

Biological Assessment of

Florida State Hospital WWTP

Gadsden County

NPDES #FL0031402

Sampled May 2000

December 2000

Biology Section

Bureau of Laboratories

Division of Resource Assessment and Management

Comprehensive Quality Assurance Plan No. 870346G

Florida Department of Environmental Protection
Fifth Year Inspection Summary

Discharger:	Florida State Hospital
County:	Gadsden
NPDES Permit Number:	FL0031402
Permit Expiration:	March 1, 2001

Toxics Sampling Inspection (XSI)

Date Sampled: 16 May 2000

Results: The metals cadmium, copper, lead, nickel, silver, and zinc were detected in the effluent at levels that complied with class III water quality standards (Table 1). Test site samples of copper (10.1 µg/L) and iron (2930 µg/L) were detected at levels that exceeded Class III water quality standards and therefore violate Rules 62-302.530(24) and (39) FAC, respectively. Lead concentrations at the control site (0.58 µg/L) and at the test site (11.2 µg/L) exceeded the Class III water quality standard (Rule 62-302.530 (40) FAC). No organic constituents were detected in the effluent samples.

Compliance Biomonitoring Inspection (CBI)

Date Sampled: 16 May 2000

Results: The effluent sample was not toxic to the vertebrate *Cyprinella leedsi* or to the invertebrate *Ceriodaphnia dubia* during the 48-hour acute screening bioassays.

Impact Bioassessment Inspection (IBI)

Date Sampled: 16 May 2000

Results: In the qualitative samples, there were reductions in the Florida Index, and taxa richness at the test site compared to the control site. However, the composite SCI score placed both study sites in the "excellent" category. Similar shifts were seen in the quantitative samples, the number of taxa, and the Florida Index were somewhat lower at the test site compared to the control site. The diversity, on the other hand, was slightly higher at the test site relative to the control site.

Water Quality Inspection (WQI)

Date Sampled: 16 May 2000

Results: Most of the test site nutrient levels were extremely elevated compared to the control site. For example, there was a 2,471% increase in ortho-phosphate, a 919% increase in total phosphorus, a 420% increase in nitrate+nitrite, and a 118% increase in total nitrogen at the test site compared to the control site. The effluent nutrients appeared to be the source of the increases at the test site. Total phosphorus (2.8 mg/L), ortho-phosphate (2.5 mg/L), and nitrate+nitrite (2.9 mg/L) concentrations were elevated in the effluent relative to study sites. The test site conductivity (153 µmhos/cm) was elevated relative to control site conductivity (58 µmhos/cm). The effluent conductivity was 421 µmhos/cm. Both study sites and the effluent exceeded the AGP "problem threshold". The control site AGP (8.5 mg dry wt/L) was 70% higher than threshold while the test site (45.7 mg dry wt/L) exceeded it by over 900%. The effluent AGP was 89.4 mg dry wt/L. These AGP values imply increased ambient nutrient enrichment in addition to significant nutrient input from the effluent.

Biological assessments are prepared by FDEP staff to provide information for review of NPDES permit renewal applications. Biological assessments, in conjunction with other information concerning the subject facility and its receiving-water body, are used to determine appropriate permit conditions.

Introduction

The Florida State Hospital is located in the northwest corner of Gadsden County, in the City of Chattahoochee (see locus map in the Appendix). Florida State Hospital is permitted to operate a domestic wastewater treatment facility. Activities at the facility include treatment of industrial wastewater using an extended aeration activated sludge system utilizing a chlorine drip system. The effluent is continuously discharged via an unnamed creek designated as Outfall D001 into Class III Mosquito Creek, a tributary of the Apalachicola River.

There may be additional contributing inputs from Florida State Hospital going into the unnamed creek. Headwaters of the unnamed creek are upstream of the WWTP discharge and may be recieving inputs from other hospital sources.

The design flow of the Florida State Hospital wastewater system is 1.30 MGD and the flow during this survey was 0.40 MGD.

Florida State Hospital currently operates under Administrative Order (AO) No.: AO009NW, due to the inability of the treatment facility to comply with its permit requirements of March 31, 1995. The AO establishes a compliance schedule with temporary effluent limitations for the following parameters: carbonaceous biological oxygen demand, 5 day, total suspended solids, total nitrogen, total phosphorus, and dissolved oxygen (see Administrative Order in Appendix).

State permit limits and AO limits for the effluent are listed in Table 1. Florida Department of Environmental Protection (FDEP) review of the monthly operating reports from the Florida State Hospital indicate that they have maintained satisfactory compliance with the permit limits and Rule 62-302 (see Facility Summary in Appendix).

Methods

The purpose of this investigation was to determine the effects of the Florida State Hospital wastewater discharge on Mosquito Creek from Outfall D001. To establish discharge effects, a comparison of biological community health was made between two field designated sites: a control site, located 20 meters upstream and north of the confluence with the unnamed creek, and a test site, 20 meters downstream and south of the confluence. Habitat assessments were performed in situ establishing comparability between each site. Supplemental physical and chemical data were also collected from the effluent site and field sites. Effluent from the Florida State Hospital was analyzed for nutrients, metals, and volatile organics. Data for this report was collected on May 16, 2000.

Using the invertebrate species, *Ceriodaphnia dubia*, and the vertebrate species, *Cyprinella leedsi*, as test organisms, acute screening toxicity bioassays were conducted on an effluent sample. Also, bacterial populations were analyzed for total and fecal coliforms.

Benthic macroinvertebrate communities from all field sites were evaluated. Quantitative invertebrate collections were done using Hester-Dendy multiplate samplers incubated for 28 days. For qualitative measurements, the invertebrates were collected from different substrate types such as snags, leaf packs and aquatic vegetation using 20 discrete dip-net sweeps.

