility's annual average total nitrogen limit of 3 mg/L. The Northwest Regional's effluent ammonia level (3.7 mg/L) was also elevated. The unionized ammonia fraction in the effluent was calculated to be 0.022 mg/L, a violation of Rule 62-302.530(3) FAC. The ammonia and nitrate-nitrite levels at test site 2 (near the Northwest Regional discharge) were higher than those found in 95% of other Florida streams.

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Chemistry summary table for River Oaks WWTP and Northwest Regional WWTP	River Oaks Effluent	Northwest Regional Effluent	Reference Site	Test Site 1 (River Oaks)	Test Site 2 (Northwest Regional)
Organic Constituents (ug/L)					
Atrazine	0.15 I	0.32			
Diazinon		0.094 T			
Metals (ug/L)					
Aluminum	106 I	100 U			
Arsenic	10 U	10 U			
Cadmium	0.08 U	0.08 U			
Calcium	70.0 A	64.1			
Copper	3 U	3 U			
Chromium	10 U	10 U			
Iron	26 A	52			
Lead	10 U	10 U			
Magnesium	5.79 A	4.01			
Mercury	0.10 U	0.01 U			
Nickel	4 U	4 U			
Selenium	30 U	30 U			
Silver	0.05 U	0.05 U			
Zinc	24 A	24			
Nutrients (mg/L)					
Ortho-phosphate	0.11 A	0.57	0.072 A	0.10 A	0.20 A
Total phosphorus	0.16 A	0.65	0.096	0.15	0.27
Ammonia	0.041 A	3.7	0.19	0.20 A	0.85 A
Unionized Ammonia		0.022			
Nitrate+Nitrite	0.072 I	1.5 A	0.20	0.46	1.1
TKN	0.85 A	4.3	0.77	0.81	1.8
General Phys-Chem Parameters					
Habitat Assessment			29	38	28
Dissolved Oxygen (mg/L)	6.7	8.7	8.5	7.6	7.1
pH (SU)	7.4	7.0	7.3	7.3	7.4
Specific Conductance (µmhos/cm)	269	810	283	585	724
Temperature (°C)	23.0	21.9	18.4	19.7	20.1
Algal Growth Potential (mg dry wt/L)	11.0	60.8	21.5	40.0	83.3
Toxicity					
Bioassay Fish	Not toxic	Not toxic			
Bioassay Invertebrate	Not toxic	Not toxic			

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

I - Value reported is less than the minimum quantitation limit, and greater than or equal to the minimum detection limit

J - Estimated value

T - Value reported is less than the criterion of detection

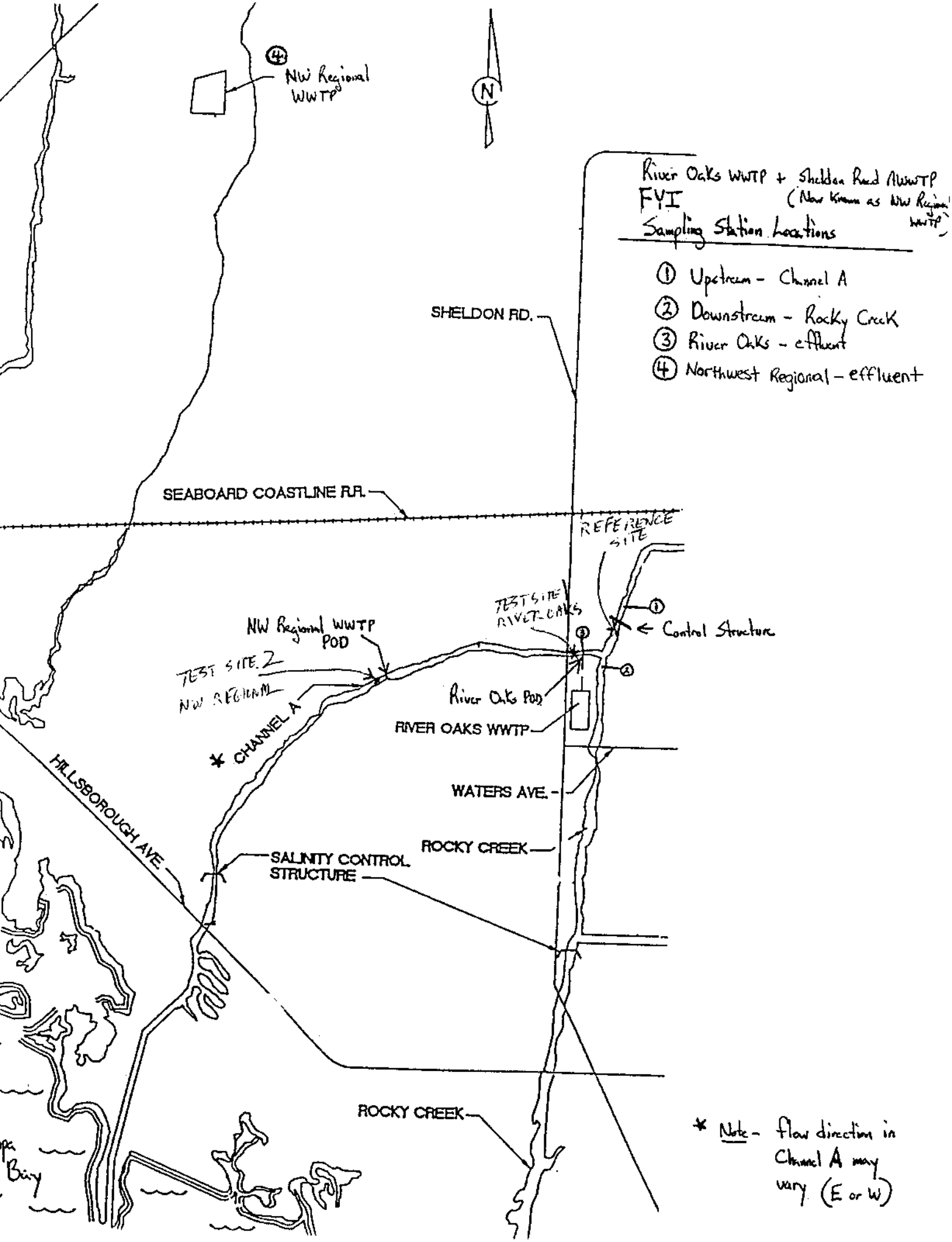
U - Material analyzed for but not detected; value reported is the minimum detection limit

