

Biological Assessment of

Everglades City Wastewater Treatment Facility

Collier County

NPDES #FL0027618

Sampled March 1995

July 1995

Biology Section
Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan No. 870346G

Department of Environmental Protection

Results of Fifth Year Inspections

Discharger: Everglades City WWTF
County: Collier
NPDES Number: FL0027618
State Permit Expiration Date: 11 October 1995 (construction permit)

Toxics Sampling Inspection (XSI)

Date Sampled: 21 March 1995

Results: Organic pollutants detected in the effluent sample included chlorpyrifos ethyl (also known as Dursban) (0.2 µg/L) and simazine (0.15 µg/L). It should be noted that both these compounds were found at levels below the criterion of detection. No metals were found at levels exceeding Class III standards.

Compliance Biomonitoring Inspection (CBI)

Date Sampled: 21 March 1995

Results: The sample of 100% effluent was toxic to the invertebrate, *Mysidopsis bahia*, but not toxic to the fish, *Menidia beryllina*. The mysid toxicity represents a violation of Rules 62-302.530(62) FAC, 62-302.500(1)(d) FAC, and 62-4.244(3)(a) FAC. It is likely that the effluent levels of chlorpyrifos ethyl and unionized ammonia contributed to the mortality in the mysid test. Chlorpyrifos is acutely toxic to *Mysidopsis bahia* at 0.035 µg/L. Unionized ammonia was found in the effluent at 0.40 mg/L, a concentration which is known to be toxic.

Impact Bioassessment Inspection (IBI)

Date Sampled: 21 March 1995

Results: The abundance of pollution sensitive macroinvertebrate species at the test sites, as well as acceptable taxa richness and diversity values, suggest that a relatively healthy community was present in the vicinity of the discharge. Apparently, the toxic effluent was sufficiently diluted by the receiving waters so that no adverse effects were seen. Of the phytoplankton measures, only chlorophyll *a* at test site 1 and algal abundance at both test sites suggested any disturbance in the receiving waters. The chlorophyll *a* concentration at test site 1 (15.5 µg/L) was higher than those found in approximately 85% of other Florida estuaries. The increased biomass at the test sites may be related to direct algal inputs from Lake Placid, since nutrient concentrations were fairly low in the receiving waters.

Water Quality Inspection (WQI)

Date Sampled: 21 March 1995

Results: While the Everglades City effluent was relatively high in some nutrients (*e.g.*, total phosphorus was 2.1 mg/L and ammonia was 19 mg/L), it did not appear to cause additional enrichment of the receiving waters. In general, the nutrient concentrations at the reference and test sites were average for a typical Florida estuary. Substantial tidal flushing in Lake Placid canal appears to be a likely factor contributing to the fairly low nutrient concentrations found at the test sites.

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 Everglades City Wastewater Treatment Facility is located on Copeland Avenue in Everglades City, Collier County, Florida (see maps in Appendix). Treatment at this facility consists of extended aeration and subsequent clarification. The effluent is chlorinated for disinfection, and then dechlorinated with sodium bisulfate, prior to discharge into the Lake Placid canal, a tidal system which flows into Chokoloskee Bay (an Outstanding Florida Water). The facility has a design flow of 0.1 MGD. Flow during the present survey was approximately 0.075 MGD.

This facility has both State and Federal Permit limits (see Facility Summary in Appendix). The following list represents the more stringent limits: BOD (25.5 mg/L as a weekly average, 17 mg/L as a monthly average, 30 mg/L as an annual average, 60 mg/L as a daily maximum), TSS (45 mg/L as a weekly average, 30 mg/L as a monthly average, 30 mg/L as an annual average, 60 mg/L as a daily maximum), fecal coliforms (maximum of 800 organisms/100 mL), dissolved oxygen (minimum of 4.0 mg/L), pH (6.0 to 8.5 SU's), and total residual chlorine (minimum of 0.5 mg/L for disinfection, and maximum of 0.01 mg/L at discharge).

A review of Monthly Operating Report data showed that the facility has had numerous upsets within the past year. These include exceeding design flow (due to saltwater infiltration) and losing the biologically active treatment bacteria (from toxic inputs). Overall, the performance of the facility is declining due to the age of the system.

