

Biological Assessment of

Arthur Dozier School WWTP

Jackson County

NPDES #FL0028185

Sampled October and September 1992

January 1993

Biology Section
Division of Technical Services

Department of Environmental Regulation

Results of Fifth Year Inspections

Discharger: Arthur Dozier School WWTP
County: Jackson
NPDES Number: FL0028185
State Permit Expiration Date: 5 December 1993

Toxics Sampling Inspection (XSI)

Date Sampled: 31 August 1992

Results: No organic priority pollutants or pesticides were present in the effluent at levels above detection limits. Only copper (17 µg/L) and zinc (11 µg/L) were found in the effluent in concentrations above the practical quantitation limit. None of these values represents a violation of Class III standards.

Compliance Biomonitoring Inspection (CBI)

Date Sampled: 31 August 1992

Results: The effluent sample was not toxic to the invertebrate, *Ceriodaphnia dubia*, or to the fish, *Notropis leedsi*. No mortality occurred in either 48 hour static acute bioassay (Appendix).

Impact Bioassessment Inspection (IBI)

Date Sampled: 1 September 1992

Results: While habitat was extremely limited in Dozier Ditch, measures of benthic macroinvertebrate community health generally indicated no degradation resulting from the Dozier WWTP discharge. The presence of more pollution sensitive taxa at the test site compared to the control, as well as the general similarities seen between the two communities, suggests that the facility is causing no adverse effects to the macroinvertebrate population. Overall, measurements of phytoplankton community health indicated fairly minor changes caused by the discharge. Because water flow tends to reduce free-floating algal populations, phytoplankton is not generally the target community in flowing systems. However, low water levels left the periphyton racks dry. AGP was significantly elevated (by 148%) below the Dozier WWTP. This may be a concern farther downstream, where physical conditions (*e.g.*, increased sunlight, longer retention time) may change so that nuisance plant growth would be possible.

Water Quality Inspection (WQI)

Date Sampled: 31 August 1992

Results: The discharge was responsible for greatly increasing the concentrations of certain nutrients in Dozier Ditch. Nitrate-nitrite and total phosphorus concentrations measured at the test site were higher than 95% and 90%, respectively, of other streams in Florida. The algal growth potential (AGP) increased in direct response to the nutrient additions to Dozier Ditch. Compared to the control, AGP was nearly tripled at the test site, where it was roughly six times higher than the eutrophication "problem threshold".

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 Arthur Dozier School Wastewater Treatment Plant is a 0.1 MGD (design capacity) contact stabilization treatment plant, located in Jackson County, Florida (see maps in Appendix). This facility discharges an average of 0.024 MGD of disinfected effluent to an unnamed stream (referred to in this report as Dozier Ditch) which flows to the Chipola River (the river is an Outstanding Florida Waterway).

State permit limits for the effluent are as follows: flow (monthly average of 0.1 MGD), BOD (annual average of 20 mg/L), TSS (annual average of 20 mg/L, TKN annual average of 30 mg/L), pH (6 to 8.5), chlorine residual (maximum of 0.01 mg/L at discharge), fecal coliforms (maximum of 200 organisms/100ml), and dissolved oxygen (minimum of 2 mg/L) (see facility summary in Appendix).

Previous biological studies by the DER Northwest District have documented water quality problems in Dozier Ditch attributable to the Dozier WWTP discharge. In 1986, Butts and Ray found nuisance growths of *Sphaerotilus* sp. (sewage bacteria) and *Chironomus* sp. (blood worms) below the Dozier WWTP discharge. Subsequently, the facility initiated upgrades in maintenance procedures and changed operator personnel. In 1988, Butts found that the nuisance organisms had been eliminated and that the effluent was clear, but unrealistically low in BOD (< 0.4 mg/L). These findings were attributed to a total residual chlorine of 1.8 mg/L (an acutely toxic concentration) measured during the survey. The recommendation from the 1988 survey was that the facility go to upland disposal.

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 Dozier Ditch, upstream of the discharge) and a test site (located in Dozier Ditch, downstream of the discharge) (see maps in Appendix). A habitat assessment was performed *in situ* to establish comparability between sites. Supplemental physical/chemical data were also collected on the effluent and study sites. Acute screening toxicity bioassays, using *Ceriodaphnia dubia* and *Notropis 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 DER Chemistry Laboratory.

Benthic macroinvertebrate communities were evaluated at reference and test sites. Invertebrates were collected from multiple substrates

Major characteristics of community structure of control and test sites.