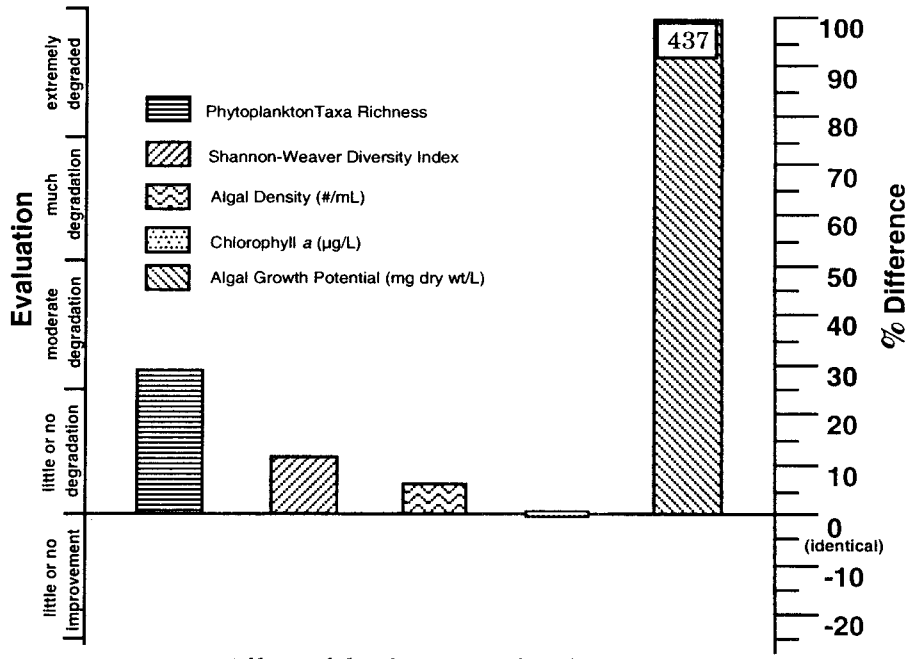


Figure 1. Effect of discharge on the phytoplankton community.

Table 1. Effluent limits and summary of chemistry data.

Florida State Hospital WWTP	Effluent Limits	Effluent Sample	Control Site		Test Site	
Organic Constituents (µg/L)						
None detected	-	-	-		-	
Metals (µg/L)			Limits	/ Sample	Limits	/ Sample
Aluminum	1500 **	180 U	-	540 I	-	5040
Arsenic	36 **	4.0 U	-	4.0 U	-	4.0 U
Cadmium	1.4 b**	0.093 I	0.4 b	0.040 U	0.8 b	0.0971 I
Chromium	264.5 b**	0.7 U	62.9 b	0.81 I	145.7 b	6.9
Copper	15.3 b**	11.5	3.4 b	1.8 I	8.2 b	10.1 A
Iron	300 **	89 A	1000 **	731	1000 **	2930 AJ
Lead	4.7 b**	1.35 A	0.5 b	0.58 I	1.8 b	11.2
Nickel	203.1 b**	3.7 I	46.1 b	1.3 U	109.7 b	5.0
Selenium	71 **	1.20 U	5.0 **	1.20 U	5.0 **	1.20 U
Silver	0.07 **	0.0493 I	0.07 **	0.030 U	0.07 **	0.0516 I
Zinc	136.6 b**	55.9	30.9 b	1.5 U	73.7 b	43.1
Nutrients (mg/L)						
Ortho-phosphate	-	2.5	0.014		0.36	
Total phosphorus	-	2.8 A	0.052		0.53 A	
Ammonia	-	0.031	0.091		0.082	
Nitrate+nitrite	-	2.9 J	0.10 J		0.52 J	
TKN	-	0.75 A	0.52		0.83 A	
Organic Nitrogen	-	0.719	0.429		0.748	
Total Nitrogen	15.0 ^	3.65	0.62		1.35	
General Physical-Chemical Parameters						
Habitat Assessment	-	-	126		122	
DO (mg/L)	> 5.0 ^	8.4	7.0		7.5	
pH (SU)	6.0 - 8.5 *	6.9	7.0		7.6	
Conductivity (µmhos/cm)	1275 **	421	58		153	
Temperature (°C)	-	24.9	24.8		24.0	
Flow (MGD)	1.3 ^	0.4	-		-	
Hardness (mg $CaCO_3$)	-	134	23		65	
CBOD 5day (mg/L)	10.0 ^	-	-		-	
TSS (mg/L)	15.0 ^	-	-		-	
AGP (mg dry wt/L)	-	89.4 A	8.5		45.7	
Toxicity (48-hour static, screening bioassay)						
Bioassay - Vertebrate	NOEC	Not Toxic Q	-		-	
Bioassay - Invertebrate	NOEC	Not Toxic Q	-		-	
Microbiology (# counts/100mL)						
Fecal Coliforms	800 ^	2 Q	14 Q		66 Q	
Total Coliforms	2400 **	170 Q	350 Q		4800 Q	

^ Administrative Order Limit
* Permit limit
** Class III water quality standard
NOEC - No Observable Effect Concentration
b - hardness based caculation
A - Value reported is the mean of two or more determinations
I - Value reported is < the minimum quantitation limit, and > the minimum detection limit
J - Estimated value
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the minimum detection limit

Table 2. Community structure of control and test sites.

Florida State Hospital WWTP	Control Site	Test Site
Phytoplankton Algae		
Number of Taxa	41	29
Shannon-Weaver diversity	4.9	4.36
Chlorophyll a (µg/L)	1	1
Algal Density (#/mL)	237	252
Diatom/Diatom + B-G Ratio	0.9	1
% Blue-green	7.8	0.0
% Green	21.1	4.2
% Diatoms	69.5	94.4
Periphyton Algae		
Number of Taxa	-	12
Shannon-Weaver diversity	-	1.96
Chlorophyll a (mg/m2)	-	24.0
Algal Density (#/cm2)	-	368,907
Diatom/Diatom + B-G Ratio	-	1
%Blue-green	-	0.5
% Diatoms	-	99
AGP (mg dry wt/L)	8.5	45.7

Sampling for periphyton was conducted at the two sites by incubating glass microscope slides in a standard periphytometer for 28 days. Unfortunately, field conditions resulted in the loss of the periphytometer at the Mosquito Creek control site. Phytoplankton were sampled by subsurface grabs. Chlorophyll *a* was determined for both phytoplankton and periphyton communities using laboratory spectrophotometer analyses. Algal Growth Potential (AGP) is measured via algal response of the test organism *Selenastrum capricornutum*. All field and laboratory methods for FDEP investigations are carried out following the Bureau of Laboratory's Standard Operating Procedures (SOP's), which may be reviewed at www.floridadep.org/labs/sops.htm.