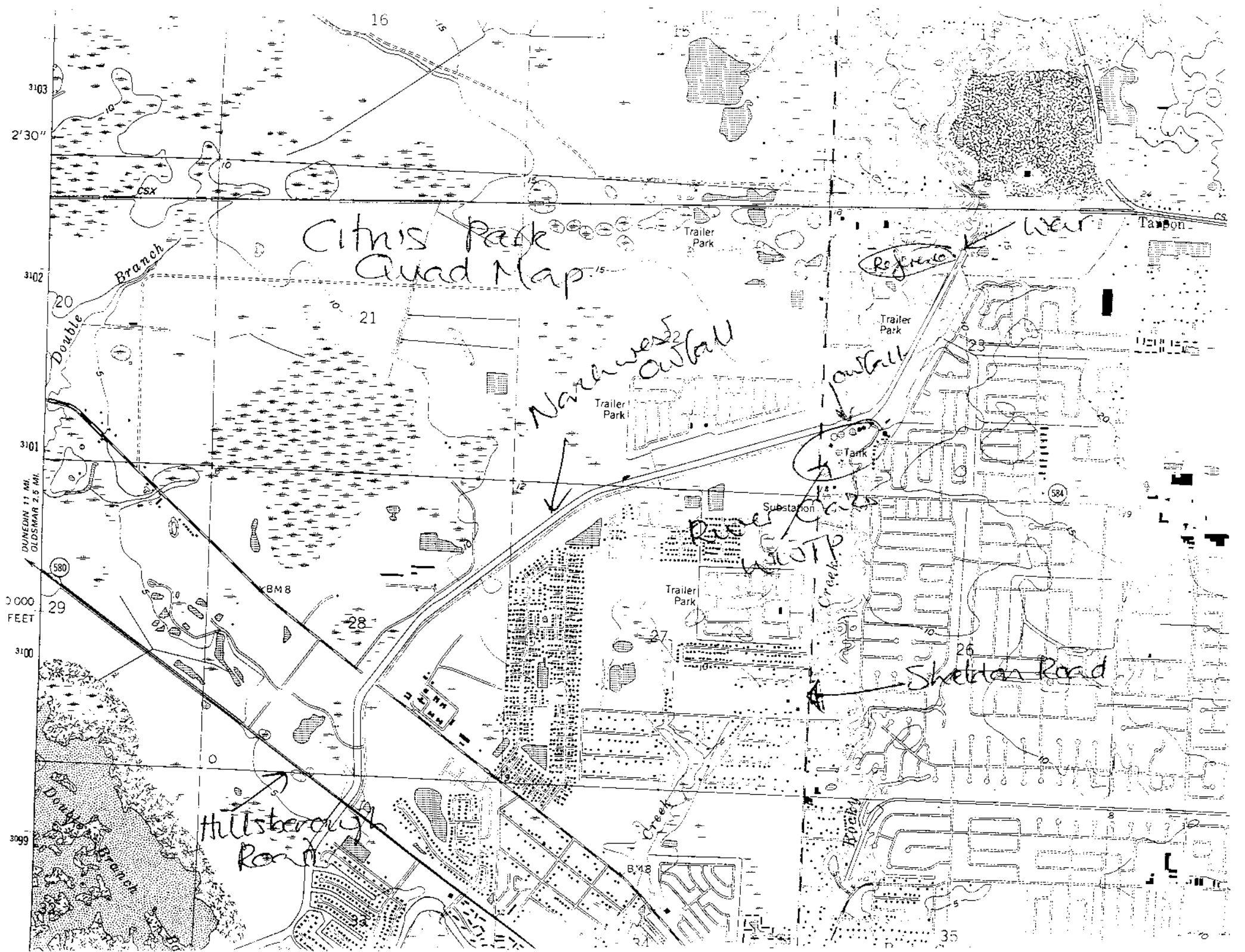
Typical Values for Selected Parameters in Florida Waters

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

Parameter	Percentile Distribution 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


④ NW Regional WWTP
N
River Oaks WWTP + Sheldon Road NWWTP
FYI (Now known as NW Regional WWTP)
Sampling Station Locations
① Upstream - Channel A
② Downstream - Rocky Creek
③ River Oaks - effluent
④ Northwest Regional - effluent
SHELDON RD.
SEABOARD COASTLINE R.R.
REFERENCE SITE
TEST SITE RIVER OAKS
① Control Structure
NW Regional WWTP POD
TEST SITE 2 NW REGIONAL
CHANNEL A
River Oaks POD
RIVER OAKS WWTP
HILLSBOROUGH AVE.
WATERS AVE.
ROCKY CREEK
SALINITY CONTROL STRUCTURE
ROCKY CREEK
* Note - flow direction in Channel A may vary (E or W)


Citi's Park
Quad Map
Northwest outfall
Outfall
Sketton Road
Hillsborough Road
Double Branch
Trailer Park
Substation
Tank
CSX
DUNEDIN 11 MI.
OLDSMAR 2.5 MI.
FEET

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
FACILITY SUMMARY

Facility Name: River Oaks WWTP		Date Summary Prepared: 3/1/96
Location (attach detailed map): See map included in submittal	County: Hillsborough	District: Southwest
Federal Permit # and expiration date: FL 002 7821, 5/31/99	State GMS # and State expiration date: DT 29-244805, 12/30/96	Facility Type: Industrial (Municipal) Federal Agricultural Other (list):

Function of facility: A type I Advanced Wastewater Treatment plant.

Description of treatment process: Activated sludge with denitrification and multimedia filters. The effluent is aerated, undergoes high-level disinfection and sodium bisulphate dechlorinated

Receiving waters: Channel A to Cobbage Head Creek to Old Tampa Bay	Classification: I II (III)	
Design Flow: 10	~~Mean Flow:~~ 3 month ADF 7.0	Flow during survey:

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.):

No mixing zone

List effluent limits (if necessary, attach relevant paperwork):

Parameter	Limit (units)
Flow	10 mgd
pH	6.00 to 8.50
CBODs	5 mg/L annual avg
TSS	5 mg/L annual avg
TN	3 mg/L annual avg
TP	1 mg/L annual avg
CL_2	0.01 mg/L
Fecal coliform	*** */100 ml
DO	5.00 mg/L

Describe special permit conditions and permit modifications:

A photocopy of the effluent limitations is included in this submittal

*** Non-detectable in at least 75% of samples collected during monthly operating period

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

River Oaks WWTP
(Facility)

FACILITY SUMMARY

Description of permitted outfall(s):

Outfall 001 gravity flows by pipe from the plant into channel "A"

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

- Plant consistently achieves AWT criteria.
- 0.5 MGD spill of RAW SEWAGE occurred 6/26/95 due to abnormal rainfall
- 12/94 failed chronic Toxicity test for C. dubia

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

A biological assessment was performed by DEP SW District and Tallahassee DEP personnel on samples collected in April 1993. The following conclusions were found:

a) Effluent caused 100% mortality to C. dubia and C. leedsi in 24 hours
b) Diazinon + atrazine were detected in effluent
c) Nutrients were relatively low in effluent.

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

Plant consistently MEETS AWT limits.

Previous DEP CSI was 5/23/95 w/ the following results:

CBOD = 2 mg/L TP = 0.17 mg/L
TSS = <1 " FECAL = <2
TN = 0.9 " TRC = <.01

Additional information:

Staff contributing to this review (signature):

Andrea Granger (Biologist)
Joe Squitieri (Inspector)
(Engineer)
( )
( )
( )

* See Southwest Northwest Regional Facility Summary for more details

PERMITTEE:
Hillsborough County
Public Utilities Dept.
River Oaks AWWTP

GMS ID NO.: 4029C02963
PERMIT NO.: DT29-244805

SPECIFIC CONDITIONS:

1. Drawings, plans, documents or specifications submitted by the permittee, not attached hereto, but retained on file at the Southwest District Office, are made a part hereof.

2. In accordance with Chapter 17-699, F.A.C., the required certified operator on-site time is: A Class C or higher operator for 24 hours/day, and 7 days a week. The lead/chief operator must be Class A.

3. The disinfection system shall be operated to maintain a minimum chlorine residual of 1.0 mg/l at the outfall from the chlorine contact chamber and prior to dechlorination. A metering device for dosing chlorine to the effluent shall be utilized and the chlorine supply tank shall be inspected regularly to ensure proper operation.

4. The effluent shall be sampled in accordance with Chapter 17-601, F.A.C. and shall meet the following limitations:

Parameter	Unit	Minimum	Maximum		Sample Type	Frequency
Permitted Capacity (flow)	MGD	-	10	Ann.Avg.	****rfmt	Continuous
pH	std un	6.00	8.50		*****meter	Continuous
$CBOD_5$*	mg/l	-	5	Annual Avg.	**fpc	Daily/5 wk
Total Suspended Solids*	mg/l	-	5	Annual Avg.	**fpc	Daily/5 wk
Total Nitrogen	mg/l		3	Annual Avg.	**fpc	Daily/5 wk
Total Phosphorous	mg/l		1	Annual Avg.	**fpc	Daily/5 wk
Cl_2	mg/l	0.01			grab	Hourly
Fecal coliform	#/100 ml	***Non-detectable			grab	Daily/5 wk
DO	mg/l	5.00			*****meter	Continuous

* Influent shall be monitored and reported monthly [Rule 17-601.300(1), F.A.C.]

** fpc - flow proportional composite - 24 hours

*** Non-detectable in at least seventy-five percent (75%) of samples collected during the monthly operating period (e.g. 23 per 30 samples).

