

Biological Assessment of

Marianna Wastewater Treatment Facility

Jackson County

NPDES #FL0028185

Sampled December 1994

May 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: Marianna WWTP
County: Jackson
NPDES Number: FL0028185
State Permit Expiration Date: 7 March 2000

Toxics Sampling Inspection (**XSI**)	
Date Sampled:	19 December 1994
Results:	No organic priority pollutants or metals were detected in the effluent sample at levels above Class III water quality standards.

Compliance Biomonitoring Inspection (**CBI**)	
Date Sampled:	19 December 1994
Results:	The sample of effluent was not toxic to the invertebrate, *Ceriodaphnia dubia*, or to the fish, *Cyprinella leedsi.*

Impact Bioassessment Inspection (**IBI**)	
Date Sampled:	19 December 1994
Results:	Hester-Dendy taxa richness, the Florida Index, Shannon-Weaver diversity, and the EPT Index were typical of a healthy north Florida lotic system at both sites. The relative similarity between these reference and test site measures of community health suggests that the discharge was not adversely affecting the macroinvertebrate population. Two periphyton parameters, taxa richness and diversity, indicated adverse changes downstream of the discharge. This may be associated with the increase in AGP at the test site.

Water Quality Inspection (**WQI**)	
Date Sampled:	19 December 1994
Results:	Total and fecal coliforms in the effluent and at receiving water sites were in compliance with Class III water quality standards and permit limits. The Marianna WWTP discharge caused slight increases in the total phosphorus and ammonia concentrations in waters of the test site. Nitrate-nitrite levels were very elevated at both the reference and test sites, exceeding those values found in over 90% of typical Florida streams. This nitrate-nitrite enrichment is probably attributable to non-point sources (*e.g.*, agricultural runoff). Algal growth potential (AGP) increased from 0.02 mg dry wt/L at the reference site to 7.6 dry wt/L at the test site, where the AGP exceeded the "problem threshold" of 5 mg dry wt/L. Given the nitrogen loading found upstream, the increase in AGP at the test site appears to be related to the facility's addition of phosphorus to the river. It should be noted, however, that effluent total phosphorus (0.3 mg/L) was well within the facility's permit limit of 2.0 mg/L. Effluent AGP was 38.9 mg dry wt/L.

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 Marianna WWTP is located on Franklin Street in Marianna, Jackson County, Florida (see map in Appendix). The facility's treatment consists of two 1.0 MGD oxidation ditches and one 0.7 MGD trickling filter. The facility is also equipped for chemically mediated phosphorus removal. Residual sludge is treated by anaerobic digestion, then dewatered by a belt press filter system and sludge drying beds. The dried sludge is then utilized by the City as a soil conditioner. Wastewater is chlorinated, then dechlorinated with sulfur dioxide prior to discharge. Effluent is discharged to the Class III Chipola River.

Permit limits are as follows: BOD_5 and TSS (12 mg/L annual average), total nitrogen (20 mg/L as a maximum monthly average, 16 mg/L as an annual average), total phosphorus (2 mg/L as a maximum annual average), pH (6.0 - 8.5 S.U.), fecal coliforms (200 organisms/100 mL maximum), chlorine residual (1.0 mg/L minimum for disinfection, 0.01 mg/L maximum at discharge). The facility has a design flow of 2.7 MGD. Flow during the inspection was 2.127 MGD.

Generally, the facility complies with permit limits, although design flow was exceeded in August, 1994, and the facility failed to apply for a new NPDES permit within 180 days of the expiration date. Previous inspections by the Department show this plant to have been operating satisfactorily.

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 in the Chipola River, 150 meters above the discharge) and a test site (approxi-

Major characteristics of invertebrate community structure of control and test sites.

	Reference Site	Test Site
Macroinvertebrate Qualitative		
Number of Taxa	24	23
Florida Index	15	23
SIIF	20	19
EPT Index	7	5
% Contribution of Dominant Taxon	36.6	28
% Diptera	68.7	71.8
% Ephemeroptera	10	7.7
% Trichoptera	8.7	3.9
% Oligochaeta	0	2.6
% Gastropoda	6.7	10.3
% Decapoda	3.3	1.3
% Predators	6	3.9
% Above Surface Deposit Feeders	8.7	14.1
% Below Surface Deposit Feeders	0	2.6
% Suspension Feeders	60.7	37.2
% Scrapers	7.3	11.5
% Other	15.7	30.1
Macroinvertebrate Hester-Dendy		
Number of Taxa	50	32
Florida Index	24	20
Shannon-Weaver Diversity	4.3	3.6
EPT Index	11	9
% Oligochaeta	6.9	1.4
% Diptera	61.2	81
% Ephemeroptera	8.5	6.2
% Trichoptera	20.6	9.7
% Other	2.5	1.4
% Predators	10.1	0.6
% Above Surface Deposit Feeders	12	15
% Below Surface Deposit Feeders	6.8	1.4
% Suspension Feeders	49.5	57.6
% Scrapers	4.2	5.1
% Other	16.4	20.3

Major characteristics of algal community structure of control and test sites.

