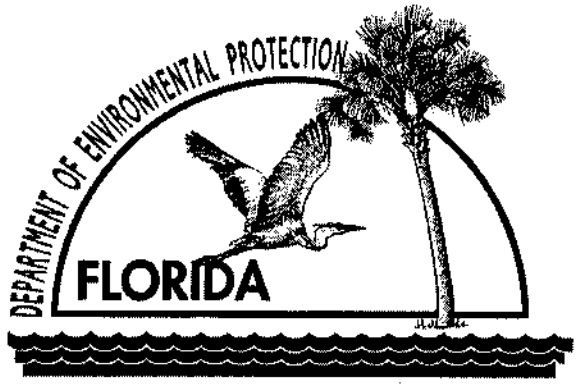


Biological Assessment of

Rivers Edge Reverse Osmosis Water Treatment Facility

Charlotte County

NPDES #FL0042412

Sampled July 1995

October 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: Rivers Edge Reverse Osmosis Facility
County: Charlotte
NPDES Number: FL0042412
Federal Permit Expiration Date: 31 March 1996

Toxics Sampling Inspection (XSI)

Date Sampled: 19 July 1995

Results: There were no organic priority pollutants detected in the effluent sample. No metals were found at levels exceeding Class III standards.

Compliance Biomonitoring Inspection (CBI)

Date Sampled: 19 July 1995

Results: The sample of undiluted effluent was acutely toxic to the invertebrate, *Mysidopsis bahia,* (with 90% mortality), but not toxic to the fish, *Menidia beryllina.* This toxicity is in violation of Rules 62-302.500(1)(d), 62-302.530(62), and 62-4.244(3)(a) FAC.

Impact Bioassessment Inspection (IBI)

Date Sampled: 19 July 1995

Results: Quantitative measures of benthic macroinvertebrate community health indicated no degradation associated with the discharge. Taxa richness and diversity values at the test sites were similar to those found at the reference site. Pollution sensitive marine taxa, such as *Gemma gemma*, *Gammarus* spp., and *Rhithropanopeus harrisii*, as well as pollution sensitive freshwater taxa, such as *Polypedilum halterale* group, were found at the test sites. These data suggest that a relatively healthy community was represented at the test sites, and that the facility did not appear to have a negative effect on the community. Although the phytoplankton communities throughout the study area were typical of eutrophic conditions (dominated by cyanophytes with chlorophyll *a* greater than 32 µg/L), they did not appear to be negatively affected by the discharge.

Water Quality Inspection (WQI)

Date Sampled: 19 July 1995

Results: Although specific conductance of the effluent was 3,096 µmhos/cm, elevated levels were not observed at the test sites. With the exception of small amounts of ammonia (0.56 mg/L), other bioreactive nutrients were low or undetected in the effluent. Conversely, total phosphorus and nitrate-nitrite levels were quite elevated at the reference site, where they were greater than the values found in approximately 90% and 80%, respectively, of other Florida streams. Test site nutrient concentrations were similar to those of the reference site. Algal Growth Potential (AGP) levels were substantially above the "problem threshold" of 5.0 mg dry wt/L at all three receiving water stations. AGP ranged from 29.4 mg dry wt/L at the reference site to 30.3 mg dry wt/L at test site 2. Extensive phosphate mining in the Peace River Basin, as well as other inputs, could account for the elevated nutrients measured during this survey.

Introduction

The Rivers Edge Reverse Osmosis Water Treatment Plant is located in Charlotte County, north of Punta Gorda (see maps in Appendix). Reject water from this facility is aerated to reduce hydrogen sulfide and increase dissolved oxygen levels prior to discharge. The effluent is released into the Class III Hunter Creek, a mangrove-lined, tidally influenced, braided branch of the Peace River. Although the design flow is 0.017 MGD, the discharge is intermittent. The facility was not discharging during this survey.

This facility has both State and Federal Permit limits (see Facility Summary in Appendix). The following list represents the more stringent limits: flow (0.017 MGD), pH (6.5-8.5 SU when the receiving waters are marine, and 6.0-8.5 SU when they are freshwater) (less than 1500 mg/L chlorides), hydrogen sulfide (maximum of 0.04 mg/L), dissolved oxygen (minimum of 4.0 mg/L, 24 hour average of 5.0 mg/L for marine and minimum of 5.0 mg/L for freshwater), TSS (30 mg/L as a monthly average and 50 mg/L maximum), cadmium (maximum of 1.2 µg/L for fresh receiving waters and 5 µg/L for marine), mercury (0.2 µg/L in freshwater and 0.1 µg/L for marine), combined radium^{226} and radium^{228} (maximum of 5 pCi/L at the end of the mixing zone and 110 pCi/L at point of discharge (POD)), gross alpha radiation (15 pCi/L at the end of the mixing zone and 110 pCi/L at the POD), specific conductance (not greater than 1275 µmhos/cm or 50% above background if receiving waters are fresh).

The facility has been granted mixing zones for the following parameters: combined radium^{226} and radium^{228} (40 feet downstream and 20 feet upstream from the POD), gross alpha radiation (EPA granted a 15 foot radius mixing zone from the POD, while the State mixing zone is 40 feet downstream and 20 feet upstream from the POD), and specific conductance (20 foot radius from the POD).

No prior violations of permit limits have been noted.