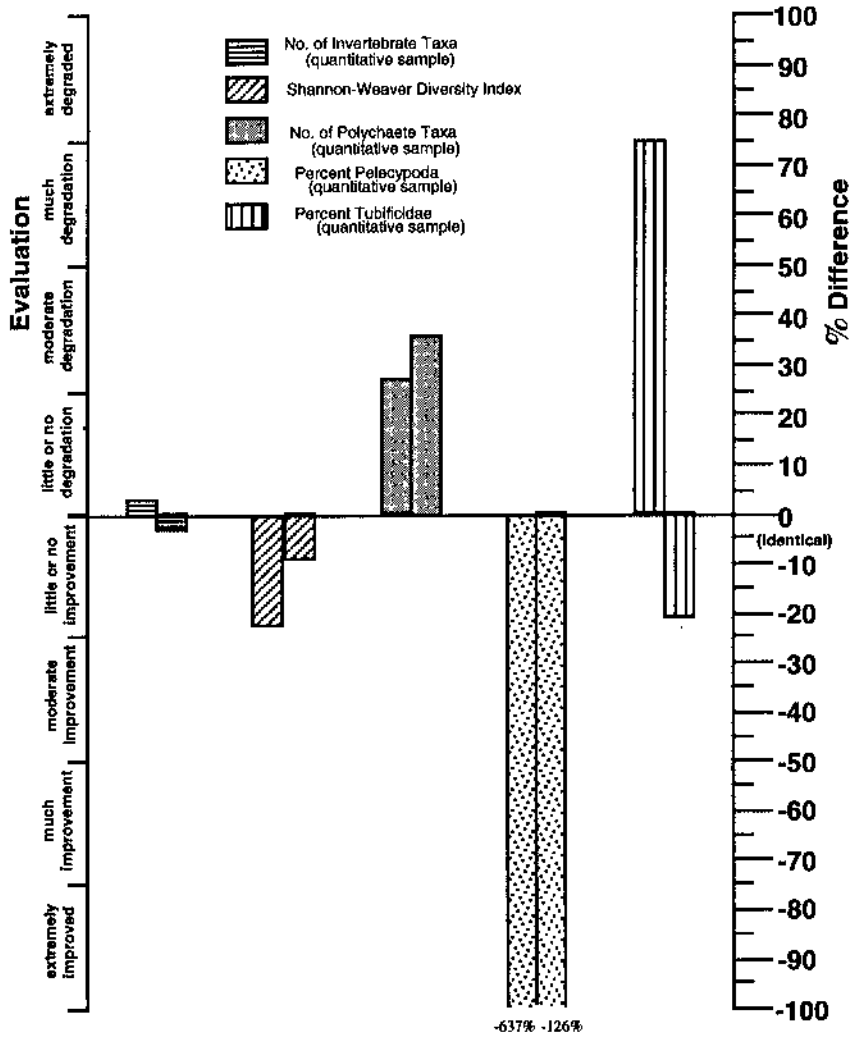
Methods

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 reference site (located on the adjacent Baron River system) and two test sites bracketing the discharge (see map in Appendix). 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 *Menidia beryllina* and *Mysidopsis bahia* as test organisms, were performed on an effluent sample (Weber 1993). The effluent was analyzed for metals and for organic constituents (base neutral and acid extractables, and pesticide extractables). Additionally, nutrient analyses were performed on effluent, reference, and test sites. Methods used for all chemical analyses are on file at the Tallahassee DEP Chemistry Laboratory.

Benthic macroinvertebrate communities were evaluated at

Major characteristics of community structure of control and test sites.

	Reference Site	Test Site 1	Test Site 2
Macroinvertebrate Ponar			
Number of Taxa	28	27	29
Shannon-Weaver Diversity	2.2	2.7	2.4
# of Polychaete Taxa	11	8	7
% Polychaeta	11.9	16.0	5.0
% Amphipoda	6.1	63.3	78.5
% Isopoda	7.4	1.9	3.7
% Gastropoda	0.37	0.0	3.7
% Tanaidacea	70.8	10.4	5.4
% Nemertea	0.19	2.6	1.1
% Tubificidae	0.56	0.98	0.44
% Pelecypoda	0.19	1.4	0.43
% Other	0.94	4.0	1.7
% Predator/Carnivores	4.4	13.0	0.11
% Above-Surface Deposit Feeders	6.9	68.4	13.5
% Below Surface Deposit Feeders	1.5	3.0	0.65
% Suspension Feeders	86.1	15.5	80.3
% Scrapers	0.37	0.0	0.0
Phytoplankton Algae			
Number of Taxa	19	17	16
Shannon-Weaver Diversity	3.3	3.2	3.0
Chlorophyll a (µg/L)	8.1	15.5	9.4
Algal Density (#/mL)	2624	4654	4469
% Blue-green	10.3	0	0
% Green	11.5	13.6	21.4
% Cryptophytes	28.2	11.6	16.2
% Diatoms	47.1	65.9	55.5



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.

reference and test sites. Invertebrates were collected via three Ponar grabs per site (Ross 1990). Phytoplankton was sampled at reference and test sites by subsurface grabs. Chlorophyll *a* was also determined for phytoplankton communities (Ross 1990). Algal Growth Potential tests were performed, but the results were invalid due to laboratory error (incorrect test organism used).

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: It is generally accepted that taxa richness is among the most robust measures of benthic community health. Anthropogenic stress has a tendency to reduce the number of different types of invertebrates present in a system. Algal taxa richness may increase with moderate nutrient enrichment, compared to an oligotrophic natural background, but becomes reduced with extreme nutrient enrichment or toxicity.

Shannon-Weaver diversity: This index is specified in the Florida Administrative Code as a measure of biological integrity. Low diversity scores are undesirable, in that they represent conditions where only a few organisms are abundant, to the exclusion of other taxa. Such scores may be associated with organic/nutrient enrichment and decreased dissolved oxygen. Excessive numerical dominance of a single type of organism (a high % contribution of the dominant taxon) is also associated with disturbance.

Numbers of pollution sensitive taxa: Unpolluted sites have characteristic numbers and types of taxa which are sensitive to anthropogenic stress. These organisms become rare or absent as the intensity or duration of the disturbance increases. For example, the Florida Index assigns points to stream-dwelling macroinvertebrates based on their sensitivity to pollution (see Ross 1990). A site with a high Florida Index score is considered healthy (*e.g.*, around 20 or more in the Panhandle, around 15 or more in the Peninsula). Species sensitivity data from other sources, such as Hulbert (1990), Hudson *et al.* 1990), Lenat (1993), Farrell (1992), Chang *et al.* 1992), and Whitmore (1989), are used as appropriate.

Community structure: A system is generally considered degraded if a substantial shift in the proportions of the major taxonomic groups. 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.

Algal biomass: The density of algal cells and the chlorophyll *a* concentration are used as estimators of biomass. A system has traditionally been considered nutrient stressed when biomass exceeds problem threshold levels, often resulting in visible algal blooms, nuisance scums, and low dissolved oxygen from the decomposition of the decaying algal tissue. 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.

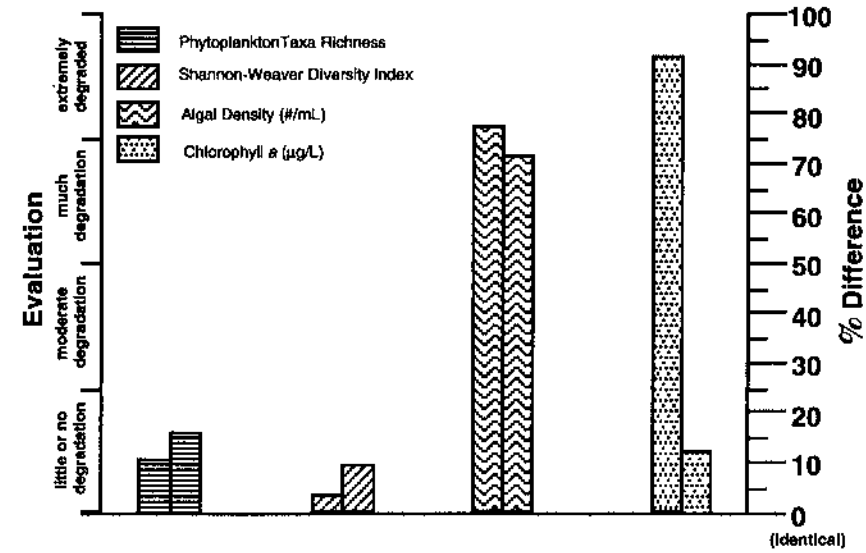
Trophic composition/feeding guilds: Undisturbed aquatic systems possess characteristic proportions of organisms using various functional feeding strategies, and human disturbance shifts these established feeding strategies. In Florida for example, pollution is known to reduce the numbers of filter-feeders and shredders.