	Control Site	Test Site
Macroinvertebrate Qualitative		
Number of Taxa	23	20
Florida Index	6	9
% Contribution of Dominant Taxon	19.6	16.3
% Oligochaeta	27.3	1.4
% Diptera	64.5	69.4
% Ephemeroptera	0.8	1.4
% Trichoptera	0.8	16.3
% Odonata	0	0.7
% Coleoptera	5.8	10.9
% Predators	22.3	27.9
% Collector-Gatherers	47.3	24.4
% Collector-Filterers	10.4	26.0
% Scrapers	15.4	13.8
% Shredders	4.6	7.9
Phytoplankton Algae		
Number of Taxa	10	9
% Contribution of Dominant Taxon	33.3	29.4
Chlorophyll a (ug/L)	1.1	1.6
Diatom/Diatom + B-G Abundance Ratio	1.0	0.86
% Blue-green	0	5.9
% Green	33.3	23.5
% Diatoms	11.1	35.3
% Euglenophytes	44.4	29.4
% Cryptophytes	11.1	5.9
Algal Growth Potential (mg dry wt/l)	11.7	29.0

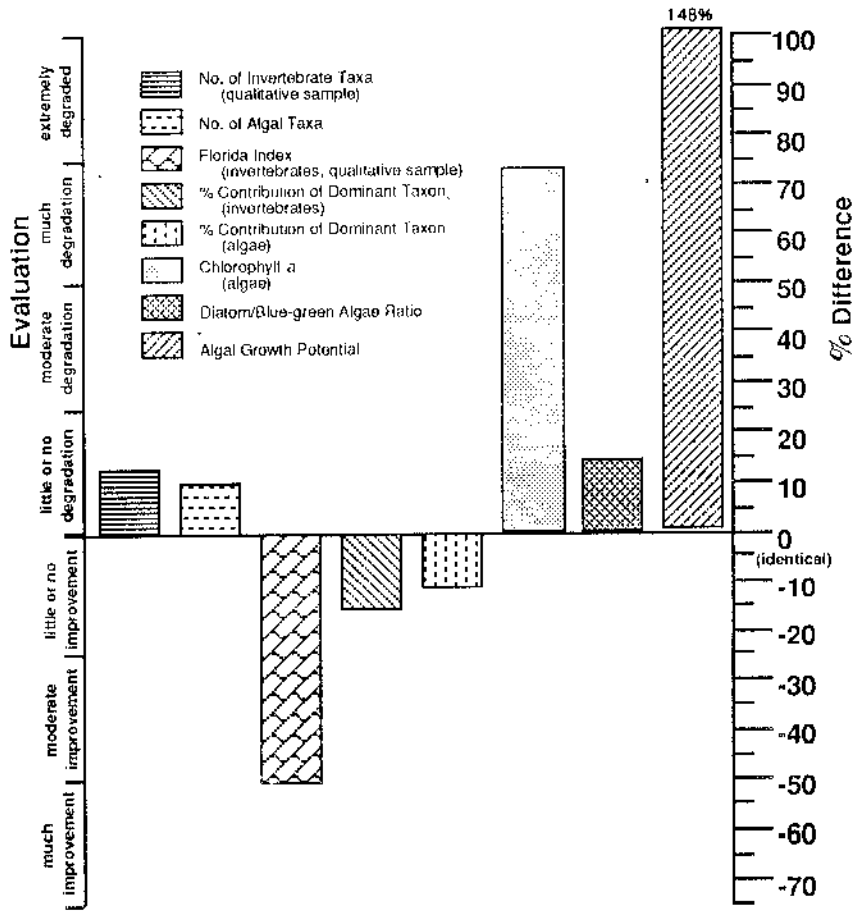
(*e.g.*, snags, leaf packs, vegetation) using discrete dip net sweeps. The system was too shallow to sample with Hester-Dendy artificial substrates or periphyton racks. Phytoplankton was sampled at both reference and test sites through subsurface grabs. Chlorophyll *a* was also determined for phytoplankton communities (Ross 1990). 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 in this report. Many of these, such as the number of taxa, and chlorophyll *a* are well known. Others are briefly explained here. 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 (*i.e.*, many clean-water organisms are present). Excessive numerical dominance of a single type of organism (a high % contribution of dominant taxon) is usually associated with disturbance. 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. The determination of the Quantitative Stability Index (for taxonomic % composition) is a two step process. First, the relative proportions of major taxonomic groups are calculated for each site. Then, the lesser of the two percentages for each discrete taxonomic group is totaled. A QSI (for % composition) of 100% means that the two sites being compared are identical. This same type of procedure is used for calculating the QSI for functional feeding groups.

For graphical purposes, the percent differences between the reference and test sites involving the number of taxa, Florida Index and the diatom to blue-green algae ratio are measured as the reference site minus test site divided by the reference site. The percent differences between sites involving the percent contribution of dominant taxon, 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: Glenn Butts (DER Northwest District) and Lyn Burton, Marshall Faircloth, Russel Frydenborg, Kathleen Lurding, Kim Pearce, and Landon Ross (Tallahassee Biology Laboratory).



Effect of discharge on receiving stream
(measured as difference between control and test sites).

Results and Discussion

While habitat scores for the reference and test sites were identical (at 20 points each), it was obvious that habitat was a limiting factor for biological success in Dozier Ditch. (Appendix). Very little productive substrate was available in Dozier Ditch, consisting predominantly of

consolidated clay with some limerock. The banks of this steeply sloped, channelized ditch were moderately eroded, vegetated primarily by the exotic Chinese privet. The facility operator stated that this vegetation is removed periodically. Observable water velocity was less than 0.05 m/sec in this very shallow (0.1 m deep), moderately shaded system. Non-point sources of pollution from urban areas and roads were apparent upstream of the reference site. Most physical/chemical measurements were fairly similar at the study areas: dissolved oxygen was above 7.9 mg/L, pH was near 6.6, and the water temperature was approximately 25° C. Specific conductance was somewhat higher below the discharge (136 µmhos/cm) than at the upstream station (74 µmhos/cm).