**** rfm&t - Recording flowmeter and totalizer

***** Hourly measurements for 24 hours may be substituted for continuous measurement.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
FACILITY SUMMARY

Facility Name: Northwest Regional WWTP		Date Summary Prepared: 3/1/96
Location (attach detailed map): Location map included in submittals	County: Hillsborough	District: Southwest
Federal Permit # FLC041670 and expiration date: 9/30/99	State GMS # and DO 29-204300 State expiration date: 9/30/96	Facility Type: Industrial (Municipal) Federal Agricultural Other (list):

Function of facility: A Type I Advanced waste water treatment plant

Description of treatment process: Oxidation ditches with Denitrification through Anoxic Tanks and Filtration. The ~~flow through~~ treatment has the following treatment: high level disinfection dechlorination, reaeration.

Receiving waters: Channel A to Cabbage Head Creek to Old Tampa Bay	Classification: I II (III)	
Design Flow: 5.0	~~Mean Flow~~: 3 month ADF 4.2	Flow during survey:

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.):

No mixing zone

List effluent limits (if necessary, attach relevant paperwork):

Parameter	Limit (units)
*See next page for photo-copy of permit effluent limitations	

Describe special permit conditions and permit modifications:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
FACILITY SUMMARY

Northwest Regional
(Facility)

Description of permitted outfall(s):
Pipe outfall to channel "A", which flows to Rocky Creek to Tampa Bay.

List permit violations (from MOR data or other source) and plant upsets that occurred within past year:
- Monthly total Nitrogen limit exceeded 12/95, 3/96, and 4/96.
- Weekly total Nitrogen limit exceeded during the weeks of 12/10/95, 12/17/95, 12/24/95, 3/7/96 and 4/14/96
- Flow exceeded 5.0 MGD in December 1995, February 1996, March 1996, and April 1996.
- Chronic toxicity to Ceriodaphnia dubia 12/95, 3/96, and 3/96.

Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions:
A biological assessment was performed on this facility and River Oaks. See next page for summary sheet of this investigation

Discuss comparability of MOR results to past DER results and whether there are trends (improving, declining) in the data set:
Results of last CSI, 12/19/94:
BOD - 1.3 mg/L
TSS - 2.0 "
Ammonia - <0.01 "
TN - 0.61 "
TP - 0.10 "

Additional information:
Approx 1.7 mgd of plant flow is directly to the reclaimed water system, not discharged.

Staff contributing to this review (signature):
Edmund a. Grainger (Biologist)
Joe Squitieri (Inspector)
(Engineer)
( )
( )
( )

PERMITTEE: Hillsborough County Public Utilities Dept. Northwest Regional Water Reclamation Facility

GMS ID NO.: 4029C10857
PERMIT NO.: DO29-204300D

SPECIFIC CONDITIONS:

1. Drawings, plans, documents or specifications submitted by the permittee, not attached hereto, but retained on file at the Southwest District Office, are made a part hereof.

2. In accordance with Chapter 62-699, F.A.C., the required certified operator on-site time is: A Class C or higher operator for 24 hours/day, and 7 days a week. The lead/chief operator must be Class A.

3. The disinfection system shall be operated to maintain a minimum chlorine residual of 1.0 mg/l at the outfall from the chlorine contact chamber and prior to dechlorination. A metering device for dosing chlorine to the effluent shall be utilized and the chlorine supply tank shall be inspected regularly to ensure proper operation.

4. The effluent shall be sampled in accordance with Chapter 62-601, F.A.C. and shall meet the following limitations prior to discharge into Channel "A":

Parameter	Unit	Minimum	Maximum	Sample Type	Frequency
Permitted Capacity (flow)	MGD	-	5.0 Ann.Avg.	****rfmt	Continuous
pH	std un	6.00	8.50	*****meter	Continuous
$CBOD_5$*	mg/l	-	5 Annual Avg.	**fpc	Daily/5 wk
Total Suspended Solids*	mg/l	0	5 Annual Avg.	**fpc	Daily/5 wk
Total Nitrogen	mg/l		3 Annual Avg.	**fpc	Daily/5 wk
Total Phosphorous	mg/l		1 Annual Avg.	**fpc	Daily/5 wk
Cl_2	mg/l		0.01	grab	Hourly
Fecal coliform	#/100 ml	ND	25***	grab	Daily/5 wk
DO	mg/l	5.00		grab	Daily/7 wk

* Influent shall be monitored and reported monthly [Rule 62-601.300(1), F.A.C.]

** fpc - flow proportional composite - 24 hours

*** Non-detectable in at least seventy-five percent (75%) of samples collected during the monthly operating period (e.g. 23 per 30 samples).

**** rfm&t - Recording flowmeter and totalizer

***** Hourly measurements for 24 hours may be substituted for continuous measurement.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		3/4/96	1505	Channel A

REMARKS:	LOCATION:	FIELD ID/NAME:
located 100m west of weir.	River Oaks WWTP	Reference Site

RIPARIAN ZONE/INSTREAM FEATURES

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

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

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

Local Watershed NPS Pollution (check box): No evidence ☐ Some potential sources ☒ Obvious sources ☐

Width of riparian vegetation (m) on least buffered side: 1½

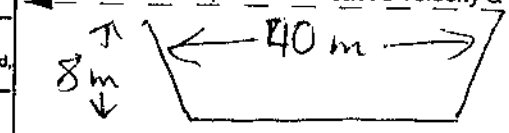
List & map dominant vegetation on back

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

Artificially Impounded ☐ yes

High Water Mark (m above bed): m

Typical Width (m)/Depth (m) /Velocity (m/sec) Transect (draw cross-section & provide at least 3 velocity & depth values)



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	65	6	Net
Leaf Packs or Mats				Mud/Muck/Silt	25	7	Net
Aquatic Vegetation	10	7	Net	Other:			
Rock or Shell Rubble				Other:			
Shorezone (Roots/Veg.)							

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								
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:
Very windy, no clouds, sunny.

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

SAMPLING TEAM:	SIGNATURE:	DATE
Andrea Grainger	Candrea Grainger	

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (v2)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
		3/4/96	Channel A

REMARKS:	LOCATION:	FIELD ID/NAME:
Located 100m west of weir.	River Oaks WWTP	Reference Site

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Bottom Substrate/ Available Cover [8]	Greater than 40% snags, logs, tree roots, emergent vegetation, leaf packs (partially decayed), undercut banks, rubble, or other stable habitat. 20 19 18 17 16	20% to 40% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	5% to 20% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Less than desirable habitat, frequently disturbed or removed. 10 9 (8) 7 6	Less than 5% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Lack of habitat is obvious, substrates unstable. 5 4 3 2 1
Water Velocity [2]	Max. observed: >0.25 m/sec. but < 2 m/sec 20 19 18 17 16	Max. observed; 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed; 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed; <0.05 m/sec, or spate occurring; > 2 m/sec 5 4 3 (2) 1 14sec/1
Artificial Channelization [2]	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 (2) 1
Deposition [3]	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20%-50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent 5 (4) 3 2 1
Bank Stability [3]	Stable. No evidence of erosion or bank failure. Little potential for future problems. 20 19 18 17 16	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 15 14 13 12 11	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 10 9 8 7 6	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 5 (4) 3 2 1
Riparian Buffer Zone Width [2]	Width of native vegetation (least buffered side) greater than 18 m 20 19 18 17 16	Width of native vegetation (least buffered side) 12 m to 18 m 15 14 13 12 11	Width of native vegetation 6 to 12 m, human activities still close to system 10 9 8 7 6	Less than 6 m of native buffer zone due to intensive human activities 5 4 3 (2) 1
Riparian Zone Vegetation Quality [9]	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions. 20 19 18 17 16	50% to 80% of riparian zone is vegetated, but one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 15 14 13 12 11	25% to 50% of riparian zone is vegetated, but one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 10 (9) 8 7 6	Less than 25% of streambank surfaces are vegetated. Poor plant community (*e.g.* grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 5 4 3 2 1