For graphical purposes, the percent differences between the reference and test sites involving the number of taxa, the diversity index, the number of polychaete taxa, and the % pelecypods are measured as the reference site minus test site divided by the reference site. The percent differences between sites involving the % tubificids, 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: Ford Walton and Andrew Barienbrock (DEP South District) and Michael Corrigan, Marshall Faircloth, Russel Frydenborg, Kathleen Lurding, Tina Mikulski, Ed Miller, Liz Miller, Bart Richard, Lisa Tamburello, Jack Taylor, David Whiting, Vicki Whiting, Greg Wynn (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

The study sites were situated in mangrove dominated tidal creeks. The receiving waters for the discharge, known as the Lake Placid canal, connects Chokoloskee Bay with the upper Baron River, after passing through Lake Placid (a saltwater lake, formerly a mangrove swamp). The reference site was situated in the saltwater Barron River in an area not influenced by the discharge. Habitat quality was slightly better at the reference site (with 70 points) than at the test site 1 (with 62 points) or at test 2 (with 69 points). Land near the study sites was predominantly natural mangrove forest, with some residential and commercial uses. The study sites were similar with respect to many physical/chemical parameters, such as salinity (between 17 ppt and 19 ppt), temperature (near 25.7 °C), pH (between 7.1 and 7.4 S.U.'s), and dissolved oxygen (ranging from 6.5 mg/L to 7.5 mg/L). Water clarity was very similar at each site, with Secchi depth measurements of between 0.5 m and 0.6 m. Substrate at all sites was composed of sand and mud/silt,



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.

with some woody debris and shell rubble present at the reference site and test site 2 (Appendix).

Organic pollutants detected in the effluent sample included chlorpyrifos ethyl (also known as Dursban) (0.2 µg/L) and simazine (0.15 µg/L). It should be noted that both these compounds were found at levels below the criterion of detection. In particular samples with low matrix interference, it is possible to reliably measure concentrations below the normal minimum detection limit. When this situation occurs, the qualifier "below criterion of detection" is used. No metals were found at levels exceeding Class III standards.

The sample of 100% effluent was toxic to the invertebrate, *Mysidopsis bahia*, but not toxic to the fish, *Menidia beryllina*. The mysid toxicity represents a violation of Rules 62-302.530(62) FAC, 62-302.500(1)(d) FAC, and 62-4.244(3)(a) FAC. It is likely that the effluent levels of chlorpyrifos and unionized ammonia contributed to the mortality in the mysid test. Chlorpyrifos, found in the effluent at 0.2 µg/L, is acutely toxic to *Mysidopsis bahia* at 0.035 µg/L (AQUIRE 1994). Unionized ammonia was found in the effluent at 0.40 mg/L, a concentration which is known to be toxic (AQUIRE 1994).

While the Everglades City effluent was relatively high in some nutrients (*e.g.*, total phosphorus was 2.1 mg/L and ammonia was 19.0 mg/L), it did not appear to cause additional enrichment of the receiving waters (see Chemistry Summary Table). In general, the nutrient concentrations at the reference and test sites were average for a typical Florida estuary (see Table of Typical Water Quality Values in Appendix). Substantial tidal flushing in Lake Placid canal appears to be a likely factor contributing to the fairly low nutrient concentrations found at the test sites.

Quantitative measures of benthic macroinvertebrate community health suggested little or no degradation associated with the discharge. The figure on p. 2 indicates the degree of difference between the reference 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 reference.

Macroinvertebrate taxa richness was very similar at all three sites, with 28 taxa found at the reference site, 27 taxa at test site 1, and 29 taxa recovered from test site 2. Shannon-Weaver diversity was also similar at all three sites. Diversity was lowest at the reference site (2.2), and increased to 2.7 at test site 1 and 2.4 at test site 2. Pollution sensitive taxa, such as *Mysidopsis* spp., *Cerapus* sp., and *Corophium acherusicum*, were well represented at the test sites (Farrell 1992). The percent Pelecypoda was greater at the test sites than at the reference site. Pelecypod abundance has been shown to decrease in polluted conditions (Engle *et al.* 1994). These data suggest that a relatively healthy community was present at the test sites.

The number of polychaete taxa was somewhat reduced at the two test sites (with 8 and 7 polychaete taxa at test sites 1 and 2, respectively) when compared with the reference site (with 11 polychaete taxa). These differences were not deemed significant, and could easily be accounted for by the differences in sediments between stations. While tubificid worms are more abundant in polluted situations (Engle *et al.* 1994), they made up less than 1% of the total population at either test site. Tubificids composed 0.98% of the population at test site 1, while only 0.56% of the reference site community were tubificids. This shows up as "degradation" on the graph, but the absolute changes were so minor as to render this a graphing artifact.

The figure on p. 3 represents changes in the algal community. As was noted with the macroinvertebrates, larger differences (that is, higher percentages) correspond with greater degrees of degradation. Phytoplankton taxa richness was similar at the three study stations, being highest at the reference site (with 19 taxa) intermediate at test site 1 (with 17 taxa) and lowest at test site 2 (with 16 taxa). Algal diversity followed a similar pattern. Diversity was 3.3 at the reference site, 3.2 at test site 1, and 3.0 at test site 2. Diatoms were the most abundant algal group at all three sites, with cryptophytes and chlorophytes also well represented. While 10.3% of the reference site community was composed of cyanophytes, none were found at either test site. Chlorophyll *a* was elevated at test site 1 (15.5 µg/L) when compared to the reference site (8.1 µg/L). Chlorophyll *a* at test site 2 (9.4 µg/L) was only somewhat higher than the reference site. The chlorophyll *a* concentration at test site 1 was higher than those

found in approximately 85% of other Florida estuaries. Algal abundance increased by 77.3% at test site 1 and by 70.3% at test site 2, when compared to the reference site. The increased biomass at the test sites may be related to direct algal inputs from Lake Placid, since nutrient concentrations were fairly low in the receiving waters.

Conclusions

Organic pollutants detected in the effluent sample included chlorpyrifos ethyl (also known as Dursban) (0.2 µg/L) and simazine (0.15 µg/L). It should be noted that both these compounds were found at levels below the criterion of detection. No metals were found at levels exceeding Class III standards.