Nine measurements of macroinvertebrate and algal community health have been used to determine the effects of the discharge on those community assemblages in the receiving water. These measurements are: algal biomass; community composition; functional feeding groups; habitat assessment; taxa richness; Ephemeroptera-Plecoptera-Trichoptera (EPT) Index; Florida Index; Stream Condition Index (SCI); and Shannon-Weaver Diversity Index. For a brief review of each of these measurements, see *Explanation of Measurements of Community Health* in the Appendix.

For graphical purposes, the percent difference for: diatom to blue-green algae ratio, diversity index, number of taxa, EPT Index, Florida Index, and % filter-feeders is calculated as the control site minus the test site divided by the control site. The percent difference for algal density, algal growth potential, and chlorophyll *a* is calculated as the test site minus the control site divided by the control site.

The Florida Department of Environmental Protection personnel involved in this investigation were field biologists from the Central Biology Laboratory in Tallahassee: Frank Butera, Mike Heyn, Edwin Loschi, and Johnny Richardson, also from the Central Biology Laboratory in Tallahassee: Scott Bryan, Rob Buda, Melva Campos, Maosen Hua, Meiqin

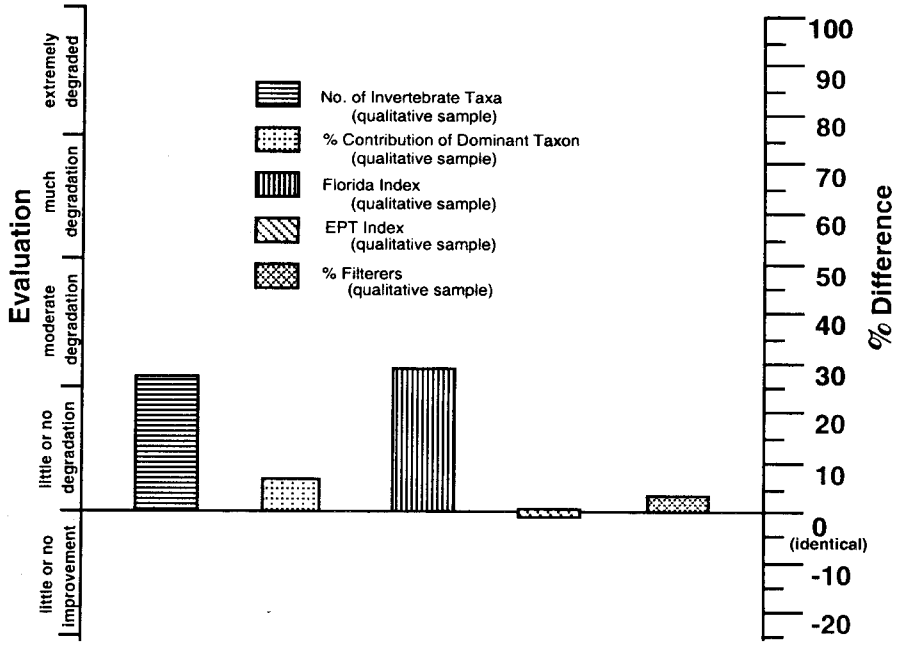


Figure 2. Effect of discharge on the macroinvertebrate community.

Table 3. Benthic community structure of control and test sites.

Florida State Hospital WWTP	Control Site	Test Site
Macroinvertebrate Qualitative		
% Dominant Taxon	8.2	8.8
EPT Index	5	5
Florida Index	28	20
Number of Taxa	59	43
Stream Condition Index	31	29
Community Composition		
% Amphipoda	6.5	8.8
% Coleoptera	8.2	3.9
% Diptera	35.3	29.4
% Ephemeroptera	10.3	7.8
% Gastropoda	13.8	16.7
% Odonata	0.4	0.0
% Oligochaeta	1.7	10.8
% Pelecypoda	5.6	3.9
% Trichoptera	12.9	12.8
Functional Feeding Groups		
% Burrowing Deposit Feeders	1.3	9.8
% Predators	20.9	11.8
% Surface Deposit Feeders	30.4	27.9
% Suspension Feeders/Filterers	12.7	12.3
% Scrapers	21.1	21.1
% Shredders	11.2	13.2
Macroinvertebrate Hester-Dendy		
% Dominant Taxon	44.8	22.9
EPT Index	5	5
Florida Index	29	26
Number of Taxa	45	31
Shannon-Weaver Diversity	3.26	3.69
Community Composition		
% Coleoptera	1.4	3.1
% Diptera	23.0	48.3
% Ephemeroptera	66.7	18.8
% Gastropoda	4.3	1.2
% Trichoptera	3.9	28.0
Functional Feeding Groups		
% Predators	9.5	5.9
% Surface Deposit Feeders	67.6	35.4
% Suspension Feeders	4.7	48.1
% Scrapers	16.1	8.2
% Shredders	1.8	2.2

Chen, Ken Espy, Marshall Faircloth, Shannon Gerardi, Joy Jackson, Isaura Lorenzo-Perez, Elizabeth Miller, Chelsea Paparigian, Della Parker-Hanson, Urania Quintana, Julie Riley, Gitta Schmitt, Karla Whiddon, and Steve Wolfe. The Point Source Studies Review Committee reviewed this report: Dr. Wayne Magley, Michael Tanski, Chuck Ziegmont, and District representatives.