29 Add 5 points if cross-sectional area of flow is estimated to be > one square meter during periods of normal flow.

Comments

[ ] **TOTAL SCORE**

ANALYSIS DATE:	ANALYST:	SIGNATURE:
3/4/96	Andrea Grainger	Andrea Grainger

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		3/4/96	1:30	Channel A

REMARKS:	LOCATION:	FIELD ID/NAME:
Chlorine odor in air	River Oaks WWTP	Test Site 1

RIPARIAN ZONE/INSTREAM FEATURES

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

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

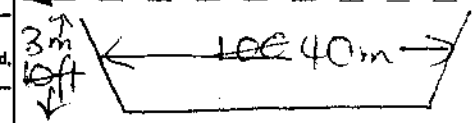
Local Watershed Erosion (check box): None ☐ Slight ☐ Moderate ☐ Heavy ☒

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

Width of riparian vegetation (m) on least buffered side: 1½ m

List & map dominant vegetation on back

Typical Width (m)/Depth (m) /Velocity (m/sec) Transect (draw cross-section & provide at least 3 velocity & depth values)



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

Artificially Impounded ☐ yes

High Water Mark (m above bed): 1 m

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)	10%	5	Net	Sand	60%	5	Net
Leaf Packs or Mats				Mud/Muck/Silt	20%	5	Net
Aquatic Vegetation	10%	5	Net	Other:			
Rock or Shell Rubble				Other:			
Shorezone (Roots/Veg.)				*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		19.65	7.32	7.58	585			1 m
Mid-depth								
Bottom								

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

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

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

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

Color (check box): Tannic: ☒ Green (algae): ☒ Clear: ☐ Other: ☐ brownish/gree

Weather Conditions/Notes:
VERY windy. A few clouds, very sunny.

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

SAMPLING TEAM:	SIGNATURE:	DATE
Andrea Grainger	Andrea Grainger	

* Tilapia beds 20 m apart.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (v2)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
		3/4/96	Channel A

REMARKS:	LOCATION:	FIELD ID/NAME:
Chlorine odor in air	River Oaks ~~AGTest~~ WWTP	TEST SITE 1

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Bottom Substrate/ Available Cover [13.]	Greater than 40% snags, logs, tree roots, emergent vegetation, leaf packs (partially decayed), undercut banks, rubble, or other stable habitat. 20 19 18 17 16	20% to 40% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 (13) 12 11	5% to 20% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	Less than 5% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Lack of habitat is obvious, substrates unstable. 5 4 3 2 1
Water Velocity [2]	Max. observed: >0.25 m/sec. but < 2 m/sec 20 19 18 17 16	Max. observed; 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed; 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed; <0.05 m/sec, or spate occurring; > 2 m/sec 5 4 3 (2) 1 30 sec/s
Artificial Channelization [2]	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 (2) 1
Deposition [7]	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20%-50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 (7) 6	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent 5 4 3 2 1
Bank Stability [5]	Stable. No evidence of erosion or bank failure. Little potential for future problems. 20 19 18 17 16	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 15 14 13 12 11	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 10 9 8 7 6	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. (5) 4 3 2 1
Riparian Buffer Zone Width [2]	Width of native vegetation (least buffered side) greater than 18 m 20 19 18 17 16	Width of native vegetation (least buffered side) 12 m to 18 m 15 14 13 12 11	Width of native vegetation 6 to 12 m, human activities still close to system 10 9 8 7 6	Less than 6 m of native buffer zone due to intensive human activities 5 4 3 2 1
Riparian Zone Vegetation Quality [7]	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions. 20 19 18 17 16	50% to 80% of riparian zone is vegetated, but one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 15 14 13 12 11	25% to 50% of riparian zone is vegetated, but one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 10 9 8 (7) 6	Less than 25% of streambank surfaces are vegetated. Poor plant community (*e.g.* grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 5 4 3 2 1

[ ] Add 5 **points** if cross-sectional area of flow is estimated to be > one square meter during periods of normal flow.

Comments

[39] **TOTAL SCORE**

ANALYSIS DATE:	ANALYST:	SIGNATURE:
3/4/96	Andrea Grainger	Andrea Grainger

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		3/4/96	1045	Channel A

REMARKS:	LOCATION:	FIELD ID/NAME:
Air had strong Chlorine odor.	Northwest Regional WWTP	Test Site 2

RIPARIAN ZONE/INSTREAM FEATURES

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

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

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

Local Watershed NPS Pollution (check box): No evidence ☐ Some potential sources ☒ Obvious sources ☐

Width of riparian vegetation (m) on least buffered side: 1½

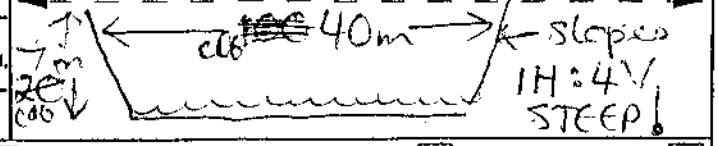
List & map dominant vegetation on back

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

Artificially Impounded ☐ yes

High Water Mark (m above bed): 1 m

Typical Width (m)/Depth (m) /Velocity (m/sec) Transect (draw cross-section & provide at least 3 velocity & depth values)



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	80	7	Net
Leaf Packs or Mats				Mud/Muck/Silt	15	7	Net
Aquatic Vegetation	5	6	Net	Other:			
Rock or Shell Rubble				Other:			
Shorezone (Roots/Veg.)				*Draw aerial view sketch of habitats found in 100 m sectior*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):			Secchi (m)
Top		20.08	7.39	7.10	724			VOB
Mid-depth								
Bottom								

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

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

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:
Very windy, no clouds, sunny.

Abundance:	Absent	Rare	Common	Abund
Periphyton *	☐	☒	☐	☐
Fish (Tilapia breeding beds)	☐	☒	☐	☐
Aquatic Macrophytes	☐	☒	☐	☐
Iron/sulfur Bacteria	☒	☐	☐	☐

SAMPLING TEAM: Andrea Granger

SIGNATURE: Andrea Granger

DATE

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (v2)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
		3/4/96	Channel A

REMARKS:	LOCATION:	FIELD ID/NAME:
Chlorine odor in air	Northwest Regional WWTP	Test Site 2

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Bottom Substrate/ Available Cover [16] (16 cfs)	Greater than 40% snags, logs, tree roots, emergent vegetation, leaf packs (partially decayed), undercut banks, rubble, or other stable habitat. 20 19 18 17 16	20% to 40% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	5% to 20% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Less than desirable habitat, frequently disturbed or removed. 10 9 (8) 7 (6)	Less than 5% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Lack of habitat is obvious, substrates unstable. 5 4 3 2 1
Water Velocity [3]	Max. observed: >0.25 m/sec. but < 2 m/sec 20 19 18 17 16	Max. observed; 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed; 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed; <0.05 m/sec, or spate occurring; > 2 m/sec (10 sec/m) 5 4 (3) 2 1
Artificial Channelization [2]	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 (2) 1
Deposition [5]	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20%-50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent (5) 4 3 2 1
Bank Stability [3]	Stable. No evidence of erosion or bank failure. Little potential for future problems. 20 19 18 17 16	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 15 14 13 12 11	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 10 9 8 7 6	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 5 4 (3) 2 1
Riparian Buffer Zone Width [2]	Width of native vegetation (least buffered side) greater than 18 m 20 19 18 17 16	Width of native vegetation (least buffered side) 12 m to 18 m 15 14 13 12 11	Width of native vegetation 6 to 12 m, human activities still close to system 10 9 8 7 6	Less than 6 m of native buffer zone due to intensive human activities 5 4 3 (2) 1
Riparian Zone Vegetation Quality [7]	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions. 20 19 18 17 16	50% to 80% of riparian zone is vegetated, but one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 15 14 13 12 11	25% to 50% of riparian zone is vegetated, but one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 10 9 8 (7) 6	Less than 25% of streambank surfaces are vegetated. Poor plant community (*e.g.* grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 5 4 3 2 1

[ ] Add 5 points if cross-sectional area of flow is estimated to be > one square meter during periods of normal flow.