	Reference Site	Test Site
Periphyton Algae		
Number of Taxa	24	11
Shannon-Weaver Diversity	3.8	1.8
Algal Density (#/sq. mm)	16,453	10,922
% Blue-green	5.1	0
% Green	5.1	1.3
% Diatoms	89.8	98.7
Diatom/Blue-green Ratio	.95	1
Phytoplankton Algae		
Number of Taxa	10	9
Shannon-Weaver Diversity	3.1	3.0
Algal Density (#/mL)	187.9	143.7
Chlorophyll a (µg/L)	0.39	0.39
% Blue-green	5.9	15.4
% Green	29.4	38.5
% Diatoms	47.1	23.1
% Cryptophytes	11.7	15.8
% Chrysophytes	5.9	0
% Euglenophytes	0	7.7
Algal Growth Potential (mg dry wt/l)	0.2	7.6

mately 50 meters below the discharge). A habitat assessment was performed *in situ* to establish comparability between sites. Supplemental physical/chemical data were also collected on the effluent and study sites. Acute screening toxicity bioassays, using *Ceriodaphnia dubia* and *Cyprinella leedsi* as test organisms, were performed on an effluent sample (Weber 1991). 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 reference and test sites. Invertebrates were collected from multiple substrates (*e.g.*, snags, leaf packs, vegetation) using discrete dip net sweeps. Additional invertebrate collections were accomplished using Hester-Dendy multiplate samplers which were incubated for 28 days (Ross 1990). Periphyton was sampled at both reference and test sites by incubating glass microscope slides in a standard periphytometer for 28 days (Ross 1990). Phytoplankton was sampled at both reference and test sites via subsurface grabs. Chlorophyll *a* was determined for phytoplankton communities (Ross 1990). Bacterial populations were analyzed for total and fecal coliforms following the methods of APHA (1989). Algal Growth Potential tests, using *Selenastrum capricornutum* as the test organism, followed Miller *et al.* (1978).

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: Anthropogenic stress has a tendency to reduce the number of different types of macroinvertebrates present in a system. Algal taxa richness may increase with moderate nutrient enrichment, compared to an oligotrophic natural background, but become 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. Excessive numerical dominance of a single type of organism (a high % contribution of the dominant taxon) is a related measure which is also associated with disturbance.

Numbers of pollution sensitive taxa: Unpolluted sites have characteristic 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. 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.

Ephemeroptera/Plecoptera/Trichoptera Index: To calculate the index, one simply sums the number of EPT taxa present at a stream station. Higher EPT values are associated with healthier systems, while lower scores indicate stressed conditions.

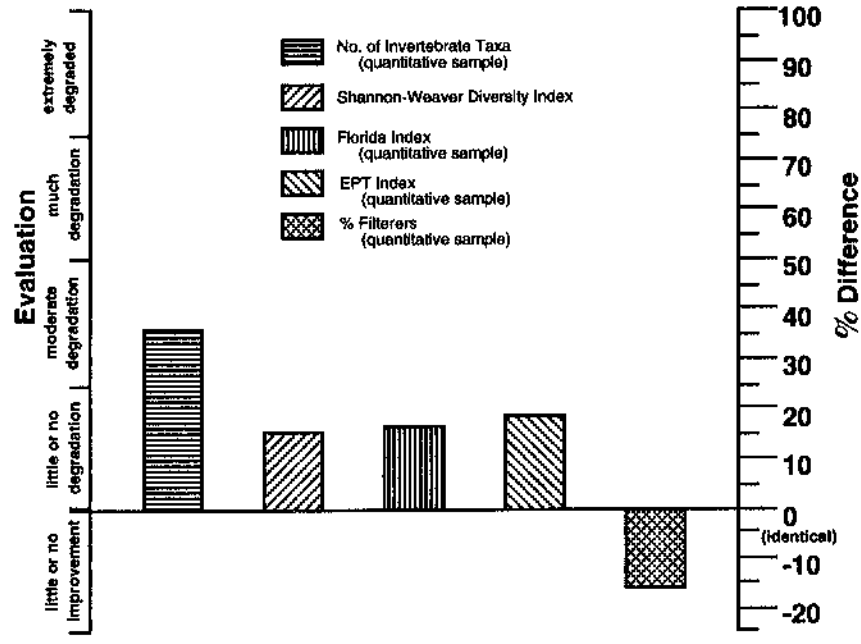
Community structure: An aquatic community is generally considered degraded if a substantial shift in the proportions of the major taxonomic groups (*e.g.*, mayflies, riffle beetles, etc.) is observed when compared to a reference site. In marine systems, an increase in the % tubificid oligochaetes, a 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: A system has traditionally been considered nutrient stressed when biomass (algal density or chlorophyll *a*) exceeds problem threshold levels, often resulting in visible algal blooms and low dissolved oxygen from the decomposition of the decaying algal tissue. A decreased diatom to bluegreen 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: Human disturbance can shift the established feeding strategies of a system. In Florida for example, pollution appears to be responsible for reducing the numbers of filter-feeders (FDEP 1994) and shredders (EA Engineering 1994).