No organic priority pollutants or pesticides were present in the effluent at levels above detection limits. Only copper (17 µg/L) and zinc (11 µg/L) were found in the effluent in concentrations above the practical quantitation limit. None of these values represents a violation of Class III standards.

The effluent sample was not toxic to the invertebrate, *Ceriodaphnia dubia*, or to the fish, *Notropis leedsi*. No mortality occurred in either 48 hour static acute bioassay (Appendix).

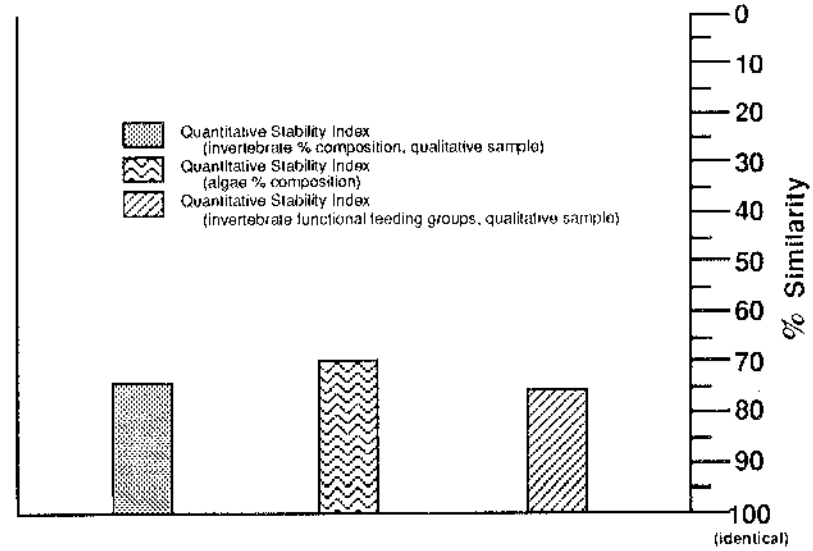
The discharge was responsible for increasing the concentrations of certain nutrients in Dozier Ditch. Nitrate-nitrite was increased from 0.19 mg/L upstream of the discharge, to 3.0 mg/L downstream of the facility. The effluent nitrate-nitrite level was 12 mg/L. Similarly, total phosphorus increased from 0.06 mg/L at the reference site, to 0.8 mg/L at the test site. The effluent total phosphorus concentration was 3.3 mg/L. Ortho-phosphate levels followed an analogous pattern. These concentrations of nitrate-nitrite and total phosphorus measured at the test site were higher than 95% and 90%, respectively, of other streams in Florida (see Table of typical water quality parameters in the Appendix).

The algal growth potential (AGP) increased in direct response to the nutrient additions to Dozier Ditch. AGP was 11.7 mg algal dry wt/L at the reference site, and rose to 29.0 mg algal dry wt/L at the test site. According to Raschke and Schultz (1987), at AGP levels above 5 mg dry wt/L, enrichment problems such as excessive algal growth and fish kills are likely to occur. The effluent AGP was 34.1 mg algal dry wt/L.

Samples for fecal and total coliform bacteria, which are normally a part of these studies, were not collected.

Measures of benthic macroinvertebrate community health generally indicated no degradation resulting from the Dozier WWTP discharge. The figure on p. 2 indicates the degree of difference between the reference and test sites. Larger differences (that is, higher percentages) correspond with greater degrees of degradation. Negative values mean that the test site is better than the reference site. The relative abundance of each individual taxon appears in the Appendix. The figure on this page summarizes similarities between the sites. Smaller similarities (lower percentages) generally correspond with greater degradation.

While macroinvertebrate taxa richness was decreased by 13% between the control and test sites, the Florida Index was increased by 50%. The QSI for % composition and functional feeding groups indicated that the benthic assemblages inhabiting the study sites were fairly similar. Two taxa were co-dominant at the test site (the trichopteran, *Cheumatopsyche* sp., and the dipteran, *Tanytarsus* sp. T Epler), while the most abundant organism at the reference site was the oligochaete, *Eclipidrilus* sp. The % contribution of the dominant taxon decreased by 15.2 % from the reference to test site. The presence of more pollution sensitive



Effect of discharge on receiving stream
(measured as similarity between control and test sites).

taxa at the test site compared to the control, as well as the general similarities seen between the two communities, suggests that the facility is causing no adverse effects to the macroinvertebrate population.

Most measurements of phytoplankton community health indicated fairly minor changes caused by the discharge. Because water flow tends to reduce free-floating algal populations, phytoplankton is not generally the target community in flowing systems. However, low water levels left the periphyton racks dry. Comparing the upstream site to the downstream site, phytoplankton taxa richness was reduced by 10%, the diatom to blue-green ratio was decreased by 14%, while the % contribution of the dominant taxon was improved by 11.7%. The increase in chlorophyll *a* observed at the test site, although appearing rather substantial on the graph, represented an absolute change of only 0.5 µg/L. As mentioned earlier, AGP was significantly elevated (by 148%) below the Dozier WWTP. This may be a concern farther downstream, where physical conditions (*e.g.*, increased sunlight, longer retention time) may change so that nuisance plant growth would be possible.