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The abundance of pollution sensitive macroinvertebrate species at the test sites, as well as acceptable taxa richness and diversity values, suggest that a relatively healthy community was present in the vicinity of the discharge. Apparently, the toxic effluent was sufficiently diluted by the receiving waters so that no adverse effects were seen.

Of the phytoplankton measures, only chlorophyll *a* at test site 1 and algal abundance at both test sites suggested any disturbance in the receiving waters. The chlorophyll *a* concentration at test site 1 (15.5 µg/L) was higher than those found in approximately 85% of other Florida estuaries. The increased biomass at the test sites may be related to direct algal inputs from Lake Placid, since nutrient concentrations were fairly low in the receiving waters.

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Chemistry summary table for

Everglades City WWTF	Effluent	Reference Site	Test Site 1	Test Site 2
Organic Constituents (ug/L)				
Chlopyrifos Ethyl	0.2 T			
Simazine	.015 T			
Metals (ug/L)				
Aluminum	500 U			
Arsenic	50 U			
Cadmium	O			
Copper	13 I			
Chromium	50 U			
Iron	490 A			
Lead	50 U			
Mercury	.01 U			
Nickel	20 U			
Selenium	30 U			
Silver	O			
Zinc	61 A			
Nutrients (mg/L)				
Ortho-phosphate	–	0.009 I	0.009 I	0.009 I
Total phosphorus	2.1 A	0.057	0.063	0.058
Ammonia	19 A	0.017 I	0.021	0.038
Unionized Ammonia	0.4	–	–	–
Nitrate+Nitrite	0.16	0.023 I	0.022 I	–
TKN	22 A	0.58	0.58	–
General Phys-Chem Parameters				
Habitat Assessment	–	70	62	69
D. O. (mg/L)	–	6.5	7.0	7.5
pH (SU's)	7.6	7.4	7.1	7.1
Specific Conductance (µmhos/cm)	8100	30,700	30,600	29,700
Temperature (°C)	–	25.7	25.8	25.6
Total Suspended Solids (mg/L)	25	–	–	–
Biological Oxygen Demand, 5 day (mg/L)	14	–	–	–
Toxicity				
Bioassay Fish-Dechlorinated	Not Toxic			
Bioassay Invertebrate-Dechlorinated	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

O - Sampled, but analysis lost or not performed

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

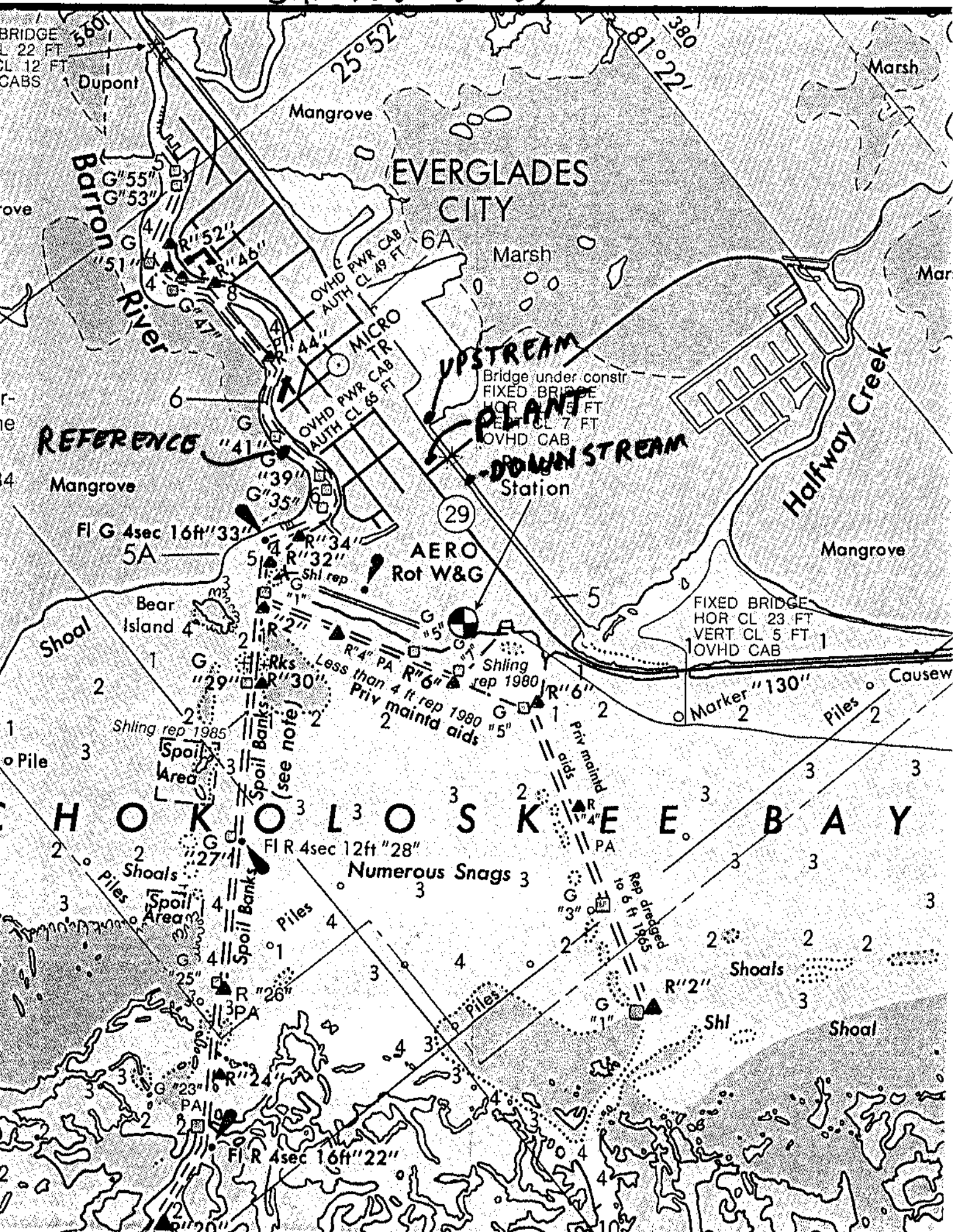
Adapted from Joe Hand, FDER, personal communication, 1991
(data was collected between 1980 and 1989)