The Stream Invertebrate Index for Florida (SIIF) is a composite metric which is based upon the macroinvertebrate communities found at Florida Eco-regional reference sites sampled with dip net sweeps (EA Engineering 1994). The SIIF assigns points to a variety of invertebrate parameters, depending on how closely that parameter approaches the expected Eco-regional reference condition. The points are then summed and an assessment of the condition of a site is made (see SIIF calculation table in Appendix).

For graphical purposes, the percent differences between the reference and test sites involving the number of taxa, the diversity index, the Florida Index, and the number of EPT taxa are measured as the reference site minus test site divided by the reference site. The percent differences between sites involving the algal density, chlorophyll *a*, and algal growth potential are measured as the test site minus reference site divided by the reference site.



Effect of discharge on the benthic macroinvertebrate community.

The following personnel were involved in this investigation: Glenn Butts, Laurence Donelan, and Steve Kelly (DEP Northwest District) and Lyn Burton, Marshall Faircloth, Russel Frydenborg, Christy LeDuc, Kathleen Lurding, Tina Mikulski, Elizabeth Miller, Urania Quintana, Landon Ross, 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-

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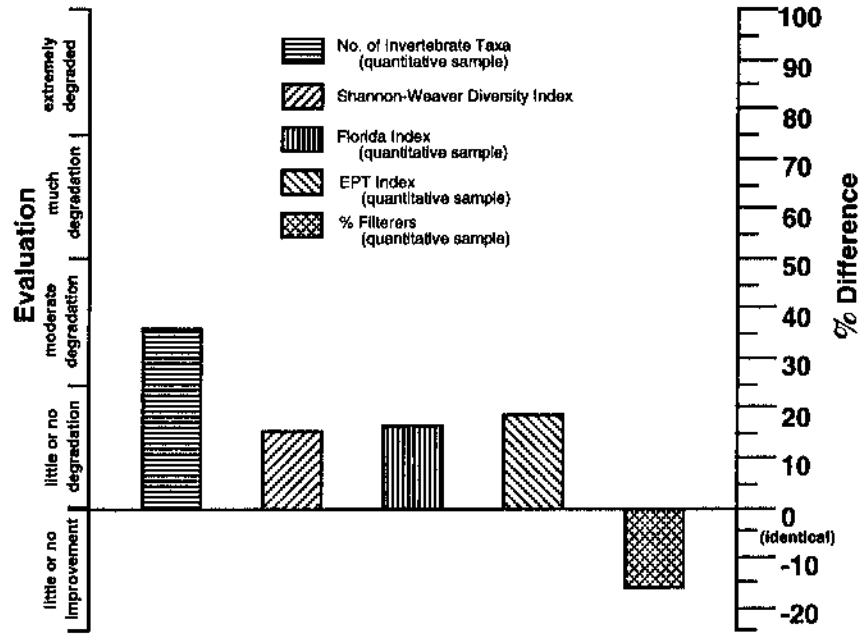
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cal Water Quality Values in Appendix). This nitrate-nitrite enrichment, already prevalent at the reference site, is likely attributable to non-point source pollution (*e.g.*, agricultural runoff).

Algal growth potential (AGP) increased from 0.2 mg dry wt/L at the reference site to 7.6 dry wt/L at the test site. Although this represents a 3700% increase over the reference site, the algal growth potential only slightly exceeded the "problem threshold" of 5 mg dry wt/L at the test site (Raschke and Schultz 1987). Given the nitrogen loading found upstream, the increase in AGP at the test site appears to be related to the facility's addition of phosphorus to the river. It should be noted, however, that effluent total phosphorus (0.3 mg/L) was well within the facility's permit limit of 2.0 mg/L. Effluent AGP was 38.9 mg dry wt/L.

Quantitative measures of benthic macroinvertebrate community health indicate that the effluent was having relatively little negative effect on the receiving water biota. The figure on p. 3 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.

Macroinvertebrate Hester-Dendy taxa richness met or exceeded the expectations for a healthy stream at each site, although fewer taxa were found at the test site (with 32 taxa) than at the reference site (with 50 taxa). Similarly, the Florida Index was acceptable at both study sites, with 24 points at the reference site and 20 points at the test site. Shannon-Weaver diversity indicated that healthy conditions prevailed in the river, with a value of 4.3 at the reference site and 3.6 at the test site. The Ephemeroptera/Plecoptera/Trichoptera Index was also typical of a north Florida lotic system, with 11 EPT's at the reference site and 9 at the test site. The relative similarity between these reference and test site measures of community health suggests that the discharge was not adversely affecting the macroinvertebrate population.