Conclusions

No organic priority pollutants or pesticides were present in the effluent at levels above detection limits. Only copper (17 µg/L) and zinc (11 µg/L) were found in the effluent in concentrations above the practical quantitation limit. None of these values represents a violation of Class III standards.

The effluent sample was not toxic to the invertebrate, *Ceriodaphnia dubia*, or to the fish, *Notropis leedsi*. No mortality occurred in either 48 hour static acute bioassay (Appendix).

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While habitat was extremely limited in Dozier Ditch, measures of benthic macroinvertebrate community health generally indicated no degradation resulting from the Dozier WWTP discharge. The presence of more pollution sensitive taxa at the test site compared to the control, as well as the general similarities seen between the two communities, suggests that the facility is causing no adverse effects to the macroinvertebrate population.

Overall, measurements of phytoplankton community health indicated fairly minor changes caused by the discharge. Because water flow tends to reduce free-floating algal populations, phytoplankton is not generally the target community in flowing systems. However, low water levels left the periphyton racks dry. AGP was significantly elevated (by 148%) below the Dozier WWTP. This may be a concern farther downstream, where physical conditions (*e.g.*, increased sunlight, longer retention time) may change so that nuisance plant growth would be possible.

Literature Cited

Butts, G. L. and D. H. Ray. 1986. Source Assessment of Dozier School for Boys. FDER Northwest District, Technical Assistance Section. 10p.

Butts, G. L. 1988. Source Assessment of Dozier School for Boys. FDER Northwest District, Technical Assistance Section. 10p.

Miller, W. E., T. E. Maloney, and J. C. Greene. 1978. The Selenastrum capricornutum Printz algal assay bottle test. U. S. Environ. Prot. Agency, EPA-600/9-78-018. 126 p.

Weber, C. I. 1991. Methods for measuring the acute toxicity of effluents to freshwater and marine organisms. 4th edition. EPA/600/4-90/027. U. S. EPA, Cincinnati, Ohio. 216 pp.

Raschke, R. L. and D. A. Schultz. 1987. The use of the algal growth potential test for data assessment. J. Wat. Poll. Cont. Fed. 59(4): 222-227.Ross, L. T. 1990. Methods for aquatic biology. Fla. Dept. Environ. Reg. Tech. Ser. 10(1): 1-47.

Chemistry summary table for

Dozier School WWTP.	**Effluent**	**Control Site**	**Test Site**
Organic Constituents (ug/L)			
None Detected	U		
Metals (ug/L)			
Aluminum	50 U		
Arsenic	20 U		
Cadmium	0.08 U		
Copper	10		
Chromium	10 U		
Iron	9 T		
Lead	15 U		
Mercury	0.1 U		
Nickel	5 U		
Silver	0.14 U		
Zinc	11		
Nutrients (mg/L)			
Ortho-phosphate	3.4 A	0.028 T	0.86 A
Total phosphorus	3.3	0.06 A	0.84
Ammonia	0.02 T	0.03 T	0.029 T
Nitrate+Nitrite	12	0.19 A	3.0 A
TKN	0.33	0.28 A	0.34
Other Parameters			
Habitat Assessment		20	20
D.O. (mg/L)		8.2	7.9
pH (SU's)	7.5	6.6	6.8
Conductivity (µmhos/cm)	323	74	136
Temperature (°C)		24.9	25.2
AGP (mg dry wt/L)	34.1	11.7	29.0
Hardness (mg/L)	116		
Bioassay Fish-Unchlorinated	Not toxic		
Bioassay Invertebrate-Unchlorinated	Not toxic		