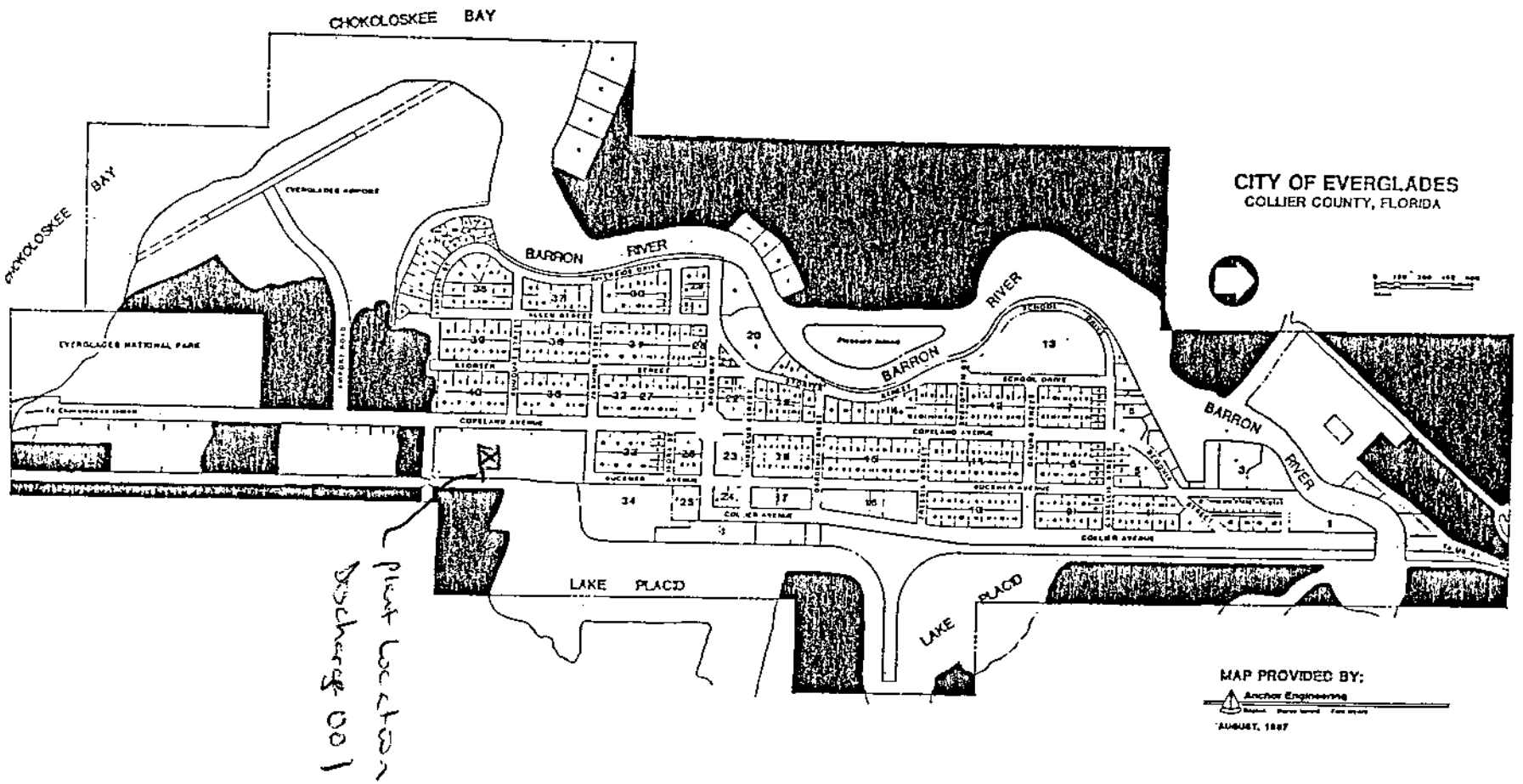
Percentile Distribution

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

SAMPLE SITES




CHOKOLOSKEE BAY
CHOKOLOSKEE BAY
EVERGLADES AIRPORT
EVERGLADES NATIONAL PARK
BARRON RIVER
BARRON RIVER
BARRON RIVER
COPELAND AVENUE
COLLIER AVENUE
LAKE PLACID
LAKE PLACID
CITY OF EVERGLADES
COLLIER COUNTY, FLORIDA
MAP PROVIDED BY:
Anchor Engineering
AUGUST, 1987
Plant Location
Discharge 001

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

FACILITY SUMMARY

Facility Name: Everglades City of		Date Summary Prepared: 3-21-95
Location (attach detailed map):	County: Collier	District: South District
Federal Permit # and expiration date: FL0027618 5-31-95	State GMS # and State expiration date: OGC Case No. 93-1908	Facility Type: Industrial; (Municipal) Federal Agricultural; Other (list):

Function of facility: Treating domestic wastewater from the city of Everglades City

Description of treatment process: Surge tank is extended aeration treatment, clarifier, plant effluent chlorinated, then dechlorinated using sodium bisulfate

Receiving waters: Lake Placid Canal	Classification: I II III OFW	
Design Flow: [redacted] .1 MGD	Mean Flow:	Flow during survey: ≈ 15,000

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

therefore, the best time to sample is: during peak flow

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)
CBOD TSS	Annual monthly wkly grab 30 mg/L 45 mg/L 70 mg/L 90 mg/L
Fecals	Max grab 800 fecal colonies/100mL
DO	> 4 mg/L
Cl_2	≥ .5 mg/L
Cl_2 (dechlor)	≤ .01 mg/L
pH	6 - 8.5 standard units

Describe special permit conditions and permit modifications:

[redacted]

EPA Limits (mg/L)

	monthly Avg	weekly Avg	grab
BOD	17.0	25.5	60
TSS	30.0	45.0	60
TKN	40.0	60.0	
TRC	≤ 0.01 mg/L		
pH	6-8.5 standard units		
Fecals	800 colonies /100mL		

Hercules City
(Facility)

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

FACILITY SUMMARY

Description of permitted outfall(s): 001 permitted outfall to Lake Placid Canal on North side of canal under mangroves.

List permit violations (from MOR data or other source) and plant upsets that occurred within past year: Numerous plant upsets due to heavy flow (silvery mullet) conditions & salt water infiltration. Toxic kills have also affected the treatment at this facility

Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions: Chemical results indicated no impact on receiving stream however, bioassay results could not be found.

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

Facility trend is declining due to the age of the system and collection system.