Comments

(26) [30] **TOTAL SCORE**

ANALYSIS DATE:	ANALYST:	SIGNATURE:
3/4/96	Andrea Grainger	Andrea Grainger

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: River Oaks WWTP
County: ~~Hills~~ Hillsborough
Contact / District: Lisa Carter / SW
NPDES Permit #: FL00 27821
LIMS Sample #: 131357 LIMS Job #: 96-MAR-05-23

Sample Collection: Date 3/4/96 Time 1230
Test Beginning: Date 3/5/96 Time 1430
Test Ending: Date 3-7-96 Time 1510
Organism Batch #: 11 Diluent Batch #: 10
Organism Age: ≤24 hr
Test Organism: Ceriodaphnia dubia

Test Type: ~~Screening~~ | Definitive
(Static) | Static Renewal | Flow-through

Test Number: 2 of 2

Remarks:

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	22.9 @ 23.0	8.1 @ 25.7 °C	107.7 @ 106.1 1421 @ 1409 @ 25.3 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.0 @ 24.1	8.1 @ 26.1 °C	1226 @ 1062 1426 @ 1419 @ 25.8 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.4 @ 23.4	8.1 @ 25.7 °C	1078 @ 1062 1425 @ 1409 @ 25.2 °C 1022.0 @ 1018.0

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	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 24 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 48 h
ctl A	A	5	5	5	7.9		7.8	24.5		24.5	7.7		7.8	175		180
ctl B	B	5	5	5			7.9			24.5			7.8			190
ctl C	C	5	5	5			7.9			24.5			7.9			180
ctl D	D	5	5	5			8.0			24.6			7.9			185
10% A	A	5	5	5	7.6		8.6	24.3		24.5	7.7		7.9	755		785
10% B	B	5	5	5			8.6			24.5			7.9			780
10% C	C	5	5	5			8.6			24.5			7.9			835
10% D	D	5	5	5			8.6			24.4			7.9			860
Measured/Loaded by:		MF	MF	MF	TM		TM	TM		TM	TM		MF	TM		TM
Recorded by:		DW	MF	MF	DW		JRS	DW		JRS	DW		JRS	DW		JRS

Investigators' Signatures

Jennifer Spagnoli
Tina Mitwalski
Marshall Fairbolt

reviewer

form updated 5/05/95

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			N/M	—	—
Lab Total Residual Cl2 (mg/L):	—	<0.03	0.05	JN ↔ DR-100 *	
Alkalinity (mg/L as $CaCO_3$):	—	75	180	JRS ↔ HACH *	3-5-96 switched
Hardness (mg/L as $CaCO_3$):	—	85	205	JRS ↔ HACH *	
Total ammonia (mg/L as N):	—	<0.017	<0.017	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -56.4 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: River Oaks WWTP
County: Hillsborough
Contact / District: Lisa Carter / SCW
NPDES Permit #: FL0027821
LIMS Sample #: 131357 (sample log 3-4-96) LIMS Job #: 96-MAR-05-23

Sample Collection: Date 3/4/96 Time 1230
Test Beginning: Date 3/5/96 Time 1500
Test Ending: Date 3-7-96 Time 1500
Organism Batch #: 13 Diluent Batch #: Well
Organism Age: 11 days
Test Organism: Cyp. variegatus

Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Test Number: 1 of 2

Remarks:

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	22.9 @ 23.0	8.1 @ 25.7 °C	107.7 @ 106.2 1421 @ 1409 @ 25.3 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.0 @ 24.1	8.1 @ 26.1 °C	107.6 @ 106.2 1426 @ 1419 @ 25.8 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.4 @ 23.4	8.1 @ 25.1 °C	107.8 @ 106.2 1425 @ 1409 @ 25.2 °C

152.20 & 10136

Conc.	Chamber #	Number Live			pH			Temperature (°C)			D.O. (mg/L)			UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm)		
		0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h
Ctl A	17	5	5	5	7.9	8.3	8.4	24.5	24.0	24.2	7.7	7.9	7.9	250	250	250
Ctl B	503	5	5	5	7.9	8.3	8.4	24.4	23.9	24.1	7.7	7.9	7.9	250	245	250
Ctl C	119	5	5	5	7.9	8.3	8.4	24.4	23.9	24.1	7.8	7.9	7.9	250	245	250
Ctl D	287	5	5	5	7.9	8.3	8.4	24.4	23.9	24.1	7.7	7.9	8.0	250	245	250
100% A	502	5	5	5	7.6	8.1	8.4	24.8	23.9	24.1	7.7	7.9	8.0	785	785	785
100% B	41	5	5	5	7.6	8.1	8.4	24.8	23.8	24.0	7.6	7.8	8.0	795	780	785
100% C	147	5	5	5	7.6	8.1	8.4	24.8	23.8	24.0	7.5	7.8	8.0	795	775	775
100% D	79	5	5	5	7.6	8.1	8.4	24.5	23.8	24.1	7.5	7.8	8.0	795	780	785
Measured/Loaded by:		MF	DW	MF	TM	MF	MF	TM	MF	MF	TM	MF	MF	TM	MF	MF
Recorded by:		DW	DW	JRS	DW	DW	JRS	DW	DW	JRS	DW	DW	JRS	DW	DW	JRS

Investigators' Signatures

Jennifer Sparapani
Gina Mikulski
Marshall Faircloth

reviewer

form updated 5/05/95

Salt Water / Well Water

Water Quality Parameters		Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):		N/m	–	–
Lab Total Residual Cl2 (mg/L):	0.03	—	0.05	Dr-100	JN
Alkalinity (mg/L as $CaCO_3$):	120	—	180	HACH	JRS
Hardness (mg/L as $CaCO_3$):	125	—	205	HACH	JRS
Total ammonia (mg/L as N):	<0.017	—	<0.017	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -56.4 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: NW Regional Hospital WWTP
County: Hillsborough
Contact / District: Brent Johnson / SW
NPDES Permit #: FL0041670
LIMS Sample #: 131363 (sample log 3-11-96) LIMS Job #: 96-MAR-05-27

Sample Collection: Date 3/4/96 Time 1045
Test Beginning: Date 3/5/96 Time 1430
Test Ending: Date 3-7-96 Time 1500
Organism Batch #: 11 Diluent Batch #: 10
Organism Age: <24 hr
Test Organism: Ceriodaphnia dubia

Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Test Number: 2 of 2

Remarks:

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	22.9 @ 23.0	8.1 @ 27.7 °C	107.7 @ 106.2 142.1 @ 1409 @ 25.3 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.0 @ 24.1	8.1 @ 26.1 °C	107.6 @ 106.2 1426 @ 1419 @ 25.8 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.4 @ 23.4	8.1 @ 25.7 °C	1078 @ 106.2 1425 @ 1409 @ 25.2 °C 10220 @ 10180

		Number Live			pH			Temperature (°C)			D.O. (mg/L)			UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm)		
Conc.	Chamber #	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h
CTL A	A	5	5	5	7.8		8.3	24.1		24.5	7.8		7.8	170		190
CTL B	B	5	5	5			8.3			24.5			7.8			195
CTL C	C	5	5	5			8.3			24.5			7.9			195
CTL D	D	5	5	5			8.3			24.5			7.9			190
100% A	A	5	5	5	7.5		8.6	24.3		24.6	8.10		7.8	780		750
100% B	B	5	5	5			8.6			24.6			7.8			745
100% C	C	5	5	5			8.6			24.6			7.8			780
100% D	D	5	5	5			8.6			24.6			7.8			805
Measured/Loaded by:		MF	MF	MF	TM		MF	TM		MF	TM		MF	TM		TM
Recorded by:		DW	MF	MF	DW		JRS	DW		JRS	DW		JRS	DW		JRS