Methods

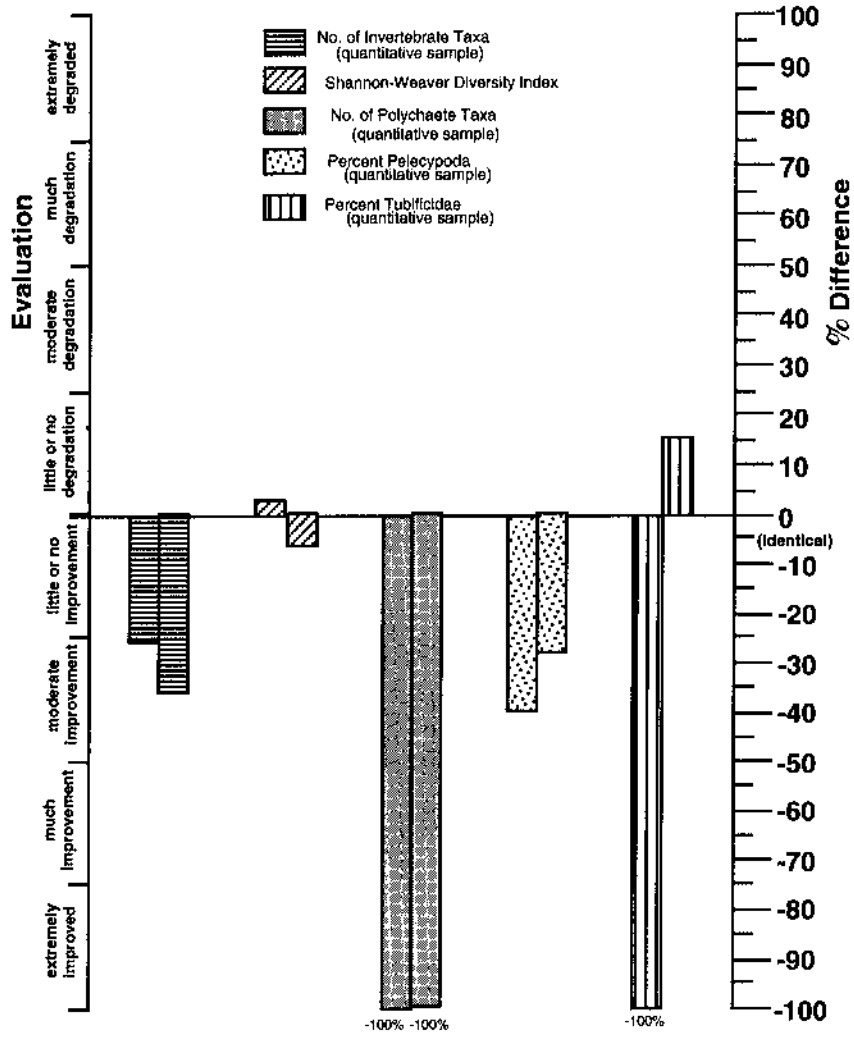
The focus of this investigation was to determine the discharger's effects on the receiving waters. A comparison of biological community health was made between a reference site (located approximately 0.5 mile upstream of the discharge in Hunter Creek at the mouth of Jim Long Lake) and two test sites (in Hunter Creek, bracketing the discharge) (see maps in Appendix). A habitat assessment was performed *in situ* to establish compa-

Major characteristics of community structure of control and test sites.

	Reference Site	Test Site 1	Test Site 2
Macroinvertebrate Ponar			
Number of Taxa	19	24	26
Shannon-Weaver Diversity	2.9	2.8	3.1
% Polychaeta	0.2	1.1	1.2
% Diptera	15.8	17.7	18.9
% Gastropoda	8.9	3.4	0.0
% Amphipoda	14.7	3.4	1.5
% Pelecypoda	40.2	56.2	51.7
% Tubificidae	0.7	0	0.8
% Isopoda	18.9	14.6	16.2
% Predator/Carnivores	1.2	4.2	6.8
% Above-Surface Deposit Feeders	7.7	8.5	8.9
% Below Surface Deposit Feeders	0.7	2	3.5
% Browser-grazers	16.3	9	9.1
% Scavengers	16.3	9	9.1
% Suspension Feeders	45.6	60.3	54.4
% Other	3.3	2.1	4.8
% Scrapers	8.9	3.4	0
Phytoplankton Algae			
Number of Taxa	36	30	31
Shannon-Weaver Diversity	3.9	4	3.9
Chlorophyll a (µg/L)	34.9	34	32.9
Algal Density (#/mL)	414,367	476,210	317,580
% Blue-green	63.8	65.9	56.8
% Green	23.4	22.3	33
% Diatoms	12.2	9.8	8.3
Algal Growth Potential (mg dry wt/l)	29.4	29.9	30.3

rability 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 1991). The effluent was analyzed for metals and for organic constituents (base neutral and acid extractables, and pesticide extractables) and radionucleotides. 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 both reference and test sites. Invertebrates were collected via three Ponar grabs per site (Ross 1990). Phytoplankton was sampled at reference and test sites via subsurface grabs. Chlorophyll *a* was also determined for phytoplankton communities (Ross 1990). Algal Growth Potential tests, using *Selenastrum capricornutum* for the test and reference sites and *Dunaliella tertiolecta* for the effluent, followed Miller *et al.* (1978) and EPA (1974).



Effect of discharge on the benthic macroinvertebrate community.

Expanationn of Measurements of Community Health

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

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

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 sensitivity to pollution (see Ross 1990). A site with a high Florida Index score is considered healthy. 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: Substantial shifts in the 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).

For graphical purposes, the percent differences between the reference and test sites involving the number of taxa, the diversity index, the % filter-feeders, 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.

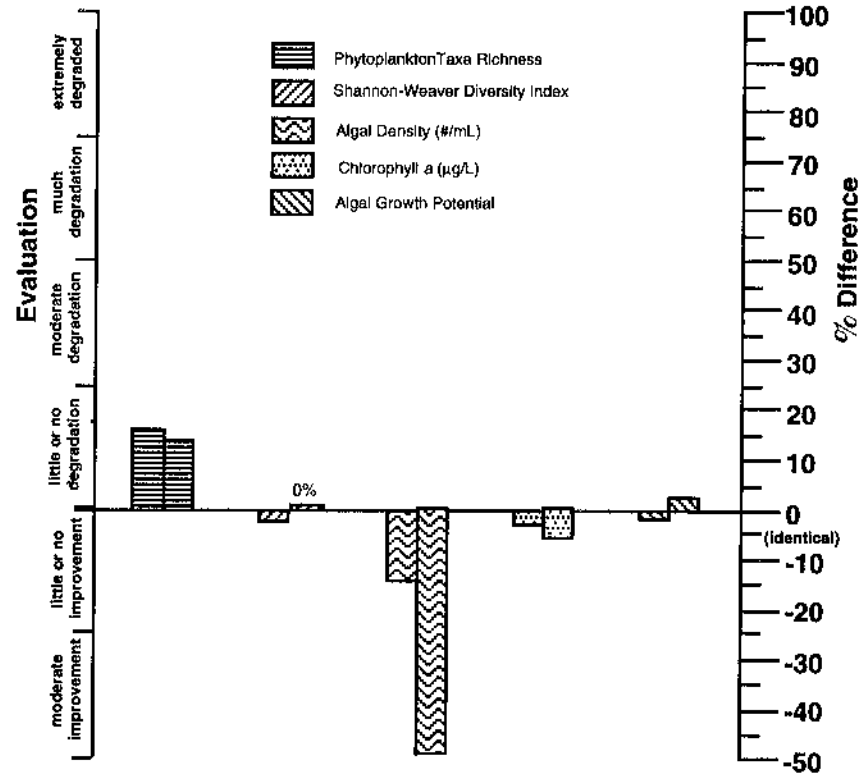
The following personnel were involved in this investigation: Ford Walton (DEP South District) and Lyn Burton, Michael Corrigan, Marshall Faircloth, Russel Frydenborg, Christy LeDuc, Kathleen Lurding, Tina Mikulski, Elizabeth Miller, Urania Quintana, Barton Richard, Lisa Tamburello, David Whiting, Vicki Whiting, and 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 Hunter Creek, a mangrove dominated tidal system (which is actually a braided portion of the Peace River) located about one mile upstream from Charlotte Harbor (see maps in Appendix). Habitat quality was similar at all three sites, with 72 points at the reference site, 77 points at test site 1, and 76 points at test site 2. Surrounding land was dominated by natural mangrove forest with some residential and commercial areas. The reference and test sites were similar with respect to most physical/chemical parameters, such as specific conductance (300 to 307 µmhos/cm), pH (6.8 SU at all sites), temperature (26.8 – 26.9 °C), and dissolved oxygen (ranging from 6.0 mg/L to 6.3 mg/L). Secchi depth was 0.4 m at all three sites. Substrate at both the test sites consisted of a combination of sand, gravel, and shell, while the reference site was composed primarily of sand with small areas of mud (Appendix).