Additional information:

Staff contributing to this review (signature):

(Biologist)

Andrew Barienbrock (Inspector)

(Engineer)

( )

( )

( )

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 4)

SUBMITTING AGENCY CODE: 52 / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
	—	3-21-95	1454	CHOKOLOSKEE BAY

REMARKS:	LOCATION:	FIELD ID/NAME:
SAMPLES TAKEN NEAR BANK, DEEP WATER SUBSTRATE W/ TOO MANY OYSTER SHELLS FOR PONAR	EVERGLADES CITY WWTP FL0027618 BARRON RIVER @ MKR 41 ← REFERENCE	DLW 032195-6

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
20			60	20		

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

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

Point-Source Pollution (list location and describe):

Estimated System Width (range, m): 50	Estimated System Depth (range, m): 3	yes Impounded ☐ Channelized * ☐ ?
High Water Mark (m above bed): 4	Velocity (range, m/s): * 0.8	

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

* NATURAL RIVER COURSE W/ CHANNEL IN MIDDLE

SEDIMENT/SUBSTRATE

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

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

Sediment Deposits: Sludge: ☐ Paper Fiber: ☐ Mud: ☐ Sand: ☐ Shell: ☐ Other: ☐

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)	✓			Riffles			
Leaf Packs				Sand	✓		
Aquatic Vegetation				Mud/Muck/Silt	✓		
Rock or Shell Rubble	✓			Benthic leaf mats			
Undercut Banks/Roots				Other:			

WATER QUALITY

	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm):			Secchi (m):
Top	0.3	25.7	7.4	6.5	30 700			0.5
Mid-depth	1.5	25.7	7.3	6.4	31 300			
Bottom	3	25.5	7.4	6.4	31 700			

System Type : Stream: ☐ (Sand Bottomed, Swamp & Bog, Alluvial, Sand Bot w/ Spring, Calcareous, Misc.) 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:
CLEAR, WARM
INCOMING TIDE

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

SAMPLING TEAM:	SIGNATURE:	DATE:
WALTON / BARIENBOCK	A.W. Walton	3-21-95

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

SUBMITTING AGENCY CODE: 52 SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y): 3-21-95	RECEIVING BODY OF WATER: CHOKOLOSKEE BAY

REMARKS:	LOCATION: EVERGLADES CITY WWTP FL0027618 BARRON RIVER @ MARKER 41 REFERENCE	FIELD ID/NAME: DW-032195-6

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 35	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 4	>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 5	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 9	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. **9-10 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 12	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 70

COMMENTS: STRONG TIDAL CURRENT, PONARS TAKEN NEAR SHORE TO AVOID EXCESSIVE SHELL IN SUBSTRATE

ANALYSIS DATE:	ANALYST:	SIGNATURE:
3-21-95	WALTON	asWalton

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 4)

SUBMITTING AGENCY CODE: 52 / SUBMITTING AGENCY NAME:	STORET STATION NUMBER: —	DATE (M/D/Y): 3-21-95	TIME 1345	RECEIVING BODY OF WATER: CHOKOLOSKEE BAY

REMARKS: INCOMING TIDE — "UPSTREAM" WAS DOWN CURRENT	LOCATION: EVERGLADES CITY WWTP FL0027618 UPSTREAM	FIELD ID/NAME: TEST SITE 1 DW-032195-4

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
50			30	20		

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

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

Point-Source Pollution (list location and describe): EVERGLADES CITY WWTP

Estimated System Width (range, m): 30	Estimated System Depth (range, m): 2	yes
High Water Mark (m above bed): 3	Velocity (range, m/s): ± 0.50	Impounded ☐ Channelized ☑

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 Deposits: Sludge: ☐ Paper Fiber: ☐ Mud: ☐ Sand: ☐ Shell: ☐ Other: ☐

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)				Riffles			
Leaf Packs				Sand	✓		
Aquatic Vegetation				Mud/Muck/Silt	✓		
Rock or Shell Rubble				Benthic leaf mats			
Undercut Banks/Roots				Other: PEATY ROOT MATS	✓		

WATER QUALITY

	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm):			Secchi (m):
Top	0.3	25.8	7.1	7.0	30 600			0.5
Mid-depth	1	25.6	7.1	6.8	31 000			
Bottom	2	25.3	7.1	7.0	32 300			

System Type : Stream: ☐ (Sand Bottomed Swamp & Bog Alluvial / Sand Bot w/ Spring Calcareous Misc.) Lake: ☐ Wetland: ☐ Estuary: ☑ Other: ☑ SALT CANAL

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: CLEAR, WARM

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

SAMPLING TEAM:	SIGNATURE:	DATE:
WALTON / BARIEN BOCIK	aSWalton	3-21-95

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

SUBMITTING AGENCY CODE: 52 SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/DY): 3-21-95	RECEIVING BODY OF WATER: CHOKOLOSKEE BAY

REMARKS:	LOCATION: EVERGLADES CITY WWTP FL0027618 UPSTREAM	FIELD ID/NAME: "TEST SITE" DW-032195-4

Habitat Parameter score	Excellent	Good	Fair	Poor
Littoral Alterations 8	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 28	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 4	>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 5	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. **9-10 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 62

COMMENTS: CANAL WIDENS TO LAKE, PONARS TAKEN AT SIDE, WHERE BOTTOM IS NOT HARD

ANALYSIS DATE:	ANALYST:	SIGNATURE:
3-21-95	WALTON	AHWalton

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 4)

SUBMITTING AGENCY CODE: SZ / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y): 3-21-95	TIME: 1300	RECEIVING BODY OF WATER: CHOCKOLOSKEE BAY
REMARKS: INCOMING TIDE — "DOWNSTREAM" WAS UP CURRENT	LOCATION: EVERGLADES CITY WWTP DOWNSTREAM FL0027618			FIELD ID/NAME: TEST SITE 2 DW 032195-5

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
50			30	15	5	

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

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

Point-Source Pollution (list location and describe): EVERGLADES CITY WWTP

Estimated System Width (range, m): 30	Estimated System Depth (range, m): 2	yes: Impounded ☐ Channelized ☑
High Water Mark (m above bed): 3	Velocity (range, m/s): ± 0.50	

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 Deposits: Sludge: ☐ Paper Fiber: ☐ Mud: ☐ Sand: ☐ Shell: ☐ Other: ☐

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)	✓			Riffles			
Leaf Packs				Sand	✓		
Aquatic Vegetation				Mud/Muck/Silt	✓		
Rock or Shell Rubble	✓			Benthic leaf mats			
Undercut Banks/Roots				Other: PEATY ROOT MATS			

WATER QUALITY

	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm):			Secchi (m):
Top	0.3	25.6	7.1	7.5	29 900			
Mid-depth		25.4	7.0	7.0	30 300			0.6
Bottom	2	25.3	7.1	6.7	30 700			