Results

The results for this report are presented in Tables 1-3.

Discussion

Habitat assessment scores placed both study sites in the "optimal" category. The test site (with 122 points) lost a few points relative to the control site (126 points) because of a slightly higher incidence of habitat smothering. A silt plume was observed entering Mosquito Creek at its confluence with the unnamed creek. The plume appears to be the source of the habitat smothering at the test site (see Habitat Assessment sheets in Appendix). Except for conductivity, all of the general physical parameters were similar between the control and test sites and complied with Class III water quality standards (Table1). The test site conductivity (153 µmhos/cm) increased 164% above the background level at the control site (58 µmhos/cm). The effluent conductivity was 421 µmhos/cm and appears to be the cause of the increase at the test site.

The metals cadmium, copper, iron, lead, nickel, silver, and zinc

were detected in the effluent at levels that complied with Class III water quality standards (Table 1). No organic constituents were detected in the effluent samples. In the test site samples concentrations of copper (10.1 µg/L) and iron (2930 µg/L) were detected at levels that exceeded Class III water quality standards and therefore violate Rules 62-302.530 (24), and (39) FAC, respectively. The lead concentrations at the control site (0.58 µg/L) and at the test site (11.2 µg/L) exceeded the Class III water quality standard (< 0.50 µg/L) (Rule 62-302.530 (40) FAC).

The effluent sample was not toxic to the vertebrate, *Cyprinella leedsi,* or to the invertebrate *Ceriodaphnia dubia,* using the 48-hour test and the chronic bioassay test (Appendix).

The test site total coliform count (4,800 counts/100ml) appeared to have exceeded the Class III water quality standard (2,400 counts/100ml), however, the samples were analyzed outside of the SOP specified holding time and therefore cannot be considered a violation of Class III standards. All other bacteriological results appeared to comply with permit limits and Class III water quality standards (Table 1).

Test site nutrient levels, with the exception of ammonia, were extremely elevated compared to the control site (Table 1). The following increases were measured at the test site compared to the control site: a 2,471% increase in ortho-phosphate, a 919% increase in total phosphorus, a 420% increase in nitrate+nitrite, a 60% increase in TKN, a 74% increase in organic nitrogen, and a 118% increase in total nitrogen (Table 1). The effluent nutrients appear to be the source of the increases at the test site. For example, total phosphorus (2.8 mg/L), ortho-phosphate (2.5 mg/L), and nitrate+nitrite (2.9 mg/L) concentrations were elevated in the effluent (Table 1).

Control site total phosphorus, and ortho-phosphate were in the 10-20 percentile rank for typical Florida streams, however those same parameters at the test site were in the 80-90 percentile rank.

Algal Growth Potential (AGP) measures the bioavailable nutrients within a system. Raschke and Shultz (1987) found that values above 5 mg dry wt/L imply a "problem threshold" with concentrations above this level indicative of anthropogenic nutrient enrichment. Both study sites as well as the effluent exceeded the "problem threshold". The control site AGP (8.5 mg dry wt/L) exceeded the threshold by 70% while the test site level (45.7 mg dry wt/L) exceeded this value by over 900%. The effluent AGP value was also extremely elevated (89.4 mg dry wt/L). These values imply some background nutrient enrichment in the receiving waters due to non-point sources but the addition of the effluent is greatly intensifying the enrichment in Mosquito Creek.

Field conditions resulted in the loss of the periphytometer at the Mosquito Creek control site so comparative assessments of periphyton communities between the study sites could not be made. However, there were indications of disturbance at the test site. For example, there were relatively few taxa (12) and a low diversity score (1.96), coupled with high chlorophyll *a* (24.0 mg/m^2) and algal density

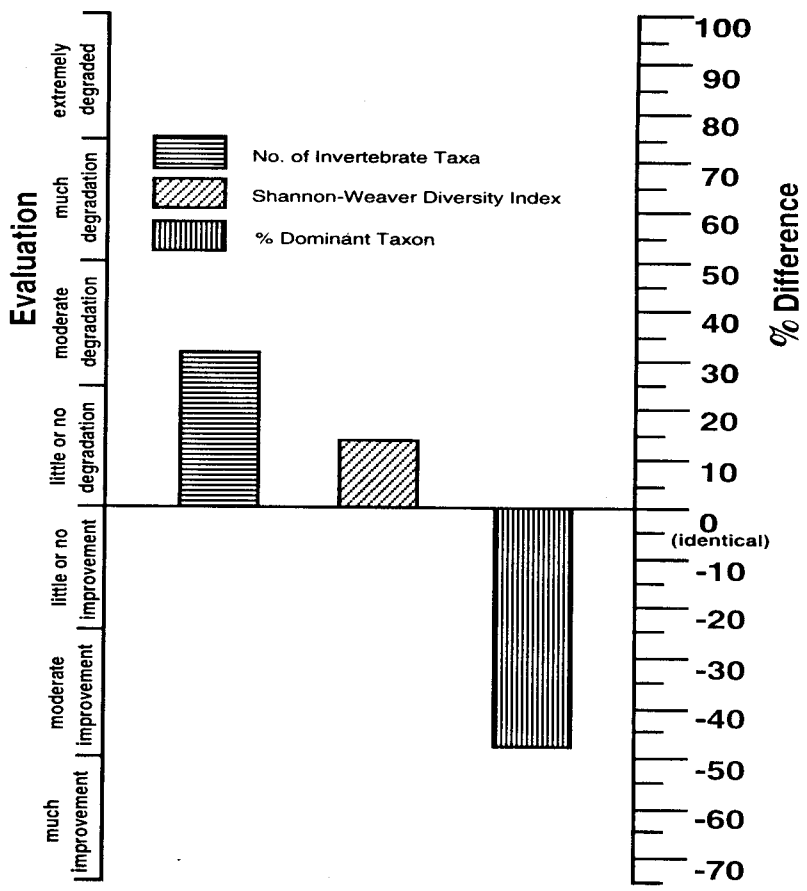


Figure 3. Effect of discharge on the macroinvertebrate community.