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

J - Estimated value

K - Actual value is known to be less than value given

L - Actual value is known to be greater than value given

N - Presumptive evidence of presence of material

O- Sampled, but analysis lost or not performed

Q - Sample held beyond normal holding tome

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

T- Value reported is less than the practical quantitation limit

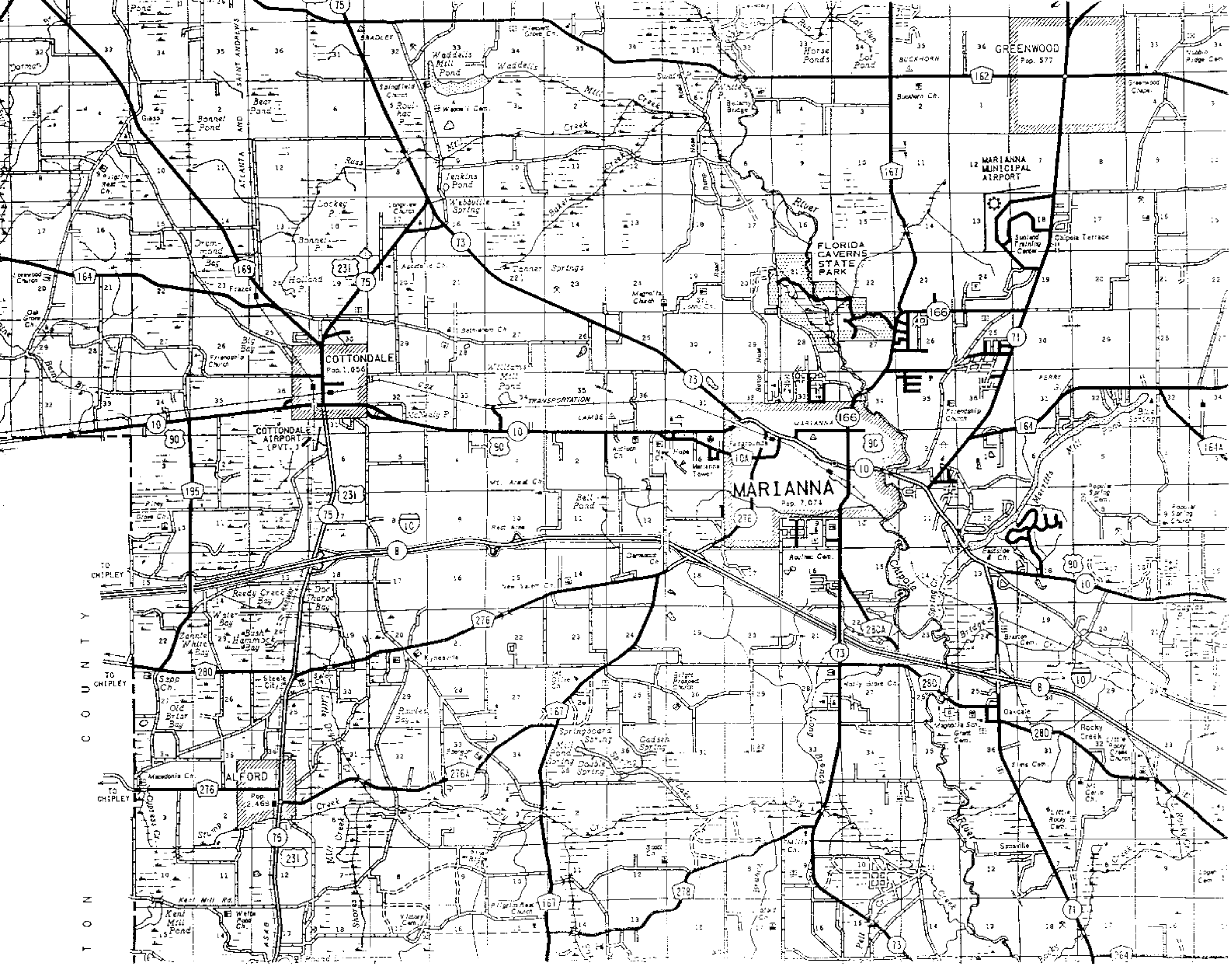
Typical Values for Selected Parameters in Florida Waters

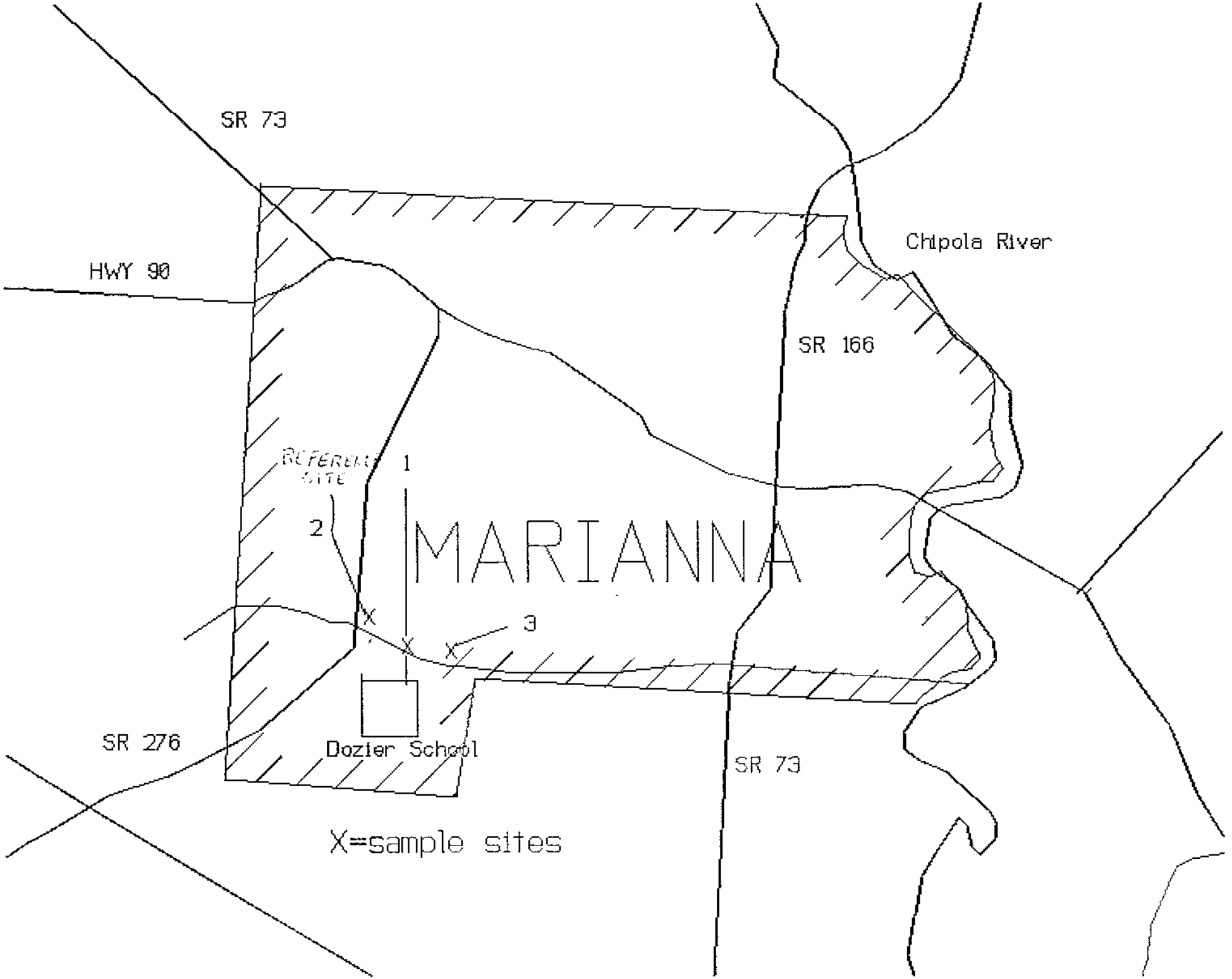
Adapted from Joe Hand, FDER, personal communication, 1991
(data was collected between 1980 and 1989)