No organic priority pollutants were detected in the effluent sample. No metals were found in the effluent above Class III water quality standards. Radionucleotide analyses revealed the presence of gross alpha radiation (92.0 pCi/L), radium^{226} (57.9 pCi/L), and radium^{228} (2.3 pCi/L). These values were in compliance with permit limits at the point of discharge.

The sample of undiluted effluent was acutely toxic to the invertebrate, *Mysidopsis bahia,* (with 90% mortality), but not toxic to the fish, *Menidia beryllina*. This toxicity is in violation of Rules 62-302.500(1)(d), 62-302.530(62), and 62-4.244(3)(a) FAC. Since other



Effect of discharge on the algal community.

toxic constituents were not found in this discharge, the mortality may have been caused by a pronounced ionic imbalance. Currently, a DEP study of selected facilities which employ membrane technology is underway to investigate this possibility.

With the exception of relatively small amounts of ammonia (0.56 mg/L), other bioreactive nutrients were low or undetected in the effluent. Conversely, total phosphorus and nitrate-nitrite levels were quite elevated at the reference site, where they were greater than the values found in approximately 90% and 80%, respectively, of other Florida streams. Test site nutrients were very similar to, or slightly less than, the reference site values. Extensive phosphate mining in the Peace River Basin, as well as other stormwater inputs, could account for the elevated nutrients measured during this survey.

Algal Growth Potential (AGP) levels were above the "problem threshold" of 5.0 mg dry wt/L (Raschke and Schultz 1987) at all three receiving water stations. AGP ranged from 29.4 mg dry wt/L at the reference site to 30.3 mg dry wt/L at test site 2.

Quantitative measures of benthic macroinvertebrate community health indicated no degradation associated with the discharge. The Figure on p. 2 indicates the degree of difference between the invertebrate populations of 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.

Taxa richness was actually higher at the test sites (with 24 taxa at test site 1 and 26 taxa at test site 2) than at the reference site (which had 19 taxa). Shannon-Weaver diversity was similar at all three sites, ranging from 2.8 at test site 1 to 3.1 at test site 2. Pelecypods, shown by Engle *et al.* (1994) to be pollution sensitive, were the most abundant group at all three sites, ranging from 40.2% at the reference site to 56.2% at test site 1. While isopods and dipterans were also well represented at all sites, polychaetes were relatively rare (with 1 taxon represented at the reference site and 2 taxa at both test sites). The lack of polychaetes throughout the study area was probably related to the low salinity (less than 1 ppt). Tubificid worms, which are often abundant in polluted situations, made up less than 1% of the total population at any of the three study sites.

Pollution sensitive marine taxa, such as *Gemma gemma*, *Gammarus* spp., *Rhithropanopeus harrisii*, as well as pollution sensitive freshwater taxa, such as *Polypedilum halterale* group, were found at the test sites (Farrell 1992, Ross 1990). These data suggest that a relatively healthy community was represented at the test sites, and that the facility's effluent did not appear to have a negative effect on the community.

The figure on p. 3 represents changes in the phytoplankton algal community. As was noted with the macroinvertebrates, larger differences (that is, higher percentages) correspond with greater degrees of degradation. Phytoplankton taxa richness and diversity ranged from 30 to 36 taxa, and from 3.9 to 4.0, respectively, at all three sites. Chlorophyll *a* was quite elevated throughout the study area (34.9 µg/L at the reference site, 34.0 µg/L at test site 1, and 32.9 µg/L at test site 2). These values are higher than 90% of other Florida streams, and coincided with the nutrient enrichment observed at the study stations. Cyanophytes dominated all three sites (they were greater than 56% of the total population), followed by chlorophytes and diatoms. Although the phytoplankton communities were typical of eutrophic conditions, they did not appear to be negatively affected by the discharge.

Conclusions

Although specific conductance of the effluent was 3,096 µmhos/cm, elevated levels were not observed at either test site.

No organic pollutants were detected in the effluent sample. No metals were found in the effluent above Class III standards. Gross alpha radiation levels, radium^{226}, and radium^{228} complied with permit limits at the point of discharge.

The sample of undiluted effluent was acutely toxic to the invertebrate, *Mysidopsis bahia*, (with 90% mortality), but not toxic to the fish, *Menidia beryllina*. This toxicity is a violation of Rules 62-302.500(1)(d), 62-302.530(62), and 62-4.244(3)(a) FAC.

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found in approximately 90% and 80%, respectively, of other Florida streams. Extensive phosphate mining in the Peace River Basin, as well as other inputs, could account for the elevated nutrients measured during this survey.

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Although the phytoplankton communities throughout the study area were typical of eutrophic conditions (dominated by cyanophytes with chlorophyll *a* greater than 32 µg/L), they did not appear to be negatively affected by the discharge.

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Chemistry summary table for

River's Edge R/O Plant	Effluent	Reference Site	Test Site 1	Test Site 2
Organic Constituents (ug/L)				
None Detected	None Detected			
Metals (ug/L)				
Aluminum	100 U			
Arsenic	10 U			
Cadmium	0.1 U			
Copper	5 I			
Chloride (mg/L)	840 A	25		38
Chromium	10 U			
Iron	21 A			
Lead	10 U			
Mercury	0.1 U			
Nickel	4 U			
Selenium	30 U			
Silver	0.1 U			
Zinc	10 U			
Nutrients (mg/L)				
Ortho-phosphate	0.02 U	0.54 A	0.54	0.55
Total phosphorus	0.015 U	0.79 Y	0.77 Y	0.77 Y
Unionized Ammonia	0.004			
Ammonia	0.56	0.06 Y	0.06 Y	0.054 Y
Nitrate+Nitrite	0.07 A	0.34 Y	0.28 Y	0.27 Y
TKN	0.74	1.5 Y	1.4 Y	1.3 Y
General Phys-Chem Parameters				
Habitat Assessment	-	72	77	76
D. O. (mg/L)	6.6	6.3	6.3	6.0
pH (SU's)	6.9	6.8	6.8	6.8
Specific Conductance (µmhos/cm)	3096	300	307	307
Temperature (°C)	28.0	26.8	26.9	26.8
Algal Growth Potential (mg dry wt/L)	2.9	29.4	29.9	30.3
Other Parameters				
Sulfide (mg/L)	< 0.40	< 0.40		< 0.40
Gross Alpha (pCi/L)	92.0			
Radium-226 (pCi/L)	57.9			
Radium-228 (pCi/L)	2.3			
Toxicity				
Bioassay Fish	Not toxic			
Bioassay Invertebrate	Toxic - 90% Mortality			

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

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

Y- Inadequately or incompletely preserved.