Investigators' Signatures

Jennifer Sparapani
Jennifer Martin
Tina Mikulski
Marbell Faircloth

reviewer

form updated 5/05/95

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			N/m	—	—
Lab Total Residual Cl2 (mg/L):	—	<0.03	<0.03	DR-100	JN
Alkalinity (mg/L as $CaCO_3$):	—	75	180	HACH	JRS
Hardness (mg/L as $CaCO_3$):	—	85	185	HACH	JRS
Total ammonia (mg/L as N):	—	<0.017	<0.017	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -56.4 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: NW Regional Hospital WWTP
County: Hillsborough
Contact / District: Brent Johnson / SW
NPDES Permit #: FL0041670
LIMS Sample #: 131363 (Sample log 3-11-96) LIMS Job #: 96-MAR-05-27

Sample Collection: Date 3/4/96 Time 1045
Test Beginning: Date 3/5/96 Time 1510
Test Ending: Date 3-7-96 Time 1500
Organism Batch #: 13 Diluent Batch #: well
Organism Age: 11 days
Test Organism: Cyprinella leedsi

Test Type: Screening | Definitive
Static | Static Renewal | Flow-through

Test Number: 1 of 2

Remarks:

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	22.9 @ 23.0	8.1 @ 27.7 °C	107.7 @ 106.2 1421 @ 1409 @ 25.3
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.0 @ 24.1	8.1 @ 26.1 °C	107.6 @ 106.2 1426 @ 1419 @ 25.8
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.4 @ 23.4	8.1 @ 25.7 °C	107.8 @ 106.2 1425 @ 1409 @ 25.2 10230 @ 10180

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
Ctl A	700	5	5	5	7.9	8.3	8.4	24.2	23.9	24.1	7.7	7.9	8.1	245	250	255
Ctl B	65	5	5	5	7.9	8.3	8.4	24.2	23.8	24.0	7.7	7.9	8.1	250	250	250
Ctl C	45	5	5	5	7.9	8.3	8.4	24.2	23.8	24.0	7.7	7.9	8.1	250	250	250
Ctl D	359	5	5	5	7.9	8.3	8.4	24.2	23.8	24.1	7.7	7.9	8.1	250	250	250
100% A	701	5	5	5	7.5	8.1	8.4	24.5	23.9	24.1	7.9	7.8	8.1	815	800	800
100% B	412	5	5	4	7.5	8.1	8.4	24.5	23.9	24.1	7.9	7.8	8.1	815	805	810
100% C	348	5	5	5	7.5	8.1	8.4	24.5	23.8	24.1	7.8	7.8	8.0	815	805	810
100% D	304	5	5	5	7.5	8.1	8.4	24.4	23.8	24.1	7.9	7.8	8.0	815	810	815
Measured/Loaded by:		MF	DW	JRS	TM	MF	MF	TM	MF	MF	TM	MF	MF	TM	MF	MF
Recorded by:		DW	DW	MF	DW	DW	JRS	DW	DW	JRS	DW	DW	JRS	DW	DW	JRS

Investigators' Signatures

Linda Mikulski

Marshall Faircloth

reviewer

form updated 5/05/95

Salt Water: Well Water | 20% Min Water

Water Quality Parameters

			Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			N/M	—	—
Lab Total Residual Cl2 (mg/L):	<0.03	—	<0.03	Dr/100	JN
Alkalinity (mg/L as $CaCO_3$):	~~120~~ 120	—	180	HACH	JRS
Hardness (mg/L as $CaCO_3$):	125	—	185	HACH	JRS
Total ammonia (mg/L as N):	<0.017	—	<0.017	Orion	JN

Ammonia Meter #98136 Meter Slope: ~56.4

Ammonia Blank: <0.017

Control Salinity: 0 ppt

Sample Salinity: 0 ppt

REFERENCE SITE

Winter Index Period: Stream Condition Index for Florida (SCI) (April 1996)													
Macroinvertebrate Dip Net (20 sweeps of most productive substrates)	Value	**Panhandle**				**Peninsula**				**Northeast**			
		5	3	1	Score	5	3	1	Score	5	3	1	Score
Total Number of Taxa	53	≥27	26-14	<14		≥ 27	26-14	<14	5	≥18	17-9	<9	
EPT Index	4	≥6	5-3	<3		≥ 4	3-2	<2	5	-	≥3	<3	
# Chironomid Taxa	20	≥9	8-5	<5		≥9	8-5	<5	5	≥4	3-2	<2	
% Contribution of Dominant Taxon	32.9	≤25	26-62	>62		≤30	31-65	>65	3	≤37	38-69	>69	
% Diptera	32.2	-	≤60	>60		-	≤52	>52	3	-	≤67	>67	
Florida Index	10	≥13	12-7	<7		≥10	9-5	<5	5	≥ 6	5-3	<3	
% Suspension feeders/Filterers	6.5	≥ 13	12-7	<7		≥15	14-8	<8	1	≥ 25	25-13	<13	
Total Score		**Panhandle**				**Peninsula**			27	**Northeast**			
Interpretation of Score		**Excellent**			27-33	**Excellent**			27-33	**Excellent**			26-31
		Good			21-26	**Good**			21-26	**Good**			20-25
		Poor			14-20	**Poor**			14-20	**Poor**			14-19
		Severely Degraded			7-13	**Severely Degraded**			7-13	**Severely Degraded**			7-13

TEST SITE 1 (RIVER CITRUS)

Winter Index Period: Stream Condition Index for Florida (SCI) (April 1996)													
Macroinvertebrate Dip Net (20 sweeps of most productive substrates)	Value	**Panhandle**				**Peninsula**				**Northeast**			
		5	3	1	Score	5	3	1	Score	5	3	1	Score
Total Number of Taxa	58	≥27	26-14	<14		≥ 27	26-14	<14	5	≥18	17-9	<9	
EPT Index	4	≥6	5-3	<3		≥ 4	3-2	<2	5	-	≥3	<3	
# Chironomid Taxa	30	≥9	8-5	<5		≥9	8-5	<5	5	≥4	3-2	<2	
% Contribution of Dominant Taxon	23.8	≤25	26-62	>62		≤30	31-65	>65	5	≤37	38-69	>69	
% Diptera	37.5	-	≤60	>60		-	≤52	>52	3	-	≤67	>67	
Florida Index	12	≥13	12-7	<7		≥10	9-5	<5	5	≥ 6	5-3	<3	
% Suspension feeders/Filterers	5.7	≥13	12-7	<7		≥15	14-8	<8	1	≥ 25	25-13	<13	
Total Score		**Panhandle**				**Peninsula**			29	**Northeast**			
Interpretation of Score		**Excellent**			27-33	**Excellent**			27-33	**Excellent**			26-31
		Good			21-26	**Good**			21-26	**Good**			20-25
		Poor			14-20	**Poor**			14-20	**Poor**			14-19
		Severely Degraded			7-13	**Severely Degraded**			7-13	**Severely Degraded**			7-13

TEST SITE 2 (NW REGIONAL)

Winter Index Period: Stream Condition Index for Florida (SCI) (April 1996)

Macroinvertebrate Dip Net (20 sweeps of most productive substrates)	Value	Panhandle				Peninsula				Northeast			
		5	3	1	Score	5	3	1	Score	5	3	1	Score
Total Number of Taxa	25	≥27	26-14	<14		≥ 27	26-14	<14	3	≥18	17-9	<9	
EPT Index	1	≥6	5-3	<3		≥ 4	3-2	<2	1	-	≥3	<3	
# Chironomid Taxa	3	≥9	8-5	<5		≥9	8-5	<5	3	≥4	3-2	<2	
% Contribution of Dominant Taxon	40.0	≤25	26-62	>62		≤30	31-65	>65	3	≤37	38-69	>69	
% Diptera	38.7	-	≤60	>60		-	≤52	>52	3	-	≤67	>67	
Florida Index	4	≥ 13	12-7	<7		≥10	9-5	<5	1	≥ 6	5-3	<3	
% Suspension feeders/Filterers	12.3	≥ 13	12-7	<7		≥15	14-8	<8	3	≥ 25	25-13	<13	
Total Score		Panhandle				Peninsula			17	Northeast			
Interpretation of Score		Excellent			27-33	Excellent			27-33	Excellent			26-31
		Good			21-26	Good			21-26	Good			20-25
		Poor			14-20	Poor			14-20	Poor			14-19
		Severely Degraded			7-13	Severely Degraded			7-13	Severely Degraded			7-13