Qualitative macroinvertebrate sampling also demonstrated the similarity between the two sites, although most invertebrate parameters were generally lower than their respective Hester-Dendy values. This was reflected by somewhat lower than expected SIIF scores, with 20 points at the reference site and 19 points at the test site (both in the moderate impairment category). Considering the difficulty in sampling a moderately large river, such as the Chipola, during fairly high flow conditions, the low SIIF scores are probably more related to gear inefficiency than to water quality problems.

The figure on p. 4 represents changes in the periphyton algal community. As was noted with the macroinvertebrates, larger differences (that is, higher percentages) correspond with greater degrees of degradation. Both phytoplankton (free-water) and periphyton (attached) algal populations were sampled for this bioassessment. As the attached algae are considered most important in lotic systems, it is the periphyton data which will be used to compare between the reference and test sites. However, since chlorophyll *a* was unavailable for periphyton, the phytoplankton chlorophyll *a* will be used for that comparison on the graph.

Two periphyton parameters, taxa richness and diversity, indicated adverse changes downstream of the discharge. Periphyton taxa richness dropped from 24 taxa at the reference site to 11 taxa at the test site. Simultaneously, Shannon-Weaver diversity decreased from 3.8 at the reference site to 1.8 at the test site. This 51.5% reduction in diversity at the test site coincided with a substantial increase of the diatom, *Cocconeis placentula*, a known indicator of nutrient enrichment (Whitmore 1989). It should be noted, however, that the reference site was also dominated by organisms tolerant of nutrient enriched conditions (*i.e.*, *Cocconeis placentula* and *Nitzchia palea*). Other algal parameters, including density, chlorophyll *a*, and the diatom to blue-green ratio, were either unchanged or slightly improved at the test site. However, the fairly large decreases in taxa richness and diversity downstream of the discharge suggest that the facility is negatively affecting the receiving water periphyton. This may be associated with the increase in AGP at the test site.

Conclusions

No organic priority pollutants or metals were detected in the effluent sample at levels above Class III water quality standards.

The sample of effluent was not toxic to the invertebrate, *Ceriodaphnia dubia*, or to the fish, *Cyprinella leedsi*.

Total and fecal coliforms in the effluent and at receiving water sites

were in compliance with Class III water quality standards and permit limits.

The Marianna WWTP discharge caused slight increases in the total phosphorus and ammonia concentrations in waters of the test site. Nitrate-nitrite levels were very elevated at both the reference and test sites, exceeding those values found in over 90% of typical Florida streams. This nitrate-nitrite enrichment is probably attributable to non-point sources (*e.g.*, agricultural runoff).

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Chemistry summary table for

Marianna WWTP	Effluent	Reference Site	Test Site
Organic Constituents (ug/L)			
None Detected			
Metals (ug/L)			
Aluminum	311 A		
Arsenic	10 U		
Cadmium	0.08 U		
Calcium	43.3 A		
Copper	6 I		
Chromium	10 U		
Iron	100 A		
Lead	10 U		
Magnesium	6.0 A		
Mercury	0.10 U		
Nickel	4 U		
Selenium	30 U		
Zinc	27 J		
Nutrients (mg/L)			
Ortho-phosphate	0.14 A	0.02 U	0.03 I
Total phosphorus	0.3 A	0.02	0.04
Ammonia	0.3 A	0.06	0.1
Nitrate+Nitrite	0.4 A	0.9	0.9 A
TKN	0.9 A	0.3	0.36
General Phys-Chem Parameters			
Habitat Assessment		100	96
D.O. (mg/L)	8.4	8.9	8.7
pH (SU's)	7.0	7.2	7.0
Conductivity (µmhos/cm)	468	222	238
Temperature (°C)	18.1	13.7	13.7
Total Suspended Solids (mg/L)	8	5 U	5
Biological Oxygen Demand, 5 day (mg/L)	4.0	0.9	1.0
Turbidity (NTU's)	7.0	6.0	6.0
Color (PCU's)	25	25	25
Hardness (mg CaCO3)	120	100	100
Algal Growth Potential (mg dry wt/L)	38.9	0.2	7.6
Toxicity			
Bioassay Fish	Not Toxic		
Bioassay Invertebrate	Not Toxic		
MIcrobiological Communities (org/100 mL)			
Fecal coliform	10 U	210 A	335 A
Total coliform	200	600	400

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

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

J - Estimated value

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



ped, edited, and published by the Geological Survey
sed in cooperation with State of Florida agencies
ol by USGS and NOS/NOAA
e and drainage in part compiled from aerial photographs

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
FACILITY SUMMARY

Facility Name: MARIANNA WWTP		**Date Summary Prepared :** 10/31/94
Location (attach detailed map): 1001 E. FRANKLIN ST. MARIANNA	**County** JACKSON	**District** 10
Federal Permit # ~~DO 12 183018~~ **and expiration date:** ~~FL0020559~~ AUGUST 31, 1995	**State GMS # and** 1032M01351 **State expiration date:** 08/31/94	**Facility Type:** Industrial Municipal Federal Agricultural **Other (list):** ~~DOMESTIC~~

Function of facility: IN COMPLIANCE WITH THE CLEAN WATER ACT, TO TREAT THE WASTE WATER FROM THE CITY OF MARIANNA WITH DISCHARGE INTO THE CHIPOLA RIVER

Description of treatment process: THE FACILITY OPERATES WITH TWO 1.1 MGD OXIDATION DITCHES, AND ONE 0.7 MGD TRICKLING FILTER. THE TREATMENT PLANT HAS A CHEMICAL SYSTEM FOR PHOSPHORUS REMOVAL WITH EFFLUENT DISCHARGE INTO THE CHIPOLA RIVER.