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


GREENWOOD
Pop. 577
MARIANNA MUNICIPAL AIRPORT
FLORIDA CAVERNS STATE PARK
MARIANNA
Pop. 7,074
COTTONDALE
Pop. 1,056
COTTONDALE AIRPORT (PVT.)
ALFORD
TO CHIPLEY
TO CHIPLEY
TO CHIPLEY
TON COUNTY


SR 73
HWY 90
Chipola River
SR 166
REFERENCE SITE
1
2
3
MARIANNA
Dozier School
SR 276
SR 73
X=sample sites

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
FACILITY SUMMARY

Facility Name: DOZIER SCHOOL		Date Summary Prepared :
Location (attach detailed map):	County JACKSON	District NORTHWEST
Federal Permit # FL0028185 and expiration date: 6-30-97	State GMS # and 103ZS00742 State expiration date: 12-5-93	Facility Type: Industrial Municipal Federal Agricultural Other (list):

Function of facility: TO TREAT SANITARY AND CAFETERIA WASTE WATER FROM STATE JUVENILE TRAINING SCHOOL

Description of treatment process:

CONTACT STABILIZATION WITH RECLAIMED WATER DISCHARGE TO SURFACE WATERS BY DITCH, SLUDGE TREATMENT BY AEROBIC DIGESTION AND DRYING BEDS.

Receiving waters: CHIPOLA RIVER		Classification: I II (III)
Design Flow: 0.1 MGD	Mean Flow: 0.024 MGD	Flow during survey:

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

therefore, the best time to sample is:

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

NO MIXING ZONE

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

Parameter	Limit (units)
FLOW	0.1 MGD MAX. MO. AVG.
pH EFF	6.0 MIN., 8.5 MAX.
Cl_2 RESIDUAL	0.01 MG/L MAX.
BOD_5	20 MG/L MAX. AN. AVG.
TSS	20 MG/L MAX. AN. AVG.
FECAL COLIFORM	200/100 ML MAX.
TKN	30 MG/L MAX. AN. AVG.
DO	2 MG/L MIN.

Describe special permit conditions and permit modifications:

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 3)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:

REMARKS:	LOCATION:	FIELD ID/NAME:

RIPARIAN ZONE/INSTREAM FEATURES

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

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

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):	Estimated System Depth (range, m):	yes
High Water Mark (m above bed):	Velocity (range, m/s):	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: ☐ Other: ☐

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

WATER QUALITY

	Temp. (°C):	D.O. (mg/l):	pH (SU):	Cond. (µmho/cm):				Secchi (m)
Top								
Mid-depth								
Bottom								

System Type : Stream: ☐ (Surficial Aquifer Fed / Deep Aquifer Fed / Alluvial / Blackwater) Lake: ☐ Wetland: ☐ Estuary: ☐ Other: ☐

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

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

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

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

Weather Conditions:

1234P

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

ANALYSIS DATE:	ANALYST:	SIGNATURE:

FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

SUBMITTING AGENCY CODE: SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:

REMARKS:	LOCATION:	FIELD ID/NAME:

Habitat Parameter score	Excellent	Good	Fair	Poor
Bottom Substrate/ Available Cover	Greater than 40% snags, logs, tree roots, emergent vegetation, leaf packs, undercut banks, rubble, or other stable habitat. **23-30 points**	20% to 40% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Adequate habitat. **16-22 points**	5% to 20% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Less than desirable habitat. **8-15 points**	Less than 5% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Lack of habitat is obvious. **0-7 points**
Water Velocity	Max. observed; >0.3 m/sec. **23-30 points**	Max. observed; 0.1 to 0.3 m/sec **16-22 points**	Max. observed; 0.05 to 0.1 m/sec **8-15 points**	Max. observed; <0.05 m/sec **0-7 points**
Artificial Channel/ Flow Alteration	No artificial channelization. Little activity (impervious surface) in watershed which would cause scouring during spates. **12-15 points**	—	—	Artificially channelized, or scouring present during spates because of excess impervious surface in watershed. **0-3 points**
Bank Stability	Stable. No evidence of erosion or bank failure. Little potential for future problems. **9-10 points**	Moderately stable. Infrequent or small areas of erosion, mostly healed over. **6-8 points**	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. **3-5 points**	Unstable. Many raw, eroded areas. Obvious bank sloughing. **0-2 points**
Riparian Zone Vegetation Quality	Over 80% of streambank surfaces consist of native plants, classified as: bottomland hardwoods, understory shrubs, or non-woody macrophytes. **9-10 points**	50% to 80% of riparian zone is vegetated, but one class of plants is not represented. **6-8 points**	25% to 50% of riparian zone is vegetated, but one or two classes of plants are not represented. **3-5 points**	Less than 25% of streambank surfaces are vegetated. Poor plant community (e.g. grass monoculture) present. **0-2 points**

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

COMMENTS:

ANALYSIS DATE:	ANALYST:	SIGNATURE:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 3)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:

REMARKS:	LOCATION:	FIELD ID/NAME:

RIPARIAN ZONE/INSTREAM FEATURES

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

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

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):	Estimated System Depth (range, m):	yes
High Water Mark (m above bed):	Velocity (range, m/s):	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: ☐ ☐ Other: ☐

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

WATER QUALITY

	Temp. (°C):	D.O. (mg/l):	pH (SU):	Cond. (µmho/cm):				Secchi (m)
Top								
Mid-depth								
Bottom								

System Type : Stream: ☐ (Surficial Aquifer Fed / Deep Aquifer Fed / Alluvial / Blackwater) Lake: ☐ Wetland: ☐ Estuary: ☐ Other: ☐

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

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

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	☐	☐	☐	☐

ANALYSIS DATE:	ANALYST:	SIGNATURE:

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

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

COMMENTS:

ANALYSIS DATE:	ANALYST:	SIGNATURE:

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: Dozier School
Address/City:
County:
Contact/District: Glenn Battles / Northwest
NPDES Permit #: FL00 28185 Outfall #:

Sample Collection: Date 8-31-92 Time 1100
Test Beginning: Date 9/1/92 Time 1300
Test Ending: Date 9-3-92 Time 1300
Test Organism: Mysidopsis bahia
Life Stage/Age: 4th 10 days
mf 9/1/92 Culture Origin: Mysidopsis bahia

Test Number: 2 of 2 Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

40251 92-SEP-01-09
entered 9/3

Remarks:

Instrument Calibrations:

	pH	DO	Temp	Cond
0 hr	7.0, 7.0, 10.0	8.5 @ 24°C	24.0 @ 24.0	988 / 9810 @ 24.0
24 hr	7.0, 7.0, 10.0	8.7 @ 23°C	22.8 @ 22.8	976 / 9700 @ 23.2 C
48 hr	7.0, 7.0, 10.0	8.5 @ 24.0	23.9 @ 23.9	9650 / 972 @ 24.0

		Number Live			pH			Temp. (°C)			DO (mg/L)			Cond. (µmhos/cm)		
Conc.	Chamber #	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	30	5	5	5	7.9	8.3	8.4	24.0	22.5	23.3	9.0	8.8	8.4			
Control	147	5	5	5	7.9	8.3	8.4				9.0	8.8	8.4	245	239	249
100%	326	5	5	5	7.5	8.1	8.2	22.2	22.5	23.3	9.3	8.9	8.5			
100%	68	5	5	5	7.5	8.1	8.2				9.3	8.9	8.5	323	326	339
Measured/Loaded by:		MF	MF	KP	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by:		MF	MF	KP	MF	MF	KP	KP	MF	KP	KP	MF	KP	MF	MF	KP

Investigators' Signatures
Kim Pearce
Marshall Faircloth

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:			not detected		
Lab Tot. Resid. Cl2:	0.0		0.0	DE 100	KP
Alkalinity:	121	72	83	Hach	KP
Hardness:	127	76	116	Hach	KP
Total Ammonia:	0.0	0.0	0.0	Orion	MF

Ammonia Meter Slope: -56.1
Ammonia Blank: 0.0
Salinity Sample: 0 ppt

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: Dozier School
Address/City:
County:
Contact/District: Glenn Battles / Northwest
NPDES Permit #: FL00 2818 5 Outfall #:

Sample Collection: Date 8-31-92 Time 1100
Test Beginning: Date 9/1/92 Time 1300
Test Ending: Date 9-3-92 Time 1300
Test Organism: Ceriodaphnia dubia
Life Stage/Age: < 24 hours

Test Number: 1 of 2 Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

40251 92-SEP-01-09
entered 9/3

Remarks:

Instrument Calibrations:

	pH	DO	Temp	Cond
0 hr	7@7,10@10	8.5@24.0°C	24.0@24.0°C	988 980@24.0°C
24 hr	7@7,10@10	8.7@23°C	22.8@22.8	996 [illegible]@23.2
48 hr	7@7,10@10	8.5@24.0	23.9@23.9	972/965.0@24.0

		Number Live			pH			Temp. (°C)			DO (mg/L)			Cond. (µmhos/cm)		
Conc.	Chamber #	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	A	5	5	5	8.1		8.3	23.0		24.8	9.4		8.4	152		170
Control	B	5	5	5			8.3						8.4			
Control	C	5	5	5			8.3						8.4			
Control	D	5	5	5			8.3						8.4			
100%	A	5	5	5	7.5		8.4	22.8		24.8	9.2		8.4	310		328
100%	B	5	5	5			8.4						8.4			
100%	C	5	5	5			8.4						8.4			
100%	D	5	5	5			8.4						8.4			
Measured/Loaded by:		MF	MF	MF	MF		MF	MF		MF	MF		MF	MF		MF
Recorded by:		KV	MF	KP	MF		KP	KP		KP	KP		KP	MF		KP

Investigators' Signatures

Kim Pearce
Marshall Faircloth

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:			not detected		
Lab Tot. Resid. Cl2:	0.0	0.0	0.0	DR-100	KP
Alkalinity:	121	72	83	Hach	KP
Hardness:	127	76	116	Hach	KP
Total Ammonia:	0.0	0.0	0.0	Orion	MF

Ammonia Meter Slope: -56.1 Ammonia Blank: 0.0 Salinity Sample: 0

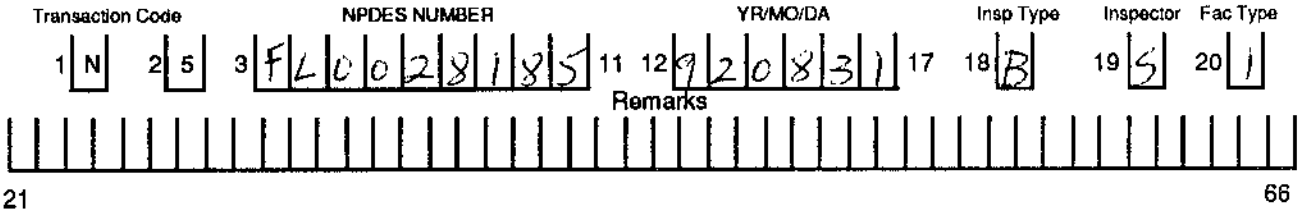
Taxa list for Dozier School WWTP, collected via 20 discrete dip net sweeps above and below the discharge on 1 September 1992.

	Reference Site	Test Site
Coleoptera		
Celina sp.	1	–
Hydaticus sp.	1	–
Macronychus glabratus	–	2
Stenelmis sp.	5	14
Diptera		
Ablabesmyia mallochi	2	10
Undetermined Chironomidae sp.	–	1
Cladotanytarsus sp.	2	–
Conchapelopia sp.	10	9
Cricotopus bicinctus	5	–
Cricotopus/Orthocladius grp.	–	1
Cryptochironomus sp.	8	10
Guttipelopia guttipennis	1	–
Polypedilum convictum grp.	–	7
Polypedilum illinoense	2	1
Polypedilum scalaenum	4	4
Polypedilum tritum	3	22
Rheotanytarsus exiguus grp.	–	4
Saetheria sp.	4	2
Tanytarsus sp. C Epler	13	7
Tanytarsus sp. T Epler	19	24
Tanytarsus sp. U Epler	5	–
Ephemeroptera		
Baetis frondalis	1	2
Gastropoda		
Physella sp.	1	–
Odonata		
Argia sedula	–	1
Oligochaeta		
Bratislava unidentata	1	–
Eclipidrilus palustris	7	–
Eclipidrilus sp.	24	1
Undetermined Enchytraeidae	1	–
Limnodrilus hoffmeisteri	–	1
Trichoptera		
Cheumatopsyche sp.	1	24

Phytoplankton taxa list for Dozier School, collected via subsurface grabs in Dozier Ditch, 31 August, 1992.

	Reference Site	Test Site
Diatoms		
Achnanthes sp.	26	–
Gomphonema sp.	–	25
Navicula sp.	–	49
Nitzschia sp.	51	49
Surirella sp.	–	25
Chlorophyta		
Coelastrum sp.	26	25
Crucigenia sp.	26	–
Scenedesmus sp.	103	74
Tetraedron sp.	26	–
Unknown chlorophyte flagellate	51	
Cryptophyta		
Cryptomonas sp.	77	25
Cyanophyta		
Chroococcus sp.	–	25
Euglenophyta		
Trachelomonas sp.	77	–
T. volvocina	231	124

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)