Winter Index Period: Stream Condition Index for Florida (SCI) (April 1996)

Macroinvertebrate Dip Net (20 sweeps of most productive substrates)	Value	Panhandle				Peninsula				Northeast			
		5	3	1	Score	5	3	1	Score	5	3	1	Score
Total Number of Taxa		≥27	26-14	<14		≥ 27	26-14	<14		≥18	17-9	<9	
EPT Index		≥6	5-3	<3		≥ 4	3-2	<2		-	≥3	<3	
# Chironomid Taxa		≥9	8-5	<5		≥9	8-5	<5		≥4	3-2	<2	
% Contribution of Dominant Taxon		≤25	26-62	>62		≤30	31-65	>65		≤37	38-69	>69	
% Diptera		-	≤60	>60		-	≤52	>52		-	≤67	>67	
Florida Index		≥ 13	12-7	<7		≥10	9-5	<5		≥ 6	5-3	<3	
% Suspension feeders/Filterers		≥ 13	12-7	<7		≥15	14-8	<8		≥ 25	25-13	<13	
Total Score		Panhandle				Peninsula				Northeast			
Interpretation of Score		Excellent			27-33	Excellent			27-33	Excellent			26-31
		Good			21-26	Good			21-26	Good			20-25
		Poor			14-20	Poor			14-20	Poor			14-19
		Severely Degraded			7-13	Severely Degraded			7-13	Severely Degraded			7-13

Benthic macroinvertebrate taxa list for River Oaks WWTP (test site 1) and Northwest Regional WWTP (test site 2), collected via 20 dipnet sweeps in Channel A, on 4 March, 1996.

	Reference Site	Test Site 1	Test Site 2
Planariidae			
Dugesia sp.	-	4	-
Dugesia tigrina	1	-	-
Rhynchocoela			
Prostoma rubrum	-	1	-
Oligochaeta			
Aulodrilus pigueti	1	14	-
Bratislavia unidentata	-	-	5
Dero sp.	-	1	1
Dero digitata	-	1	7
Dero trifida	-	1	1
Dero vaga	-	14	-
Gloiobdella elongata	1	3	-
Haber speciosus	4	-	-
Ilyodrilus templetoni	-	-	1
Limnodrilus hoffmeisteri	3	7	27
Lumbriculus variegatus	-	-	1
Nais communis	-	1	2
Nais pardalis	-	-	20
Pristinella jenkinae	-	-	1
Stylaria lacustris	-	1	-
Hirudinea			
Undetermined Hirudinea	-	-	1
Gastropoda			
Ferrissia hendersoni	-	-	2
Hebetancylus excentricus	49	75	-
Melanoides tuberculata	2	-	-
Micromenetus dilatatus	-	4	-
Micromenetus dilatatus avus	8	-	-
Micromenetus floridensis	10	-	-
Physella sp.	4	-	-
Planorbella duryi	1	-	1
Pseudosuccinea columella	5	26	-
Pyrogophorus platyrachis	5	5	-
Undetermined Ancylidae	-	-	2
Undetermined Hydrobiidae	-	11	-
Pelecypoda			
Corbicula fluminea	18	12	-
Undetermined Pisidiidae	1	-	-
Acarina			
Albia sp.	1	-	-
Arrenurus sp.	1	-	-
Atractides sp.	-	1	-

Koenikea sp.	-	1	-
Piona sp.	1	-	-
Amphipoda			
Hyalella azteca	137	150	138
Palaemonetes paludosus	2	-	1
Collembola			
Sminthurinus sp.	1	-	-
Ephemeroptera			
Baetis sp.	-	1	-
Caenis sp.	5	12	-
Callibaetis floridanus	3	7	-
Procloeon viridocularis	1	1	-
Undetermined Leptophlebiidae	-	-	2
Odonata			
Argia sp.	-	2	-
Argia fumipennis	-	1	-
Enallagma cardenium	-	2	-
Enallagma sp.	1	-	-
Erythemis simplicicollis	-	1	-
Ischnura sp.	6	12	-
Somatochlora sp.	1	-	-
Hemiptera			
Mesovelia sp.	2	6	-
Undetermined Corixidae	-	-	4
Coleoptera			
Dubiraphia sp.	2	2	-
Megaloptera			
Chauliodes sp.	1	-	-
Trichoptera			
Cyrnellus fraternus	1	-	-
Lepidoptera			
Undetermined Lepidoptera	2	1	-
Undetermined Pyralidae	1	-	-
Diptera			
Ablabesmyia mallochi	6	2	-
Asheum sp.	-	1	-
Asheum beckae	-	1	-
Chironomus sp.	8	1	-
Cladopelma sp.	-	1	-
Cladotanytarsus sp.	-	8	82
Clinotanypus sp.	2	2	-
Coelotanypus sp.	-	1	-
Corynoneura sp.	-	1	-
Cricotopus or *Orthocladius* sp.	1	-	-
Cricotopus sylvestris	1	12	12
Cryptochironomus sp.	1	3	-
Cryptotendipes sp.	3	6	-
Dicrotendipes modestus	3	8	5
Endochironomus subtendens	-	1	1

Glyptotendipes sp.	1	-	-
Glyptotendipes sp. B Epler	-	1	-
Goeldichironomus sp.	-	1	-
Kiefferulus sp.	1	-	-
Labrundinia neopilosella	-	2	-
Labrundinia pilosella	1	-	-
Nanocladius sp.	-	1	1
Odontomyia sp.	1	-	-
Palpomyia/Bezzia grp.	11	2	7
Paralauterborniella nigrohalterale	3	-	-
Polypedilum sp.	-	1	-
Polypedilum convictum grp.	2	-	-
Polypedilum halterale grp.	2	6	2
Polypedilum illinoense grp.	50	127	13
Procladius sp.	1	-	-
Pseudochironomus sp.	1	9	3
Tanytarsus sp.	4	6	-
Tanytarsus sp. A Epler	5	6	-
Tanytarsus sp. C Epler	-	5	-
Tanytarsus sp. D Epler	-	1	-
Tanytarsus sp. F Epler	-	4	-
Tanytarsus sp. G Epler	2	7	-
Tanytarsus sp. K Epler	-	1	-
Tanytarsus sp. L Epler	-	1	-
Tanytarsus sp. T Epler	-	1	-
Undetermined Chironomidae	24	19	11

Benthic macroinvertebrate taxa list for River Oaks WWTP (test site 1), collected via Hester-Dendy samplers in Channel A on 4 March, 1996. Densities are in number/m^2.

	Reference Site	Test Site 1
Planariidae		
Dugesia tigrina	11	-
Oligochaeta		
Dero trifida	5	-
Nais sp.	8	-
Nais behningi	3	-
Nais communis	16	-
Stylaria lacustris	3	-
Gastropoda		
Amnicola sp.	3	2
Hebetancylus excentricus	32	14
Micromenetus sp.	13	54
Micromenetus dilatatus	-	2
Physella sp.	98	30
Pseudosuccinea columella	13	2
Pyrogophorus platyrachis	8	-
Undetermined Ancylidae	13	34
Undetermined Hydrobiidae	3	-
Undetermined Gastropoda	3	-
Acarina		
Albia sp.	8	2
Atractides sp.	11	-
Amphipoda		
Hyalella azteca	355	298
Ephemeroptera		
Baetis sp.	5	4
Caenis sp.	8	56
Callibaetis floridanus	3	6
Stenacron sp.	13	4
Stenacron interpunctatum	11	-
Undetermined Baetidae	5	2
Undetermined Leptophlebiidae	-	4
Odonata		
Enallagma sp.	13	14
Enallagma cardenium	3	-
Enallagma pollutum	-	10
Ischnura sp.	3	2
Undetermined Zygoptera	21	4
Coleoptera		
Dubiraphia sp.	-	2
Trichoptera		
Cernotina sp.	3	-
Undetermined Trichoptera	3	-