(368,907 #/cm^2) values. In the phytoplankton samples, there was a 29% decrease in taxa richness at the test site (29 taxa) compared to the control site (41 taxa) and an 11% decrease in diversity (Figure 1). All other community measures were similar between the two sites (Table 2).

There were some indications of macroinvertebrate community disturbance at the test site relative to the control site. For example, the qualitative macroinvertebrate community health measures (Table 3) showed a 29% decline in the Florida Index and a 27% decline in taxa richness. Both study sites received high Stream Condition Index (SCI) scores placing them in the "excellent" category (see SCI worksheet in Appendix). The test site received 29 SCI points which was slightly lower than the control site score of 31 points. A decreased number of chironomid taxa at the test site relative to the control site accounted for this difference. There was no difference in the EPT Index between the two sites. A similar trend was seen from the quantitative samples. Relative to the control site the test site taxa richness was 31% lower, the Florida Index was 10% lower, and the EPT Index was the same at each site. The Shannon-Weaver diversity was 13% higher at the test site (3.69) compared to the control site (3.26) (Table 3).

Overall, it appears Florida State Hospital WWTP is contributing high levels of nutrients into Mosquito Creek; which is producing an effect on the algal communities and which may account for differences in the macroinvertebrate communities.

References

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ENTRY DATE COMET
5/23/00

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

WASTEWATER COMPLIANCE INSPECTION REPORT

FACILITY AND INSPECTION INFORMATION

@ = Optional

Name and Physical Location of Facility	WAFR ID:	County	Entry Date/Time
Florida State Hospital	FL0031482	Gadsden	05-08-00/1200
Blackberry Lane		Phone	@ Exit Date/Time
Chattahoochee		(850) 663-7466	05-08-00/1400

Name(s) of Field Representatives(s)	Title	Phone
Joe Spooner	Lead Operator	(850) 663-7466

Name and Address of Permittee or Designated Representative	Title	Phone	@ Operator Certification #
Mr. Robert L. Williams	Hospital Administrator	(850) 663-7536	B-004323
Florida State Hospital			
Post Office Box 1000, Drawer 117			
Chattahoochee, Florida 32324			

Inspection Type: C | E | I — Samples Taken(Y/N): No — @ Sample ID#: — Samples Split (Y/N): No

☒ Domestic ☐ Industrial — Were Photos Taken(Y/N): No — @ Log book Volume : IV — @ Page

FACILITY COMPLIANCE AREAS EVALUATED

S=Satisfactory; M=Minor; U=Unsatisfactory; Blank=Not Evaluated

Unsatisfactory Ratings in Areas Marked by a "Diamond (♦)" Will Always put the Facility Status in Significant Non-Compliance

	PERMITS/ORDERS		SELF MONITORING PROGRAM		FACILITY OPERATIONS		EFFLUENT/DISPOSAL
S	1. ♦Permit FL0031042-001		3. Laboratory	S	6. Facility Site Review	*	9. ♦Effluent
S	2. ♦Compliance Schedules	S	4. Sampling	S	7. Flow Measurement	S	10. ♦Disposal
		S	5. ♦Records & Reports	S	8. ♦Operation & Maintenance	S	11. Residuals Management
	13. Other:						12. Groundwater

Facility and/or Order Compliance Status: ☒ In-Compliance ☐ Minor-Out-Of-Compliance ☐ Significant-Out-Of-Compliance

Recommended Actions: See Regulatory Requirements and Suggestions

Name(s) and Signature(s) of Inspector(s)	District Office/Phone Number	Date
Candice M. Burger	Tallahassee Branch Office/(850)488-3704	May 23, 2000
Candice M. Burger	921 4936	
@ Signature of Reviewer	District Office/Phone Number	Date
	Tallahassee Branch Office/(850)488-3704	May 23, 2000

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

Transaction Code	NPDES Number	YR/MO/DA	Insp Type	Inspector	Fac Type
N 5	F L 0 0 3 1 4 0 2	9 9 0 6 0 2	1 C	2 S	3 1

ADDITIONAL NPDES COMMENTS

Inspection Type (Field 1) A=PAI, B=CBI, C=CEI, S=CSI, X=XSI, R=RI
Inspection Code (Field 2): S=State, J=Joint EPA/State-EPA Lead, T=Joint State/EPA-State Lead, L=Local Program
Facility Type (Field 3): 1=Municipal (Publicly Owned), 2=Industrial and Privately Owned Domestic,
3= Agricultural, 4=Federal
Every other field is self explanatory

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF:

Florida State Hospital
Robert B. Williams
Hospital Administrator
Post Office Box 1000,
Drawer 117
Chattahoochee, Florida 32324
_____/

IN THE OFFICE OF THE
NORTHWEST DISTRICT

Administrative Order No.: AO009NW

DEP Permit No: FL0031042-001

ORDER ESTABLISHING COMPLIANCE SCHEDULE UNDER SECTION 403.088(2)(f), F.S.

I. STATUTORY AUTHORITY

The Department of Environmental Protection (Department) issues this order under the authority of Section 403.088 of the Florida Statutes. The Secretary of the Department has delegated this authority to the Director of District Management, who issues this order and makes the following findings of fact.

II. FINDINGS OF FACT

1. Florida State Hospital (hereinafter referred to as "permittee") is a person under Section 403.031 of the Florida Statutes.

2. Permittee owns and operates a 1.3 MGD activated sludge wastewater treatment facility located on Blackberry Lane in Chattahoochee, Florida which discharges wastewater into waters of the state as defined in Section 403.031 of the Florida Statutes.