System Type : Stream: ☐ (Sand Bottomed / Swamp & Bog / Alluvial / Sand Bot w/ Spring / Calcareous / Misc.) Lake: ☐ Wetland: ☐ Estuary: ☐ Other: ☑ SALT CANAL

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: CLEAR WARM

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

SAMPLING TEAM:	SIGNATURE:	DATE:
WALTON / BARENBOCK	A.W. Walton	3-21-95

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

SUBMITTING AGENCY CODE: 52 / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y): 3-21-95	RECEIVING BODY OF WATER: CHOCKOLOSKEE BAY

REMARKS:	LOCATION: EVERGLADES CITY WWTP FL0027618 DOWNSTREAM	FIELD ID/NAME: TEST SITE 2 DW 032195-5

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations: 7	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: 34	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: 4	>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: 5	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. 9-10 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: 12	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 69

COMMENTS: CANAL, FAST TIDAL FLOW, ONE BANK W/ SEGMENTS OF SEAWALL, OTHER W/MANGROVES. HARD BOTTOM IN CENTER; PONARS NEAR SIDE OF CANAL

ANALYSIS DATE:	ANALYST:	SIGNATURE:
3-21-95	WALTON	A.F. Walton

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Everglades city STP
County:
Contact / District: Tanski / South
NPDES Permit #: FL00
LIMS Sample #: 101585 (sample log 3/31) **LIMS Job #:** 95-Mar-21-01

Sample Collection: Date 3-20-95 Time 1315
Test Beginning: Date 3-21-95 Time 1300
Test Ending: Date 3-23-95 Time 1300
Organism Batch #: 21,22 **Diluent Batch #:** 12
Organism Age: 10-12 days
Test Organism: Menidia beryllina

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

Test Number: 2 of 2

Remarks: sample is light-gray in color possibly due to abundance of suspended particulate matter. 3/22/95 MF particulates have settled to bottom of test vessels. 3/21/95 MF

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	23.9 @ 23.9	8.4 @ 23.6°C	984 @ 994 9860 @ 10040 @ 24.2 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.9 @ 23.9	8.4 @ 23.9 °C	990 @ 1020 972 @ 994 @ 24.2 °C 9850 @ 10040
48 hr	7.0 @ 7.0 9.0 @ 9.0	24.2 @ 24.2	8.4 @ 24.2°C	986 @ 1020 961 @ 994 @ 24.3°C 9730 10040

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
Control A	14	5	5	5	8.6	8.1	7.9	23.4	23.6	23.6	7.7	7.2	7.6	8.0	8.0	8.1
Control B	412	5	5	5	8.6	8.1	7.9			23.5	7.7	7.2	7.6	8.0	8.0	8.0
Control C	307	5	5	5	8.6	8.1	7.9			23.4	7.8	7.3	7.7	8.0	8.0	8.0
Control D	350	5	5	5	8.6	8.1	7.9			23.5	7.9	7.3	7.7	8.0	8.0	8.1
100% A	87	5	5	5	7.6	8.0	8.3	21.9	23.7	23.6	7.1	4.8	5.8	8.5	8.9	9.0
100% B	76	5	4	4	7.6	8.0	8.3			23.5	7.2	4.8	5.8	8.5	8.9	8.9
100% C	149	5	5	5	7.6	8.1	8.3			23.5	7.2	5.1	5.9	8.5	8.9	9.0
100% D	630	5	5	5	7.5	8.0	8.3			23.6	7.1	4.8	6.0	8.5	8.9	8.9
Recorded by:		TR	TR	JM	TR	TR	LW	TR	TR	LW	TR	TR	LW	TR	TR	LW
Measured/Loaded by:		TR	TR	JM	JN	TR	TM	JN	TR	TM	JN	TR	TM	JN	TR	TM

Investigators' Signatures
Marshall Faircloth
Tom C Rader
Lynn Month
Lisa Mikulski
Reviewer

(Salt Water)

Water Quality Parameters	Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			—	—	—
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR-100	JM
Alkalinity (mg/L as $CaCO_3$):	144		306	Hach	JN
Hardness (mg/L as $CaCO_3$):					
Total ammonia (mg/L as N):	<0.017		1.73	Orion	JN

Ammonia Meter #98136 Meter Slope: -58.8 Ammonia Blank: <0.017 Control Salinity: 4.8 ppt Sample Salinity: 5.0 ppt

form updated 10/05/94

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Everglades City STP
County:
Contact / District: Tanski / South
NPDES Permit #: FL00
LIMS Sample #: ID1588 (Simple log 3/31) **LIMS Job #:** 95-Mar-21-01

Sample Collection: Date 3-20-95 Time 1315
Test Beginning: Date 3-21-95 Time 1300
Test Ending: Date 3-23-95 Time 1300
Organism Batch #: 77 **Diluent Batch #:** 12
Organism Age: 3 days
Test Organism: Mysidopsis bahia

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

Test Number: 1 of 2

Remarks:
Sample adjusted from 4.51‰ to 5.0‰ with 40F.
Sample is light grey in color, possibly due to the abundance of particulate matter (suspended). 3/21/95 MF
3/22/95 MF. Dead mysids appear to be trapped in settled particulates.

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	23.9 @ 23.9	8.4 @ 23.6 °C	984 @ 994 9860 @ 10040 @ 24.2 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.9 @ 23.9	8.4 @ 23.9 °C	99.0 @ 102.0 992 @ 994 @ 24.2 °C 9850 @ 10040
48 hr	7.0 @ 7.0 9.0 @ 9.0	24.2 @ 24.2	8.4 @ 24.2 °C	98.6 @ 102.0 961 @ 994 @ 24.3 °C 9730 10040

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
Control A	30	5	5	5	8.6	8.1	7.9	23.6	23.5	23.6	8.0	7.3	7.5	8.6	8.8	8.9
Control B	76	5	5	5	8.6	8.1	8.0			23.5	8.2	7.3	7.5	8.7	8.8	8.9
Control C	114	5	5	5	8.6	8.2	7.9			23.5	8.3	7.4	7.6	8.7	8.8	8.9
Control D	219	5	5	5	8.6	8.2	8.0			23.6	8.6	7.4	7.6	8.7	8.8	8.9
100% A	506	5	0	0	7.6	8.1	8.3	22.1	23.5	23.6	6.8	5.3	5.8	8.6	9.0	9.1
100% B	10	5	0	0	7.6	8.0	8.2			23.5	7.0	5.3	5.8	8.6	9.0	9.0
100% C	174	5	0	0	7.6	8.0	8.3			23.5	7.1	5.3	5.7	8.6	9.0	9.0
100% D	75	5	1	0	7.6	8.0	8.3			23.6	7.2	5.3	5.7	8.6	9.0	9.1
Recorded by:		TR	TR	TM	TR	TR	LW	TR	TR	LW	TR	TR	LW	TR	TR	LW
Measured/Loaded by:		TR	TR	TM	JN	TR	TM	JN	TR	TM	JN	TR	TM	JN	TR	TM