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

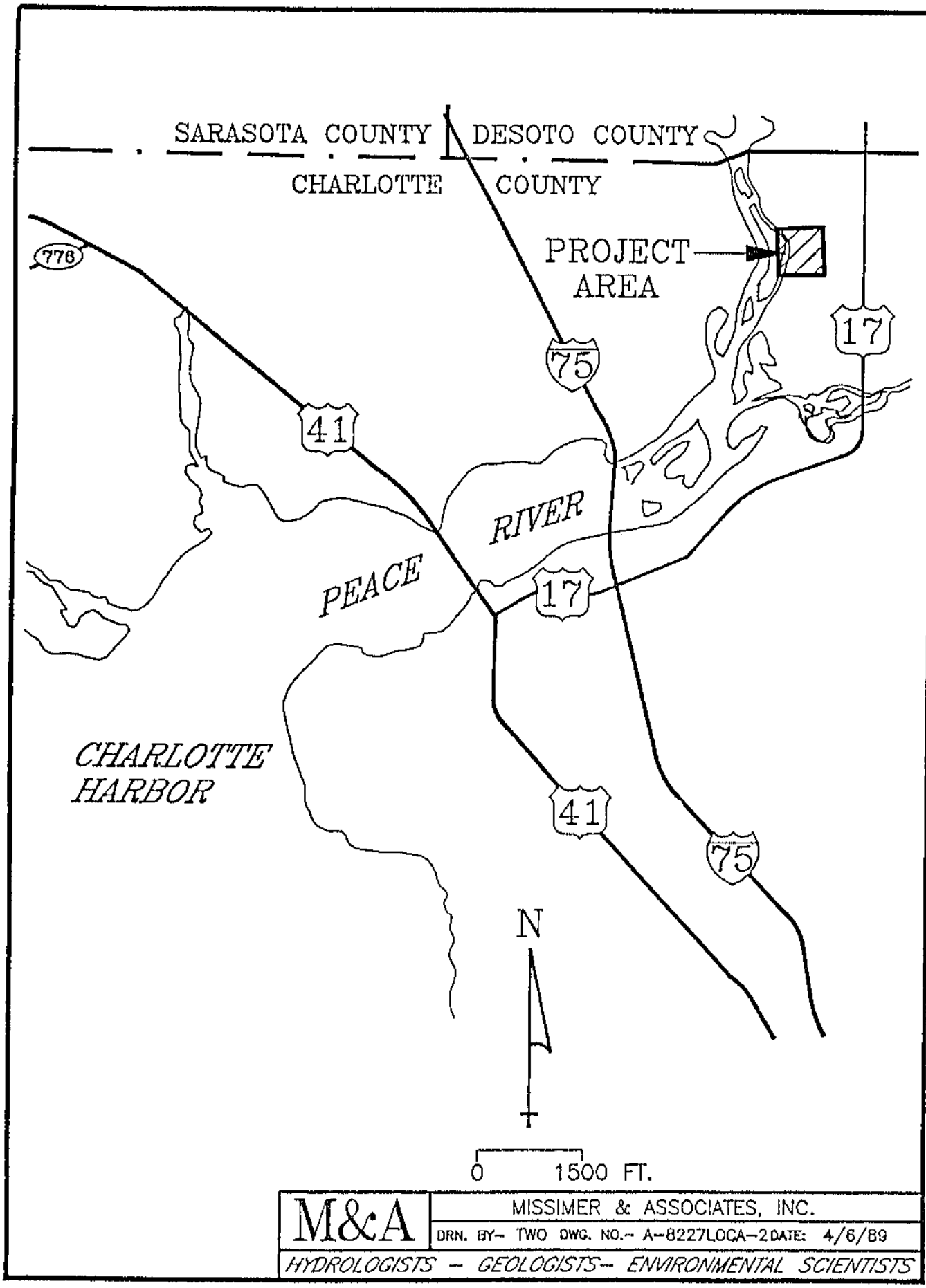
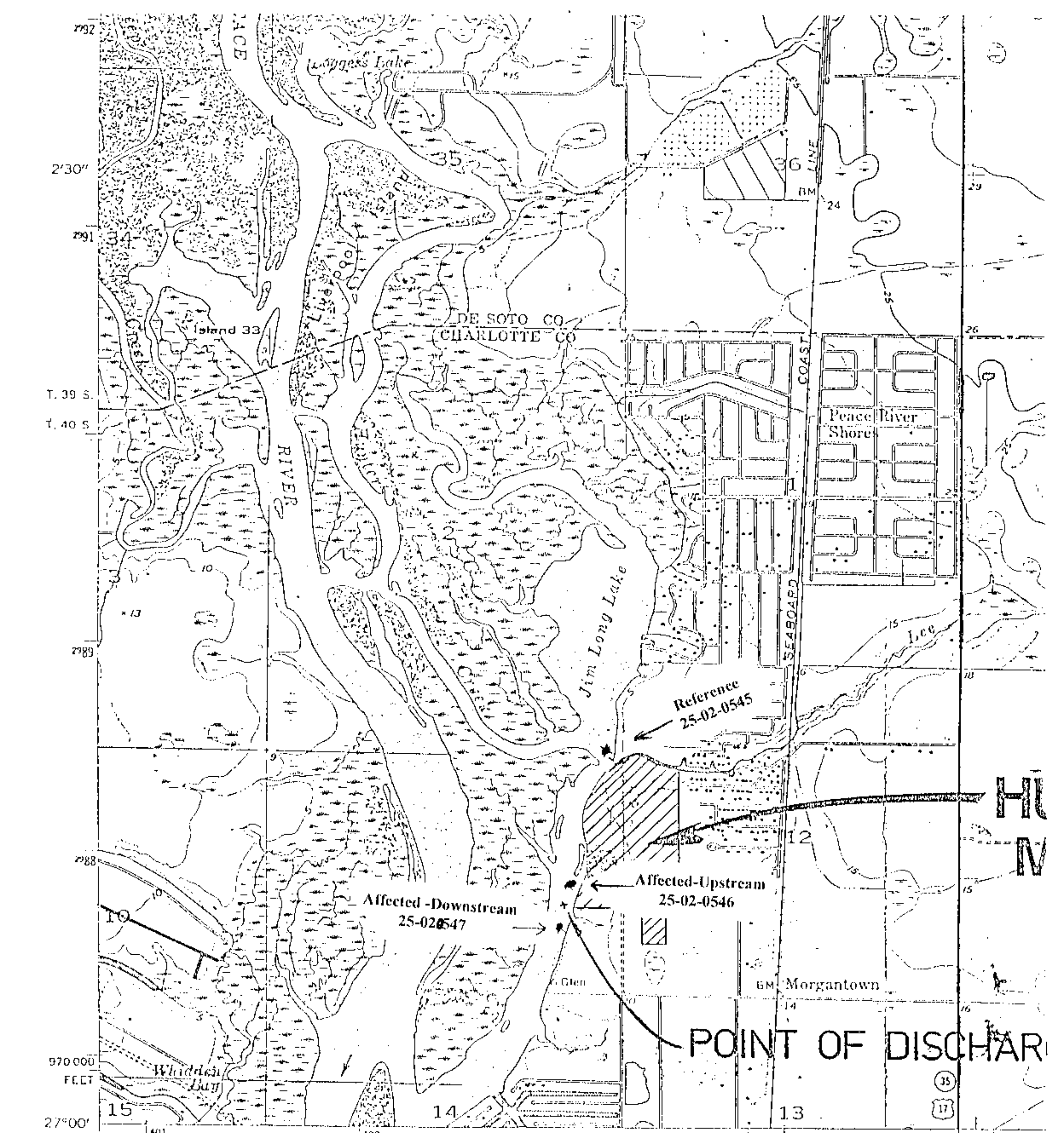