3. Permittee has applied for a permit under Section 403.088(2) of the Florida Statutes.

4. Permittee's discharge does not meet the wasteload allocation (WLA) issued by the Department on March 31, 1995, for

the wastewater treatment facility. The WLA study require the following limitation:

$CBOD_5$	5.0 mg/L (max.)
TSS	10.0 mg/L (max.)
Total Nitrogen	10.0 mg/L (max.)
Total Phosphorus	1.0 mg/L (max.)
DO	5.0 mg/l (min.)

Since the permittee cannot meet the WLA, time must be granted to implement an option that will either upgrade the facility to meet the standard or revise the operation activities to eliminate the pollution source or remove the effluent from the receiving stream by going to land application of the effluent. The Administrative Order and the permit will allow the permittee to continue to operate the wastewater treatment facility and implement the option stated earlier to bring the wastewater treatment facility into compliance with the rules.

5. Sections 403.088(2)(e) and (f) of the Florida Statutes authorize the Department to issue a permit for the discharge of wastes into waters of the state, accompanied by an order establishing a schedule for achieving compliance with all permit conditions if the specified criteria are met.

6. The Department finds that:

(1) The applicant will be reviewing their options to determine the proper approved pollution abatement facility or alternative waste disposal system;

(2) The applicant needs permission to pollute the waters within the state for a period of time necessary to complete research, planning, construction,

installation, or operation of an approved and acceptable pollution abatement facility or alternative waste disposal system;

(3) There is no present, reasonable, alternative means of disposing of the waste other than by discharging it into waters of the state;

(4) The granting of an operation permit will be in the public interest; or

(5) The discharge will not be unreasonably destructive to the quality of the receiving waters.

III. ORDER

Based on the foregoing findings of fact,

IT IS ORDERED,

1. Permittee shall comply with the following schedule:

Milestone Event	Date of Completion
- Identification of potential land application sites and availability for use	September 1, 1996
- Hydrogeologic/engineering field evaluation of potential land application sites	January 1, 1998
- Phosphate reduction evaluation through use of non-phosphate detergents	July 1, 1998
- Preliminary Engineering Report identifying improvements/ modifications required and	October 1, 1998

associated costs for change to land application	
Submittal of FCA Budget	June 15, 1999
Total nitrogen reduction evaluation through variation of aerator oxygen transfer ability	July 1, 1999

2. Permittee shall provide this office with quarterly reports outlining progress toward compliance with the time frames specified in paragraph 1 of this section, beginning on December 1995.

3. Permittee shall maintain and operate its facilities in compliance with all other conditions of DEP Permit No. FL0031042-001. Full compliance with DEP Permit No. FL0031042-001 is required with the exception of items mentioned in paragraph 4 above. The temporary effluent limitation for the parameters listed below shall be:

- $CBOD_5$ (effluent)	10 mg/L (Max. annual avg.)
- TSS (effluent)	15 mg/L (Max. annual avg.)
- TN (effluent)	15 mg/L (Max. annual avg.)
- TP (effluent)	Not Limited (Report only)
- DO (effluent)	5 mg/L (min.)

4. This order may be modified as set forth in chapter 62-620 of the Florida Administrative Code.

5. Reports or other information required by this order shall be sent to the Domestic Wastewater Section, Department of Environmental Protection, 160 Governmental Center, Pensacola, Florida 32501.

COMPLIANCE EVALUATION INSPECTION
FLORIDA STATE HOSPITAL WASTEWATER TREATMENT FACILITY
INSPECTION COMMENTS

INTRODUCTION

On May 8, 2000, a representative of the Florida Department of Environmental Protection (FDEP) conducted a Compliance Evaluation Inspection (CEI) at the Florida State Hospital Wastewater Treatment Facility, Gadsden County, Chattahoochee, Florida. The purpose of the CEI was to determine if the facility was in compliance with the State Permit.

The following individuals were present during the inspection:

NAME	ORGANIZATION	TELEPHONE
Candice M. Burger	FDEP	(850) 488-3704
Joe Spooner	Florida State Hospital	(850) 663-7466

SUMMARY/DATA INTEGRITY

The overall integrity of the permittee's compliance with the State Permit was rated in compliance.

FIELD EVALUATION

The areas evaluated in the cover, Wastewater Compliance Inspection Report Form, are discussed in this report. Deficiencies identified during the CEI are followed by their respective Regulatory Requirement. Suggestions are included to strengthen the quality and reliability of the permittee's self-monitoring program.

1. PERMIT:

Background: STATE PERMIT #FL0031042-001
Date of Issuance - April 9, 1996
Date of Expiration - March 1, 2001

A copy of the current permit was on the facility site.

Rating: Satisfactory

2. COMPLIANCE SCHEDULE:

Background: An Administrative Order (AO009NW) was issued on April 9, 1996 which established a schedule for compliance with the wasteload allocation issued March 31, 1995. The Administrative Order allows the facility to operate under interim limitations until it can achieve full compliance with the wasteload allocation or remove the discharge from the receiving waters. A compliance schedule was stipulated in the Order which is being met.

Rating: Satisfactory

3. LABORATORY: Not evaluated.

4. SAMPLING:

Background: Sampling is performed by Isco autosamplers for both influent and effluent. The autosamplers are properly cooled by refrigeration and a log kept of the temperature readings. The samples are collected and maintained according to DER-QA-001/92[1].

Rating: Satisfactory

5. RECORDS & REPORTS:

Background: Self-monitoring records consisted of the following:

- Discharge Monitoring Reports (DMRs)
- A copy of the current permit
- Original laboratory reports
- Chain-of-custody sheets for samples
- Maintenance log for the facility

Rating: Satisfactory

6. FACILITY SITE REVIEW:

Background: The facility is a Municipal wastewater treatment plant serving the residents of Florida State Hospital and adjacent buildings. Waste is treated by extended aeration activated sludge facility with a design capacity of 1.30 MGD. The treated effluent is discharged to Outfall D001 into Mosquito Creek. The facility's treatment plant is described in the flow diagram on the following page. Two of the aeration zones have been modified to anoxic areas. The plant is currently utilizing a chlorine drip system to combat filamentous organisms.