Receiving waters: CHIPOLA RIVER	**Classification:** I II (III)	
Design Flow: 2.7 MGD	**Mean Flow:** 1.553 MGD	**Flow during survey:** 2.127 MGD

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

therefore, the best time to sample is:

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

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

Parameter	Limit (units)
pH	6.0 (MIN) 8.5 (MAX)
CHLORINE RESIDUAL	0.01 mg/l (MAX)
BOD5 TOTAL NONFILT. CARBONACEOUS BOD	10 mg/l (ANNUAL AVG) 15 mg/l (MONTHLY AVG)
TOTAL NITROGEN	9.0 mg/l (MAX ANNUAL AVG) 20 mg/l (MAX MONTHLY AVG)
TOTAL PHOSPHORUS	2 MG/l (MAX MONTHLY AVG)
FECAL COLIFORM	200 / 100 ml

Describe special permit conditions and permit modifications:

MARIANNA WWTF
(Facility)

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
FACILITY SUMMARY

Description of permitted outfall(s): THE DISCHARGE OF EFFLUENT IS INTO THE CHIPOLA RIVER WHICH IS CLASSIFIED AS A CLASS III WATER BODY, SUITABLE FOR RECREATION, PROPAGATION, AND THE MAINTENANCE OF FISH AND WILDLIFE.

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

AUGUST 94: EXCEEDED PERMITTED CAPACITY OF 3.7 MGD WITH A MONTHLY AVERAGE FLOW OF 3.9 MGD

JAN 1994: FAILED TO REAPPLY FOR A NEW NPDES PERMIT AT LEAST 180 DAYS PRIOR TO THE EXPIRATION DATE OF THE PERMIT

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

THE PREVIOUS BIOASSESSMENT WAS PERFORMED IN 1990 BY CLEAN WATERS. THE STUDY FOUND THAT CLEAN WATER INDICATOR ORGANISMS MADE UP 31.1 % (BENTHOS) OF THE FAUNA.

NO CURRENT ENFORCEMENT ACTIONS

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

LABORATORY COMPARISONS BETWEEN MOR AND DER TESTS ARE SIMILAR THROUGH OUT THE YEAR. AN UNDERLYING TREND EXISTED IN THE FECAL COLIFORM SAMPLES WHICH WERE ALMOST CONSTANT.

INSPECTOR COMMENTS WERE ALL SATISFACTORY AND MANY RATED THE FACILITY AS "WELL MAINTAINED"

Additional information:

Staff contributing to this review (signature):

(Biologist)

(Inspector)

(Engineer) Steve Kelley 7/31/96

( )

( )

MARIANNA

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 4)

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: FDEP	STORET STATION NUMBER: 31.02.0017	DATE (M/D/Y): 12-19-94	TIME	RECEIVING BODY OF WATER: CHIPOLA RIVER

REMARKS: CONTROL SITE	LOCATION: AT HWY 90	FIELD ID/NAME: # 3

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
10			30	60		

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): 75 ft	Estimated System Depth (range, m): 3.0	yes
High Water Mark (m above bed):	Velocity (range, m/s): .5 614 CFS	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)	5	5	NCT	Riffles			
Leaf Packs	2	4	NCT	Sand	45		
Aquatic Vegetation	1	2	NCT	Mud/Muck/Silt	5		
Rock or Shell Rubble	30	2	NCT	Benthic leaf mats	1	2	NCT
Undercut Banks/Roots	11	5	NCT	Other:			

WATER QUALITY

	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm):	TURB	BOD	Secchi (m):
Top	0.5	13.65	7.19	8.9	222	6	0.9	>3.0
Mid-depth								
Bottom								

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:

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

SAMPLING TEAM: G. BUTTS / L. DONELAN	SIGNATURE: Glenn Butts	DATE: 12-19-94

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (V2)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER: 3 1 2 2 0 1 7	DATE (M/D/Y): 12-19-94	RECEIVING BODY OF WATER: Chipola River

REMARKS:	LOCATION: Chipola River Hwy 90	FIELD ID/NAME: #3
control site		

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

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

Comments: Many Cypress + Trees on banks

[76] **TOTAL SCORE**

ANALYSIS DATE:	ANALYST:	SIGNATURE:
12-19-94	G. Butts / L. Donelan	Glenn Butts

MARIANNA

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 4)