FIGURE 2-1. LOCATION MAP OF HUNTER'S CREEK.



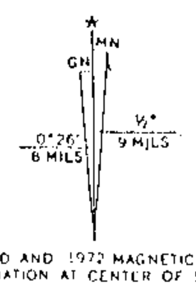
Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Culture and drainage in part compiled from aerial photographs taken 1951–1952. Topography by planetable surveys 1956

Polyconic projection. 1927 North American datum
10,000-foot grid based on Florida coordinate system, west zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue

Revisions shown in purple compiled from aerial photographs taken 1972. This information not field checked



UTM GRID AND 1972 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FACILITY SUMMARY

Facility Name: Rivers Edge		Date Summary Prepared: July 12,1995
Location (attach detailed map): North of Punta Gorda near Desoto/Charlotte County Line off hwy 17	County: Charlotte	District: South
Federal Permit # FL0042412 and expiration date March 31,1996	State GMS # 5208P00625 and State expiration date: 4/6/99	Facility Type: **Private** Municipal Federal Agricultural Other (list):

Function of facility:
Reverse Osmosis Water Plant

Description of treatment process:

Degasifier is used to reduce Hydrogen Sulfide levels and increase Dissolved Oxygen.

Receiving waters: Hunters Creek	Classification: I II **III**	
Design Flow: 0.017 MGD	Mean Flow: 0.003 MGD	Flow during survey: 0.0 MGD

Discharge is: Continuous **Intermittent** Seasonal Rainfall dependent
Other (describe) Operates between two and three hours per day in summer.

therefore, the best time to sample is: While plant is operating and discharging reject water.

If facility has a mixing zone , give details (size, parameters affected. etc.):

Combined radium 226 & 228 : EPA & STATE - 40 ft down stream and 20 feet upstream from point of discharge.
Gross Alpha: EPA -15 foot radius from discharge pipe. STATE - 40 feet down stream and 20 feet upstream from POD.
Specific Conductance: EPA & STATE - 20 foot radius from discharge pipe.

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

Parameter	Limit (units)
Flow	0.017 MGD
Dissolved Oxygen ✓	NLT 4.0 for Marine, 5.0 Fresh
Hydrogen Sulfide ✓	0.04 mg/L
pH ✓	6.5-8.5 Marine, 6.0-8.5 Fresh
Specific Conductance	See Permit
Gross Alpha ✓	15 @EOMZ, 110@POD
Combined Radium ✓	5@EOMZ, 110@POD
TSS ✓	30mg/L AVG, 50 mg/L Max.
Cadmium ✓	0.8-1.2 Fresh, 5ug/L Marine
Mercury	.2 ug/L fresh, 0.1ug/L Marine
Chlorides	See Permit

Describe special permit conditions and permit modifications:

end of mixing zone

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Rivers Edge
(Facility)

FACILITY SUMMARY

Description of permitted outfall(s):

One outfall. Water discharges to Hunters Creek.

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

MOR and DMR data is not available in the State GMS or EPA PCS data systems from January 1995 to current. The operator and park manager stated that the reports were sent in. The operator produced copies of reports for January 1995 through June 1995 during the first sampling event.

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

No known enforcement actions.

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

Data trends are inconclusive due to the missing last seven months of data.

Additional Information:

HUNTERS CREEK IS A SIDE BRANCH OF THE PEACE RIVER. THE FLORA AND FAUNA INDICATE THAT IT IS AT THE OLIGOHALINE END OF THE CHARLOTTE HARBOR / PEACE RIVER ESTUARY