Diptera		
Ablabesmyia sp.	3	-
Ablabesmyia mallochi	63	18
Ablabesmyia peleensis	-	2
Ablabesmyia rhamphe grp.	40	30
Asheum beckae	3	26
Chironomus sp.	3	2
Corynoneura sp.	79	6
Corynoneura sp. C Epler	29	-
Corynoneura taris	5	-
Cricotopus bicinctus	8	-
Cricotopus or *Orthocladius* sp.	5	12
Cricotopus sylvestris	-	10
Cryptochironomus sp.	3	6
Cryptotendipes sp.	8	8
Dicrotendipes sp.	-	4
Dicrotendipes modestus	29	77
Dicrotendipes neomodestus	5	8
Dicrotendipes simpsoni	-	46
Endochironomus nigricans	-	2
Endochironomus subtendens	-	32
Glyptotendipes sp.	-	10
Glyptotendipes sp. B Epler	-	10
Goeldichironomus sp.	-	4
Goeldichironomus natans	-	6
Labrundinia sp.	3	2
Labrundinia neopilosella	-	4
Labrundinia pilosella	24	10
Larsia sp.	5	-
Nanocladius sp.	50	10
Palpomyia/Bezzia grp.	19	8
Parachironomus sp.	-	8
Parachironomus carinatus	-	4
Parachironomus hirtalatus	-	2
Paralauterborniella nigrohalterale	5	-
Pentaneura inconspicua	13	-
Polypedilum sp.	3	4
Polypedilum convictum grp.	16	2
Polypedilum fallax	-	2
Polypedilum halterale grp.	-	2
Polypedilum illinoense grp.	42	226
Polypedilum scalaenum	-	4
Polypedilum scalaenum grp.	19	2
Pseudochironomus sp.	-	4
Rheotanytarsus distinctissimus grp.	3	-
Rheotanytarsus exiguus grp.	3	-
Stenochironomus sp.	-	2
Tanytarsus sp.	13	24
Tanytarsus sp. A Epler	262	145

Tanytarsus sp. C Epler	56	42
Tanytarsus sp. F Epler	3	12
Tanytarsus sp. G Epler	5	2
Tanytarsus sp. L Epler	26	10
Tanytarsus sp. O Epler	-	2
Tanytarsus sp. S Epler	3	-
Tanytarsus sp. T Epler	11	26
Thienemanniella sp.	-	2
Thienemanniella sp. A Epler	26	-
Tribelos sp.	3	2
Tribelos fuscicornis	3	-
Undetermined Chironomidae	190	95

Phytoplankton taxa list and densities (#/mL) for River Oaks WWTP (test site 1) and Northwest Regional WWTP (test site 2), collected via subsurface grabs in Channel A, on 4 March, 1996.

	Reference Site	Test Site 1	Test Site 2
Cyanophyceae			
Anabaena sp.	11	40	–
Aphanocapsa sp.	63	–	–
Aphanothece sp.	11	–	–
Chroococcus sp.	21	–	–
Dactylococcopsis sp.	32	–	–
Gloeocapsa sp.	11	–	–
Lyngbya sp.	11	–	–
Marssoniella sp.	53	80	–
Merismopedia sp.	–	40	–
Oscillatoria sp.	42	–	–
Spirulina sp.	–	–	12
Bacillariophyceae			
Achnanthes sp.	–	–	12
Amphora sp.	11	40	–
Bacillaria sp.	–	40	–
Cocconeis sp.	21	40	–
Cyclotella sp.	21	–	173
Melosira sp.	21	–	–
Navicula sp.	21	40	49
Nitzschia sp.	42	201	62
Skeletonema sp.	–	1327	1063
Undetermined Pennales	–	442	136
Chlorophyceae			
Carteria sp.	11	–	–
Characium sp.	–	40	–
Chlamydomonas sp.	21	121	12
Chodatella sp.	–	40	25
Crucigenia sp.	63	–	12
Dictyosphaerium sp.	11	–	–
Kirchneriella sp.	11	–	–
Scenedesmus sp.	137	–	12
Schroederia sp.	–	40	–
Spermatozoopsis sp.	21	402	272
Tetradesmus sp.	11	–	–
Tetraedron sp.	42	–	–
Undetermined Chlorophyceae	42	80	–
Euglenophyceae			
Euglena sp.	11	–	–
Trachelomonas sp.	11	–	–
Dinophyceae			
Ceratium sp.	11	–	–
Cryptophyceae			
Chroomonas sp.	11	6073	1273
Cryptomonas sp.	42	1931	309

Periphyton taxa list and densities (#/cm^2) for River Oaks WWTP (test site 1) and Northwest Regional WWTP (test site 2), collected via standard diatometers in channel A on 4 March, 1996.

	Test Site 1	Test Site 2
Cyanophyceae		
Anabaena sp.	7,068	1,494
Chroococcus sp.	1,571	–
Gloeocapsa sp.	–	136
Lyngbya sp.	–	272
Oscillatoria sp.	–	679
Bacillariophyceae		
Achnanthes affinis	3,141	–
Achnanthes exigua	2,356	8,015
Achnanthes lanceolata	9,424	6,657
Achnanthes minutissima	28,273	2,445
Amphora ovalis	785	–
Amphora veneta	–	679
Cocconeis placentula	255,244	3,396
Cyclotella meneghiniana	–	1,223
Eunotia pectinalis	3,141	–
Gomphonema angustatum	785	543
Gomphonema gracile	–	543
Gomphonema parvulum	50,263	13,042
Melosira sp.	–	1,087
Navicula sp.	–	408
Navicula capitata	1571	–
Navicula elginensis	–	136
Navicula lanceolata	–	136
Navicula minima	72,254	11,276
Navicula radiosa	–	408
Navicula rhynchocephala	–	408
Nitzschia amphibia	5,498	4,483
Nitzschia fonticola	1,571	2,038
Nitzschia ignorata	–	136
Nitzschia palea	–	679
Synedra sp.	–	679
Undetermined Pennales	–	9,238
Chlorophyceae		
Ankistrodesmus sp.	–	136
Characium sp.	2,356	2,581
Chlamydomonas sp.	1,571	543
Chlorococcum sp.	–	408
Gloeocystis sp.	785	–
Oedogonium sp.	–	679
Pediastrum sp.	785	–
Scenedesmus sp.	–	136
Stigeoclonium sp.	25,132	3,532
Tetraedron sp.	785	–
Tetrastrum sp.	–	136
Undetermined Chlorophyceae	1,571	–

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

1	2	3	11	12	17	18	19	20
Transaction Code		NPDES NUMBER		YR/MO/DA		Insp Type	Inspector	Fac Type
N	5	FL0027821		030496		X	5	1

Remarks

21 66

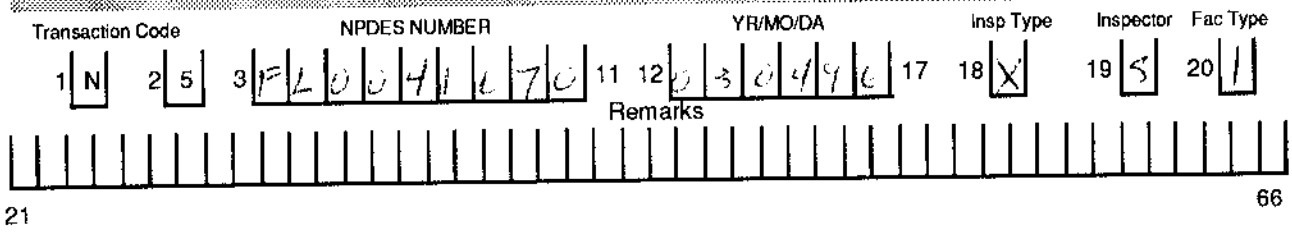
Fill Out This Section For All Surface Water Discharger Inspections (CEI, CSI, CBI, PAI, XSI - RI Optional)

1	2	3	11	12	17	18	19	20
Transaction Code		NPDES NUMBER		YR/MO/DA		Insp Type	Inspector	Fac Type
N	5	FL0027821		030496		B	5	1

Remarks

21 66

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)