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: FDEP	STORET STATION NUMBER: 31.02.0008	DATE (M/D/Y): 12-19-94	TIME	RECEIVING BODY OF WATER: CHIPOLA RIVER

REMARKS: B-34 TEST SITE	LOCATION: 150 ft SOUTH OF MARIANNA WWTP	FIELD ID/NAME: # 2

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
20			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): MARIANNA WWTP DISCHARGE 1.5 MGD

Estimated System Width (range, m): 75 ft	Estimated System Depth (range, m): 3.0	yes
High Water Mark (m above bed):	Velocity (range, m/s): 6.14 CFS	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)	8	5	NET	Riffles			
Leaf Packs	4	5	NET	Sand	10		
Aquatic Vegetation	2	2	NET	Mud/Muck/Silt	10		NET
Rock or Shell Rubble	50	1		Benthic leaf mats	3	2	NET
Undercut Banks/Roots	10	5	NET	Other:	3		

WATER QUALITY

	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm):	TURB	BOD	Secchi (m):
Top	0.5	13.7	7.09	8.7	238	6	1.0	
Mid-depth								> 3.0
Bottom								

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: ☐ Brown

Weather Conditions:

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

SAMPLING TEAM: G. BUTTS / L. DONELAN	SIGNATURE: Glenn Butts	DATE: 12-19-94

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (V2)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
	31c2mc8	12-19-94	CHIPOLA RIVER

REMARKS:	LOCATION:	FIELD ID/NAME:
B34 TEST SITE	15c ST Smith rd Marianna hwy 71	#2

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

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

Comments

[96] **TOTAL SCORE**

ANALYSIS DATE:	ANALYST:	SIGNATURE:
12-19-94	G. BUTTS / L. DONELAN	Glenn Butts

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Marianna
County: JACKSON
Contact / District: Glenn Butts / NW
NPDES Permit #: FL0020117
LIMS Sample #: 96128 **LIMS Job #:** 94-DEC-20-29-01

Sample Collection: Date 12/19/94 Time 1045
Test Beginning: Date 12/20/94 Time 1400
Test Ending: Date 12/23/94 Time
Organism Batch #: 48 **Diluent Batch #:** 49
Organism Age: < 24 hours
Test Organism: Ceriodaphnia dubia

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	20.9 @ 21.0	8.8 @ 21.3 °C	939 @ 1000 9370 @ 10000 @ 22.2 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	22.0 @ 22.1	8.7 @ 22.0 °C	953 @ 1000 9510 @ 10000 @ 22.9 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	21.7 @ 21.8	8.5 @ 23.1 °C	1062 @ 986 9540 @ 9896 @ 22.8 °C

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED ~~Cond. (mmhos/cm)~~ Cond. (µmhos/cm) 0 hr	UNCORRECTED Cond. (µmhos/cm) 24 h	UNCORRECTED Cond. (µmhos/cm) 48 h
Control	A	5	5	5	8.2		8.3	21.7		23.6	8.2		8.2	165		175
Control	B	5	5	5			8.3			23.3			8.1			170
Control	C	5	5	5			8.3			22.7			8.3			175
Control	D	5	5	5			8.3			22.2			8.3			200
100%	A	5	5	5	7.6		8.5	21.6		23.1	8.3		8.3	425		460
100%	B	5	5	5			8.5			22.5			8.2			530
100%	C	5	5	5			8.5			22.0			8.5			565
100%	D	5	5	5			8.5			21.6			8.5			550
Recorded by:		MF	MF	MF	MF		TR	MF		TR	MF		TR	MF		TR
Measured/Loaded by:		TM	MF	MF	JD		MF	JD		MF	TM		MF	JD		MF

Investigators' Signatures

Marshall Faircloth
Debra C. Rabon
Tony McKendry

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	0.04	DPD	TM
Alkalinity (mg/L as $CaCO_3$):		75	120	Hach	TR
Hardness (mg/L as $CaCO_3$):		50	135	Hach	TM
Total ammonia (mg/L as N):	20.017	20.017	0.072	Orion	MF

Ammonia Meter #98136 Ammonia Meter Slope: -58.4 Ammonia Blank: 20.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Marianna
County: JACKSON
Contact / District: Glenn Batts / NW
NPDES Permit #: FL0020117
LIMS Sample #: 96128 LIMS Job #: 94-DEC-20-2901

Sample Collection: Date 12/19/94 Time 1045
Test Beginning: Date 12/20/94 Time 1400
Test Ending: Date 12/22/94 Time
Organism Batch #: 51 Diluent Batch #: well
Organism Age: 10 days
Test Organism: Cyprinella leedsi

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	20.9 @ 21.0	8.8 @ 21.3 °C	939 @ 1010 9370 @ 10000 @ 22.2 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	22.0 @ 22.1	8.7 @ 22.0 °C	953 @ 1000 9510 @ 10000 @ 22.9 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	21.7 @ 21.8	8.5 @ 23.1 °C	10.2 @ 98.6 9840 @ 9896 @ 22.8 °C