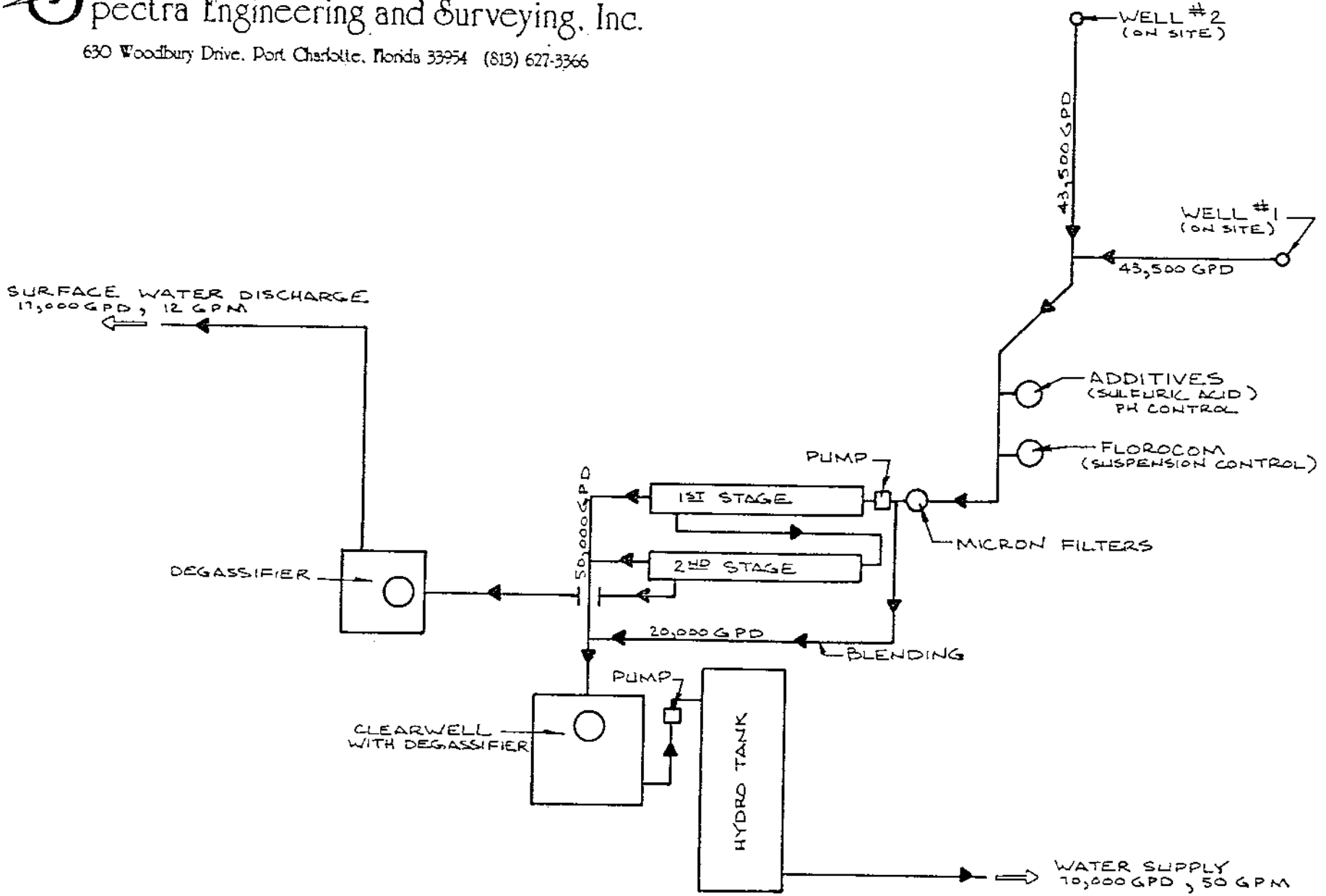
Staff contributing to this review (signature):

Albert S. Walton Jr (Biologist)

TIM PARKER (Inspector)

(Engineer)

Spectra Engineering and Surveying, Inc.
630 Woodbury Drive, Port Charlotte, Florida 33954 (813) 627-3366



HUNTERS CREEK WATER TREATMENT PLANT SCHEMATIC LAYOUT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: DEP - SOUTH DIST	STORET STATION NUMBER: 25-02-0545	DATE (M/D/Y): 7-19-95	TIME 1436	RECEIVING BODY OF WATER: PEACE RIVER

REMARKS:	LOCATION: RIVERS EDGE WWTP - REFERENCE SITE	FIELD ID/NAME: IW-071995-1

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)
60				40			

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: | ***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 ☐ ☐ ☐
Artificially Impounded ☐ yes — recent, severe / some recovery / mostly recovered, more sinuous

High Water Mark (m above bed):

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

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: ☐ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☑ SLIGHT 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	75		
Leaf Packs or Mats				Mud/Muck/Silt	25		
Aquatic Vegetation				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	0.5 m	26.8	6.8	6.3	300 (0.1)			0.4
Mid-depth	1.5 m	26.8	6.8	6.3	304 (0.1)			
Bottom	3 m	26.7	6.8	6.7	300 (0.1)			

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:
RECENT HEAVY RAINS

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

SAMPLING TEAM:	SIGNATURE:	DATE:
PARKER / WALTON	C.W. Walton	7-19-95

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

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: DEP - SOUTH DIST	STORET STATION NUMBER: 25-02-0545	DATE (M/D/Y): 7-19-95	RECEIVING BODY OF WATER: PEACE R

REMARKS:	LOCATION: RIVERS EDGE WWTP - REFERENCE SITE	FIELD ID/NAME: 1W-071995-1

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 3	>0.75 m. **4-5 points**	0.5 - 0.75 m. **3 points**	0.25 - 0.5 m. **2 points**	<0.25 m. **0-1 point**
Freshwater Discharges/ Alterations 8	Only natural runoff.. **9-10 points**	Mostly natural runoff, but with a few, small stormwater sources. **6-8 points**	Considerable stormwater discharge from local roads, parking lots, etc. **3-5 points**	Extensive manmade discharges, especially from canals draining large tracts of land. **0-2 points**
Flow and Wave Action 10	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. **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 10	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 72

COMMENTS:

ANALYSIS DATE: 7-19-95	ANALYST: WALTON	SIGNATURE:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: DEP - SOUTH	STORET STATION NUMBER: 25-02-0546	DATE (M/D/Y): 7-19-95	TIME: 1517	RECEIVING BODY OF WATER: PEACE R

REMARKS:	LOCATION: RIVERS EDGE WTP - AFFECTED UPSTREAM	FIELD ID/NAME: IW-071995 -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)
50				50			

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: 2

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):

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	75		
Leaf Packs or Mats				Mud/Muck/Silt	25		
Aquatic Vegetation				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	0.5	26.9	6.8	6.3	307 (0.1)			0.4
Mid-depth	2 ft	27.1	6.8	6.1	300 (0.1)			
Bottom	4.2 ft	28.9	6.8	6.1	301 (0.1)			

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:
RECENT HEAVY RAIN

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

SAMPLING TEAM: PARKER / WALDRON	SIGNATURE: A W Walton	DATE: 7-19-95

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

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: DEP-SOUTH	STORET STATION NUMBER: 25-02-0546	DATE (M/D/Y): 7-1995	RECEIVING BODY OF WATER: PEACE RIVER

REMARKS:	LOCATION: RIVERS EDGE WWTP - AFFECTED UPSTREAM	FIELD ID/NAME: IW-07/1995-2

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 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 3	>0.75 m. **4-5 points**	0.5 - 0.75 m. **3 points**	0.25 - 0.5 m. **2 points**	<0.25 m. **0-1 point**
Freshwater Discharges/ Alterations 8	Only natural runoff.. **9-10 points**	Mostly natural runoff, but with a few, small stormwater sources. **6-8 points**	Considerable stormwater discharge from local roads, parking lots, etc. **3-5 points**	Extensive manmade discharges, especially from canals draining large tracts of land. **0-2 points**
Flow and Wave Action 10	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. **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 13	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 77

COMMENTS:

ANALYSIS DATE: 7-19-95	ANALYST: WALTON	SIGNATURE: aswalton

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

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: DEP - SOUTH	STORET STATION NUMBER: 25-02-0547	DATE (M/D/Y):	RECEIVING BODY OF WATER: PEACE RIVER