Rating: Satisfactory

7. FLOW MEASUREMENT:

Background: Flow is measured by a 12-inch parshall flume that is calibrated annually.

Rating: Satisfactory.

8. OPERATION & MAINTENANCE:

Operation Background: The wastewater treatment facility is staffed 7 days per week, 16 hours per day by five licensed operators. One primary clarifier is bypassed due to low flows.

Maintenance Background: Maintenance is performed by the operating staff and maintenance crew.

Rating: Satisfactory

9. *EFFLUENT:

Observation: The effluent was clear and did not contain any foam, oil sheen, or solids.

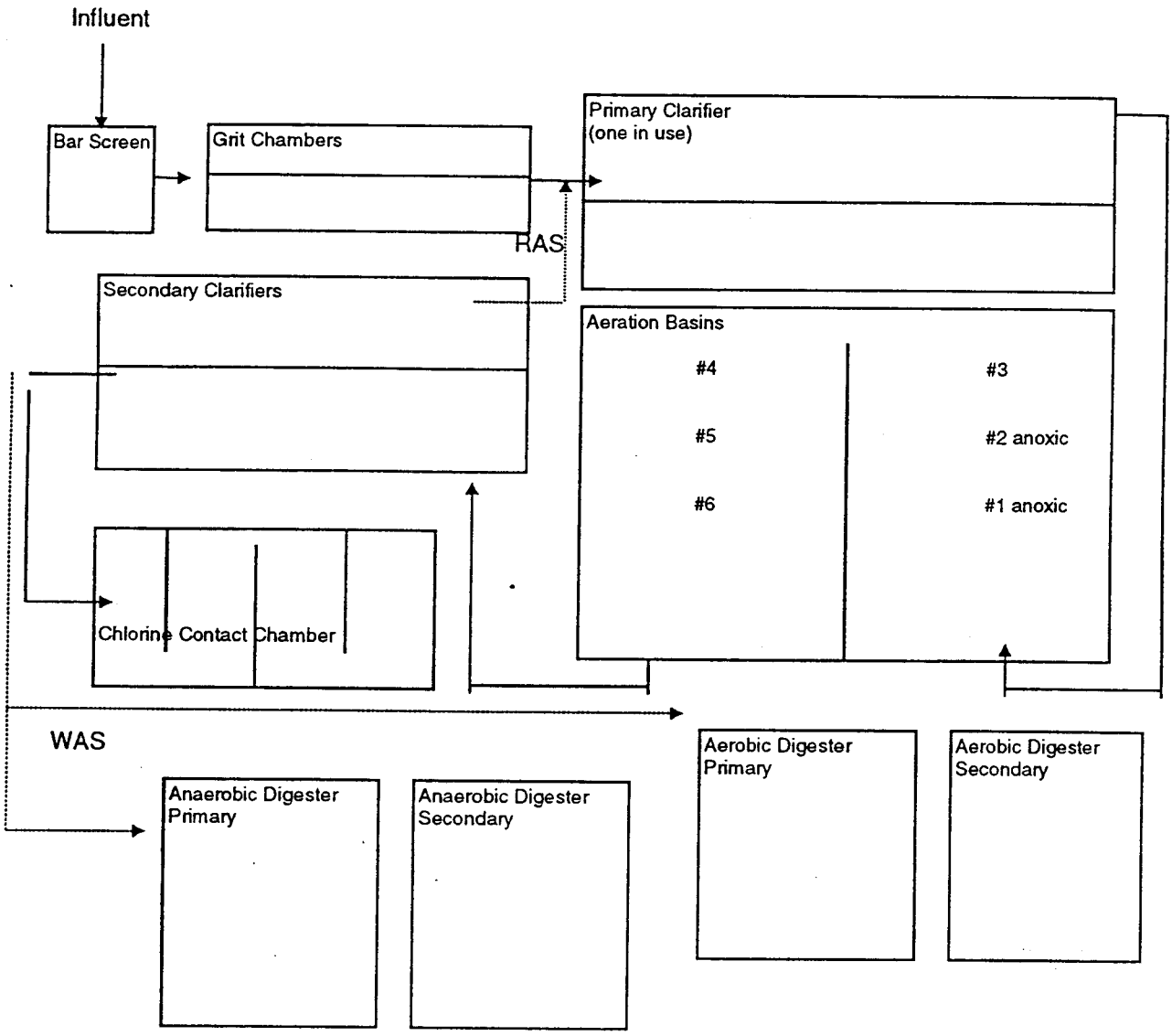
Rating: Satisfactory

10. DISPOSAL:

Background: The effluent is discharged to outfall D001, Womak Creek, as described by the State Permit.

Rating: Satisfactory

Florida State Hospital
Flow Diagram



11. RESIDUALS MANAGEMENT:

Background: Waste sludge is stabilized by aerobic and anaerobic digestion. The residuals are dewatered and hauled to the Springhill Regional Landfill for disposal.

Rating: Satisfactory

12. GROUNDWATER: Not applicable.

References:

1. Department of Environmental Regulation Standard Operating Procedures for Laboratory and Sample Collection Activities, 1992.