*wrong wrong Calibration Result MF 12/22/94

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. (µmhos/cm) 0 hr	UNCORRECTED Cond. (µmhos/cm) 24 h	UNCORRECTED Cond. (µmhos/cm) 48 h
Control	306	5	4	4	7.9	8.2	8.2	21.5	22.0	22.2	8.2	8.6	7.6	235	240	240
control	309	5	5	5	7.8	8.2	8.2			21.8	8.3	8.6	7.9	235	240	235
Control	62	5	5	5	7.8	8.2	8.2			21.8	8.3	8.8	8.4	235	235	235
Control	14	5	5	5	7.9	8.2	8.2			22.0	8.2	8.8	8.4	235	240	240
100 %	8	5	5	5	7.5	8.1	8.2	21.6	22.0	22.1	8.5	8.3	8.2	435	440	445
100 %	2	5	5	5	7.5	8.0	8.2			22.0	8.6	8.3	8.2	435	440	440
100 %	21	5	5	5	7.5	8.0	8.2			21.9	8.7	8.3	8.4	435	440	440
100 %	77	5	5	5	7.5	8.0	8.2			22.0	8.7	8.4	8.5	435	440	440
Recorded by:		TR	MF	TR	MF	TR	TR	MF	TR	TR	MF	TR	TR	MF	TR	TR
Measured/Loaded by:		TR	MF	TM	TM	MF	MF	TM	MF	MF	TM	MF	MF	TM	MF	MF

Investigators' Signatures

Marshall Faircloth
Robin G. Rader
Tina M. Kendall

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		0.04	DR 100	TM
Alkalinity (mg/L as $CaCO_3$):	125		120	Hach	TM
Hardness (mg/L as $CaCO_3$):	120		135	Hach	TM
Total ammonia (mg/L as N):	<0.017	<0.017	0.012	Orion	MF

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

Macroinvertebrate taxa list for Marianna WWTP, collected on 8 December 1994, via Hester-Dendy artificial substrates.

	Reference Site	Test site
Acarina		
Sperchon	5	–
Hygrobates	3	–
Undetermined Trombidiformes	3	–
Coleoptera		
Ancyronyx variegata	–	5
Hygrotus sp.	8	–
Macronychus glabratus	–	3
Stenelmis sp.	5	–
Stenelmis hungerfordi	3	–
Stenelmis convexula	–	3
Undetermined Coleoptera	–	3
Decapoda		
Palaemonetes paludosus	–	3
Diptera		
Corynoneura sp.	11	3
Cricotopus or *Orthocladius* sp.	3	8
Hemerodromia sp.	74	13
Labrundinia sp.	5	–
Microtendipes pedellus grp.	21	–
Orthocladius annectens	3	–
Parachironomus sp.	3	–
Parakiefferiella sp. B Epler	3	–
Parakiefferiella sp. C Epler	3	–
Polypedilum convictum grp.	111	74
Polypedilum fallax	3	5
Polypedilum illinoense grp.	3	11
Polypedilum scalaenum grp.	11	3
Rheocricotopus robacki	24	48
Rheotanytarsus sp.	8	–
Rheotanytarsus distinctissimus grp.	58	77
Rheotanytarsus exiguus grp.	323	397
Simulium sp.	151	53
Tanytarsus sp.	11	8
Tanytarsus sp. L Epler	16	5
Tanytarsus sp. A Epler	53	26
Tanytarsus sp. S Epler	3	–
Tanytarsus sp. P Epler	3	–
Tanytarsus sp. E Epler	–	11
Tanytarsus sp. M Epler	34	5
Tanytarsus sp. J Epler	13	5
Tanytarsus sp. C Epler	8	13
Tanytarsus sp. D Epler	3	–
Tanytarsus sp. T Epler	11	–

Thienemanniella sp.	69	95
Undetermined Chironomidae	204	40
Ephemeroptera		
Baetis sp.	–	3
Baetis intercalaris	50	16
Caenis sp.	–	3
Isonychia sp.	16	13
Isonychia sicca	–	5
Serratella deficiens	29	3
Stenonema sp.	–	3
Stenonema exiguum	34	13
Stenonema smithae	13	11
Stenacron interpunctatum	3	–
Undetermined Ephemeroptera	26	–
Gastropoda		
Ferrissia sp.	3	–
Ferrissia hendersoni	19	–
Isopoda		
Lirceus fontinalis	3	–
Megaloptera		
Corydalus cornuta	5	–
Oligochaeta		
Haber speciosus	3	–
Nais sp.	3	–
Nais behningi	114	16
Nais elinguis	3	–
Nais pardalis	13	–
Nais simplex	3	–
Pristinella osborni	3	–
Plecoptera		
Acroneuria sp.	3	–
Taeniopteryx sp.	–	3
Trichoptera		
Cheumatopsyche sp.	357	79
Hydropsyche sp.	53	–
Lype diversa	–	29
Neureclipsis sp.	3	–
Undetermined Polycentropodidae	5	–

Macroinvertebrate taxa list for Marianna WWTP, collected on 12 December 1994, via 20 dip net sweeps of natural substrates.