REMARKS:	LOCATION: RIVERS EDGE WWTP — DOWN STREAM AFFECTED	FIELD ID/NAME: IW- -3

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 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 3	>0.75 m. **4-5 points**	0.5 - 0.75 m. **3 points**	0.25 - 0.5 m. **2 points**	<0.25 m. **0-1 point**
Freshwater Discharges/ Alterations 8	Only natural runoff.. **9-10 points**	Mostly natural runoff, but with a few, small stormwater sources. **6-8 points**	Considerable stormwater discharge from local roads, parking lots, etc. **3-5 points**	Extensive manmade discharges, especially from canals draining large tracts of land. **0-2 points**
Flow and Wave Action 10	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. **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 76

COMMENTS:

ANALYSIS DATE: 7-19-93	ANALYST: WALTON	SIGNATURE: A S Walton

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: DEP - SOUTH	STORET STATION NUMBER: 25-02-0547	DATE (M/D/Y): 7-19-95	TIME 1558	RECEIVING BODY OF WATER: PEACE RIVER

REMARKS:	LOCATION: RIVERS EDGE WWTP - AFFECTED DOWNSTREAM	FIELD ID/NAME: IW-071995-3

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)
50				50			

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: 2 — ***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):

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

SEDIMENT/SUBSTRATE

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

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

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

Substrate Types	% coverage	# times sampled	method	**Substrate Types**	% coverage	# times sampled	method
Woody Debris (Snags)				Sand			
Leaf Packs or Mats				Mud/Muck/Silt			
Aquatic Vegetation				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	SURF	28.8	6.8	6.0	307 (0.1)			0.4
Mid-depth	3.0	26.8	6.8	5.8	306 (0.1)			
Bottom	6.5 ft	26.8	6.8	5.75	305 (0.1)			

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:
RECENT HEAVY RAIN

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

SAMPLING TEAM:	SIGNATURE:	DATE:
WALTON / PARKER	A.W. Walton	7-19-95

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Rivers Edge Inc.
County: Charlotte
Contact / District: Timothy Parker - Selvi Kongara / South
NPDES Permit #: FL00 42412
LIMS Sample #: 111112 **LIMS Job #:** 95-Jul-18-45
sample log 7/24/95

Sample Collection: Date 7-17-95 Time 1115
Test Beginning: Date 7-18-95 Time 1645
Test Ending: Date 7-20-95 Time 1545
Organism Batch #: 460 **Diluent Batch #:** N2a
Organism Age: 12 days old
Test Organism: Menidia beryllina

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	23.4 @ 23.6	8.1 @ 25.6 °C	103.8 @ 102.1 1394 @ 1400 @ 24.6 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	25.3 @ 25.3	8.3 @ 23.6 °C	107.6 @ 102.1 1388 @ 1400 @ 23.9 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	24.2 @ 24.3 °C	8.4 @ 23.8 °C	1400.0 @ 1400.8 µmhos mmhos/cm 570 @ 587 @ 24.5 °C

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) 0 hr	UNCORRECTED Cond. (mmhos/cm) 24 h	UNCORRECTED Cond. (mmhos/cm) 48 h
Control A	3	5	5	5	7.9	8.1	8.3	25.2	23.0	23.9	8.0	8.2	8.2	3.3	3.2	3.3
Control B	174	5	5	5	7.9	8.1	8.3	25.0		23.9	8.0	8.2	8.3	3.3	3.2	3.2
Control C	210	5	5	5	7.9	8.1	8.3	25.0		23.9	8.0	8.3	8.2	3.3	3.1	3.2
Control D	287	5	5	5	7.9	8.0	8.3	25.0		23.8	8.2	8.3	8.2	3.3	3.1	3.2
100% A	502	5	5	5	7.7	7.8	8.0	24.6	22.9	23.8	8.1	8.2	8.1	3.3	3.2	3.3
100% B	604	5	5	5	7.7	7.8	8.0	24.3		23.8	8.2	8.1	8.1	3.3	3.2	3.3
100% C	21	5	5	5	7.7	7.8	8.0	24.2		23.7	8.2	8.2	8.1	3.3	3.2	3.3
100% D	1265	5	5	5	7.7	7.8	8.0	24.2		23.7	8.2	8.3	8.1	3.3	3.2	3.3
Recorded by:		TM	MF	MF	JN	MF	JN	JN	MF	JN	JN	MF	JN	JN	MF	JN
Measured/Loaded by:		TM	MF	MF	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS

Investigators' Signatures

Robin C. Rader
Tina M. Rudder
Jennifer Sparagon
Mandell Fairchild
Reviewer

form updated 10/05/94

Water Quality Parameters

	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):					
Lab Total Residual Cl2 (mg/L):			<0.03	DR-100	TR
Alkalinity (mg/L as $CaCO_3$):	128		85	Hach	TR
Hardness (mg/L as $CaCO_3$):	—		—	—	—
Total ammonia (mg/L as N):	<0.017		.387	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -57.4 Ammonia Blank: <0.017 Control Salinity: 1.7 ppt Sample Salinity: 1.7 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Rivers Edge Inc.
County: Charlotte
Contact / District: Timothy Parker - Sylvi Kongara / South
NPDES Permit #: FL00 42412
LIMS Sample #: 11112 **LIMS Job #:** 95-Jul-18-95

Sample Collection: Date 7-17-95 Time 1115
Test Beginning: Date 7-18-95 Time 1640
Test Ending: Date 7-20-95 Time 1545
Organism Batch #: 196 **Diluent Batch #:** NSW
Organism Age: 3 days old
Test Organism: Mysidopsis bahia

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	23.4 @ 23.6	8.1 @ 25.6 °C	103.8 @ 102.1 1394 @ 1400 @ 24.6 °C 57.0 @ 58.7
24 hr	7.0 @ 7.0 9.0 @ 9.0	25.3 @ 25.3	8.3 @ 23.6 °C	101.6 @ 102.1 1388 @ 1400 @ 23.9 °C 57.0 @ 58.7
48 hr	7.0 @ 7.0 9.0 @ 9.0	24.2 @ 24.3 °C	8.4 @ 23.8 °C	1400 @ 1400.8 µmhos/cm mmhos/cm 57.0 @ 58.7 @ 24.5 °C

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) 0 hr	UNCORRECTED Cond. (µmhos/cm) 24 h	UNCORRECTED Cond. (µmhos/cm) 48 h
Control A	306	5	4	4	7.9	8.0	8.1	24.4	23.0	23.9	8.1	8.0	8.1	10.2	10.0	10.2
Control B	309	5	5	5	7.9	8.0	8.1	24.4		23.9	8.0	8.0	8.1	10.2	10.0	10.2
Control C	D17	5	5	4	7.9	8.0	8.1	24.4		23.9	8.0	8.1	8.0	10.2	9.9	10.2
Control D	607	5	5	5	7.9	8.0	8.1	24.3		23.9	8.1	8.1	8.2	10.2	9.9	10.2
100% A	218	5	0	—	8.0	7.9	8.0	25.6	22.9	23.9	8.1	8.1	8.1	10.7	10.3	10.5
100% B	302	5	2	1	8.0	7.9	8.0	25.6		23.8	8.0	8.1	8.0	10.7	10.3	10.3
100% C	503	5	1	0	8.0	7.9	8.0	26.6		23.8	8.0	8.1	8.0	10.7	10.2	10.4
100% D	43	5	2	1	8.0	7.9	8.0	25.7		23.7	8.1	8.1	7.9	10.7	10.2	10.5
Recorded by:		TM	MF	MF	JN	MF	JN	JN	MF	JN	JN	MF	JN	JN	MF	JN
Measured/Loaded by:		JN	MF	MF	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS

Investigators' Signatures

Reviewer

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Ammonia Meter #98136 Ammonia Meter Slope: -57.4 Ammonia Blank: <0.017

Control Salinity: 6 ppt

Sample Salinity: 6 ppt

Benthic macroinvertebrate taxa list for River's Edge R/O Treatment Facility, collected via Ponar grab samples in Hunter Creek, on 19 July 1995. Densities, in number/m^2, represent the mean of three replicates.