Investigators' Signatures
Marshall Faircloth
Tom C. Rader
Joseph Smith
Gina Mikulski
Reviewer

Water Quality Parameters	(Salt Water) Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			<0.01	—	—
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR-100	JN
Alkalinity (mg/L as $CaCO_3$):	148		306	Hach	JN
Hardness (mg/L as $CaCO_3$):					
Total ammonia (mg/L as N)	<0.017		1.73	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -58.8 Ammonia Blank: <0.017 Control Salinity: 30 ppt Sample Salinity: 50 ppt

form updated 10/05/94

Benthic macroinvertebrate taxa list for Everglades City WWTP, collected via 3 Ponar grabs per station from Lake Placid canal and the Baron River, on March 21, 1995. Densities, in number/m^2, represent the mean of three replicates.

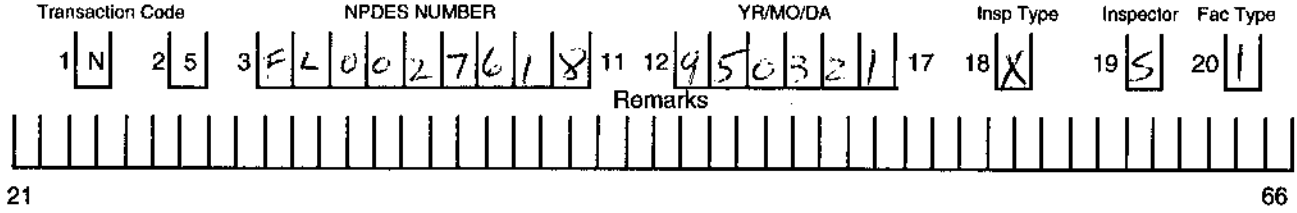
	Reference Site	Test Site 1	Test Site 2
Anthozoa			
Actiniaria	14	-	14
Nemertea			
Rhynchocoela	14	333	69
Polychaeta			
Aricidea philbinae	-	181	14
Boccardiella sp.	56	-	-
Capitella sp.	14	28	-
Capitella capitata	28	-	-
Cirrophorus sp.	14	-	-
Fabricia sp.	250	-	56
Gyptis brevipalpa	-	-	14
Hobsonia florida	56	333	56
Laeonereis culveri	14	125	-
Leitoscoloplos robustus	-	42	14
Paraprionospio sp.	56	14	-
Peresiella sp.	14	-	-
Polydora sp.	125	-	-
Streblospio benedicti	208	1208	125
Tharyx annulosus	-	56	-
Ampharetidae	42	56	28
Nereidae	-	-	14
Syllidae	14	-	-
Oligochaeta			
Tubificidae	42	125	28
Gastropoda			
Vitrinella sp.	-	-	236
Gastropoda	28	-	-
Pelecypoda			
Crassostrea virginica	14	-	-
Parastarte sp.	-	69	-
Tellina sp.	-	56	-
Tellinidae	-	56	28
Mysidacea			
Mysidopsis sp.	-	14	-
Mysidopsis almyra	-	28	-
Mysidopsis bahia	-	42	-
Bowmaniella sp.	-	-	14
Mysidacea	-	-	14
Cumacea			
Almyracuma proximoculi	-	83	-
Cyclaspis sp.	-	-	14

Cyclaspis unicornis	-	125	-
Oxyurostylis sp.	-	97	14
Cumacea	-	-	14
Tanaidacea			
Apseudes sp.	319	1306	111
Hargeria rapax	4972	14	236
Isopoda			
Cassidinidea ovalis	111	-	42
Cyathura polita	56	139	153
Edotea montosa	-	97	-
Uromunna reynoldsi	389	-	42
Amphipoda			
Ampelisca abdita	-	1514	83
Cerapus sp.	-	6403	97
Corophium sp.	167	-	-
Corophium acherusicum	97	42	4056
Elasmopus sp.	111	-	97
Gammarus mucronatus	14	-	-
Gitanopsis sp.	14	-	97
Grandidierella bonnieroides	-	42	486
Melita nitida	-	-	97
Amphipoda	-	14	-
Aoridae	28	42	-
Corophiidae	28	-	-
Decapoda			
Grapsidae sp.	14	-	-
Diptera			
Glyptotendipes paripes	-	-	14
Polypedilum sp.	28	-	-
Polypedilum scalaenum grp.	125	56	14

Phytoplankton taxa list and densities (#/mL) for Everglades City WWTP, collected via subsurface grabs in Lake Placid canal (test sites) and the Barron River (reference site), on March 21, 1995.

	Reference Site	Test Site 1	Test Site 2
Cyanophyceae			
Rhabdoderma sp.	271	-	-
Chrysophyceae			
Mallomonas sp.	-	15	46
Synura sp.	-	15	-
Haptophyceae			
Rhabdosphaera sp.	-	-	15
Bacillariophyceae			
Amphora sp.	-	-	31
Chaetoceros sp.	91	401	370
Corethron sp.	-	154	62
Cyclotella sp.	60	200	92
Diploneis sp.	15	-	-
Entomoneis sp.	30	15	-
Gyrosigma sp.	60	92	108
Melosira sp.	-	15	-
Navicula sp.	75	77	15
Nitzschia sp.	91	-	-
Nitzschia longissima	91	1063	663
Rhizosolenia sp.	196	848	1033
Thalassiosira sp.	468	200	92
Pennales	60	-	15
Chlorophyceae			
Chlamydomonas sp.	15	-	-
Chlorella sp.	45	62	15
Coelastrum sp.	15	-	-
Dunaliella sp.	211	570	940
Euglena sp.	-	15	15
Golenkinia sp.	15	-	-
Pyramimonas sp.	45	-	-
Tetraselmis sp.	-	370	231
Dinophyceae			
Dinophysis sp.	15	-	-
Peridinium sp.	15	-	-
Cryptophyceae			
Cryptomonas sp.	739	539	724

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)