	Reference Site	Test Site
Amphipoda		
Hyalella azteca	100	–
Collembola		
Isotomurus palustris	33	–
Coleoptera		
Prionocyphon sp.	–	25
Undetermined Gyrinidae	–	25
Decapoda		
Procambarus sp.	–	25
Procambarus spiculifer	166	–
Ephemeroptera		
Baetis intercalaris	166	–
Baetisca sp.	33	–
Eurylophella temporalis	–	100
Hexagenia limbata	33	–
Serratella deficiens	133	–
Stenonema exiguum	133	50
Diptera		
Ablabesmyia mallochi	–	50
Chironomus sp.	–	50
Corynoneura taris	–	25
Cricotopus or *Orthocladius* sp.	33	50
Hemerodromia sp.	100	–
Labrundinia pilosella	–	25
Palpomyia/Bezzia grp.	–	25
Pentaneura inconspicua	33	–
Polypedilum convictum grp.	266	125
Polypedilum illinoense	–	225
Polypedilum scalaenum grp.	33	–
Rheocricotopus robacki	33	75
Rheotanytarsus distinctissimus grp.	133	–
Rheotanytarsus exiguus grp.	600	125
Simulium sp.	1833	550
Tanytarsus sp. A Epler	66	–
Thienemanniella sp.	66	–
Thienemanniella xena	–	75
Undetermined Chironomidae	233	–
Gastropoda		
Elimia athearni	33	–
Elimia curvicostata	–	100
Elimia floridensis	200	100
Somatogyrus walkerianus	100	–
Oligochaeta		
Limnodrilus hoffmeisteri	–	50

Trichoptera		
Cheumatopsyche	300	25
Hydropsyche	133	25
Oecetis cinerascens	–	25

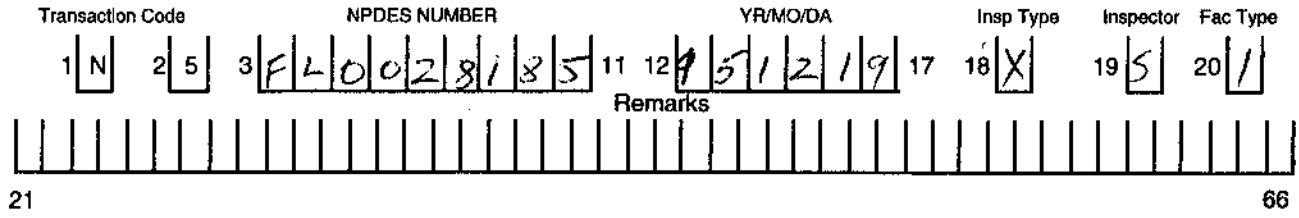
Phytoplankton taxa list for Marianna WWTP, collected on 18 December 1994, via grab sample. Abundances are in #/mL.

	Reference Site	Test Site
Chlorophyta		
Ankistrodesmus	–	11
Chlamydomonas	22	22
Protococcus	–	11
Protoderma	33	–
Undetermined Chlorophyceae	–	11
Chrysophyta		
Mallomonas	11	–
Bacillariophyta		
Undetermined Bacillariophyceae	11	11
Achnanthes	11	–
Gyrosigma	11	–
Navicula	22	11
Nitzschia	33	11
Cryptophyta		
Chroomonas	11	11
Cryptomonas	11	11
Cyanophyta		
Oscillatoria	11	22
Euglenophyta		
Euglena	–	11

Periphyton taxa list for Marianna WWTP, collected on 19 December 1994, via standard diatometers. Abundances are in #/mm^2.

	Reference Site	Test Site
Bacillariophyta		
Achnanthes clevei	558	1456
Achnanthes hungarica	279	–
Achnanthes hustedtii	–	291
Achnanthes lanceolata	139	–
Achnanthes lanceolata dubia	697	146
Cocconeis placentula	3067	6845
Cymbella minuta	139	–
Diploneis ovalis	139	–
Eunotia sp.	139	–
Eunotia exigua	–	146
Eunotia pectinalis	139	–
Gomphonema parvulum	697	146
Navicula minima	697	146
Navicula pupula	139	–
Navicula radiosa	139	–
Navicula rhynchocephala	1534	291
Navicula viridula	279	–
Nitzschia amphibia	558	–
Nitzschia constricta	139	–
Nitzschia palea	3346	291
Stauroneis obtusa	139	–
Stauroneis smithi	139	–
Surirella ovata	418	–
Synedra gaillonii	697	437
Undetermined Pennales	558	583
Chlorophyta		
Coleochaete	697	–
Oedogonium	–	146
Undetermined Oedogoniaceae	139	–
Cyanophyta		
Lyngbya	558	–
Phormidium	279	–

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)