	Reference Site	Test Site 1	Test Site 2
Nemertina			
Undetermined Rhynchocoela	-	31	62
Polychaeta			
Laeonereis culveri	-	47	31
Hobsonia florida	16	16	16
Oligochaeta			
Limnodrilus hoffmeisteri	-	-	16
Aulodrilus pigueti	16	-	94
Haber speciosus	47	-	16
Pristina leidyi	-	16	-
Dero trifida	16	94	31
Pristinella jenkinae	16	-	-
Gastropoda			
Littoridinops monroensis	624	187	-
Pelecypoda			
Rangia sp.	655	-	-
Rangia cuneata	-	468	546
Gemma gemma	2169	2653	1545
Isopoda			
Cyathura polita	1326	811	655
Amphipoda			
Undetermined Amphipoda	-	16	-
Undetermined Aoridae	16	-	-
Corophium simile	62	-	16
Grandidierella bonnieroides	31	109	16
Undetermind Gammaridea	-	-	31
Gammarus sp.	921	62	31
Decapoda			
Rhithropanopeus harrisii	-	62	140
Collembola			
Isotomurus palustris	-	-	16
Odonata			
Undetermind Libellulidae	-	-	16
Diptera			
Palpomyia/Bezzia grp.	47	31	47
Undetermind Chironomidae	31	16	-
Coelotanypus sp.	-	47	62
Coelotanypus tricolor	-	-	16
Ablabesmyia rhamphe grp.	-	16	-
Djalmabatista pulcher	16	-	-
Cricotopus or Orthocladius sp.	-	-	16

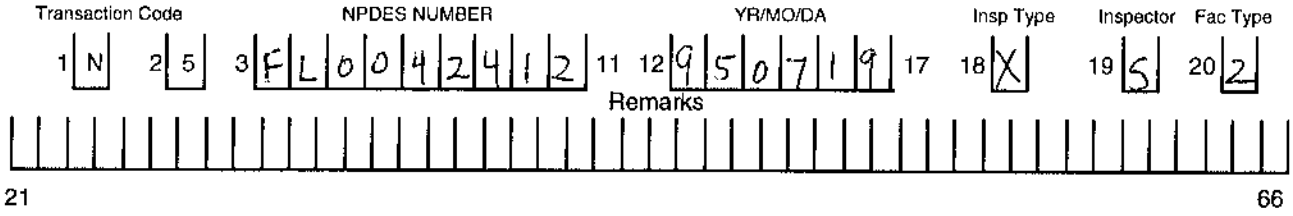
Asheum beckae	-	47	-
Chironomus sp.	16	16	16
Cryptochironomus sp.	16	94	78
Dicrotendipes neomodestus	-	16	-
Goeldichironomus sp.	-	16	-
Goeldichironomus amazonicus	-	16	-
Polypedilum sp.	-	31	-
Polypedilum scalaenum grp.	359	156	312
Polypedilum halterale grp.	-	31	16
Tribelos sp.	-	-	16
Tribelos fuscicornis	-	16	-
Cladotanytarsus sp.	624	437	187

Phytoplankton taxa list and densities (#/mL) for River's Edge R/O Treatment Facility, collected via subsurface grabs in the Hunters Creek, on 19 July 1995.

	Reference Site	Test Site 1	Test Site 2
Cyanophyceae			
Aphanocapsa sp.	27221	33785	30246
Aphanothece sp.	-	4826	8066
Chroococcus sp.	6049	11262	6049
Gloeocapsa sp.	8066	-	3025
Marssoniella sp.	11090	12871	4033
Merismopedia sp.	5041	8044	4033
Microcystis sp.	40328	56309	33270
Rhabdoderma sp.	13106	28959	10082
Dactylococcopsis sp.	15123	14479	5041
Lyngbya sp.	4033	4826	2016
Lyngbya contorta	97795	67570	59483
Oscillatoria sp.	2016	8044	3025
Spirulina sp.	-	1609	-
Romeria sp.	24197	53091	5041
Anabaena sp.	1008	1609	2016
Anabaenopsis sp.	9074	6435	5041
Chrysophyceae			
Mallomonas sp.	-	1609	1008
Bacillariophyceae			
Melosira sp.	1008	-	3025
Cyclotella sp.	11090	9653	13106
Coscinodiscus sp.	-	4826	1008
Rhizosolenia sp.	1008	-	-
Undetermined Pennales	4033	17697	6049
Fragilaria sp.	26213	4826	3025
Achnanthes sp.	-	1609	-
Achnanthes peragalli	1008	-	-
Achnanthes gibberula	1008	-	-
Navicula sp.	3025	-	-
Diploneis sp.	1008	-	-
Nitzschia sp.	1008	6435	-
Nitzschia obtusa	-	1609	-
Chlorophyceae			
Undetermind Chlorophyceae	2016	-	1008
Chlamydomonas sp.	5041	9653	4033
Chlorogonium sp.	-	1609	1008
Chlorococcum sp.	3025	-	-
Schroederia sp.	1008	-	-
Tetraedron sp.	2016	-	4033
Chlorella sp.	3025	3218	-
Ankistrodesmus sp.	-	-	3025

Treubaria sp.	-	-	1008
Pediastrum sp.	2016	-	3025
Scenedesmus sp.	52426	62744	37303
Crucigenia sp.	3025	-	-
Selenastrum sp.	3025	1609	-
Tetrastrum sp.	-	1609	1008
Micractinium sp.	-	-	2016
Gloeocystis sp.	1008	-	-
Ulothrix sp.	19156	24132	47385
Desmidium sp.	-	1609	-
Spermatozoopsis sp.	1008	4826	-
Euglenophyceae			
Euglena sp.	1008	-	-
Trachelomonas sp.	1008	-	-
Lepocinclis sp.	-	-	1008
Cryptophyceae			
Cryptomonas sp.	-	3218	4033

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



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