TopoZone.com

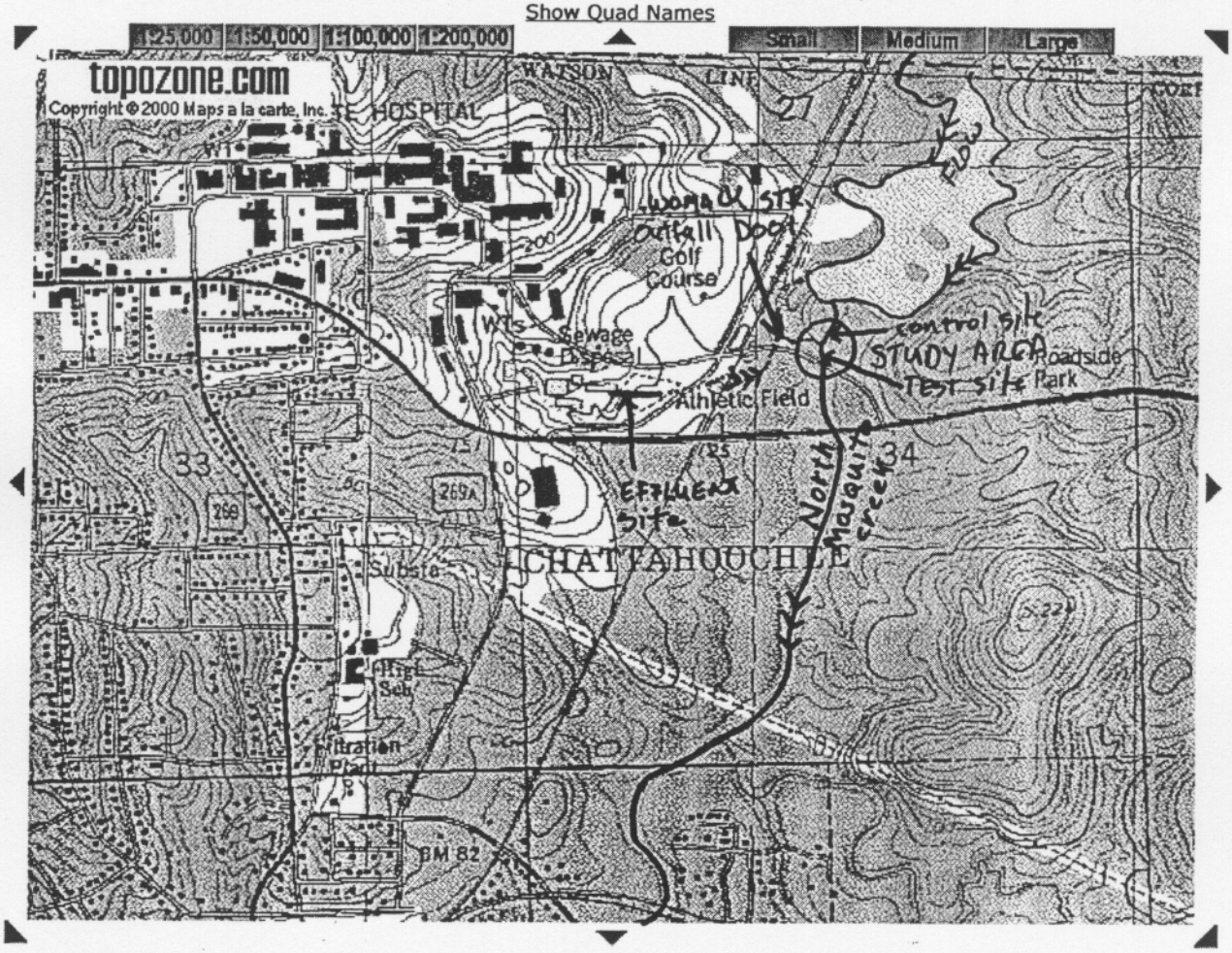
Get a Map | What's New? | Partners | Info | Sign up!

Map target is 30.6974°N, 84.8271°W - UTM Zone 16, N 3397899, E 708118

Exact center of display is UTM Zone 16, N 3398139, E 707644

Show Quad Names

1:25,000 | 1:50,000 | 1:100,000 | 1:200,000 | Small | Medium | Large



Show Quad Names

meters 0 500 1000 1500 2000

miles 0 0.5 1.0

Click anywhere on the map to recenter the map on that point.

Take a look at our **Map Legend** for help with topographic map symbols

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FLORIDA State Hospital

Explanation of Measurements of Community Health

Different measurements of macroinvertebrate and algal community health are used to determine the biotic effects of a discharge. The measurements are briefly discussed here.

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

Shannon-Weaver diversity: This index is specified in the Florida Administrative Code as a measure of biological integrity. Low diversity scores are undesirable. They represent conditions where only a few organisms are abundant, to the exclusion of other taxa. Excessive numerical dominance of a single type of organism (a high % contribution of the dominant taxon) is a related measure that is also associated with disturbance.

Numbers of pollution sensitive taxa: Some organisms become rare or absent as the intensity or duration of disturbance increases. Species sensitivity data from other sources, such as Chang *et al.* (1992), Farrell (1992), Hudson *et al.* (1990), Hulbert (1990), Lenat (1993), and Whitmore (1989), are used as appropriate.

Community structure: Substantial shifts in proportions of major groups of organisms, compared to control 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

Functional feeding groups/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).

Algal Growth Potential: *Selenestrum* sp, *Duniella* sp.

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.

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

The Florida Index: Some organisms become rare or absent as the intensity or duration of disturbance increases. 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.

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

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

Typical Values for Selected Parameters in Florida Waters

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

Florida State Hospital **STREAMS Percentile Distribution** (1617 stations)

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	Measured
Control Site												
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	3.26
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**	59
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**	45
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	1.0
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	lost
TKN	0.30	**0.39**	**0.56**	0.73	0.87	1.00	1.11	1.26	1.49	1.93	2.80	0.52
Ammonia	0.02	0.02	0.04	0.05	0.06	**0.08**	**0.11**	0.14	0.20	0.34	0.60	0.091
NO2-NO3	0.01	0.01	0.03	0.05	0.07	**0.10**	0.14	0.20	0.32	0.64	1.05	0.10
Total Phosphorus	0.02	0.03	**0.05**	**0.06**	0.10	0.13	0.18	0.25	0.39	0.74	1.51	0.052
Ortho Phosphate	0.01	**0.01**	**0.03**	0.04	0.05	0.08	0.11	0.17	0.27	0.59	1.37	0.014
Test Site												
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	3.69
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**	43
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**	31
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	1.0
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	24.0
TKN	0.30	0.39	0.56	**0.73**	**0.87**	1.00	1.11	1.26	1.49	1.93	2.80	0.83
Ammonia	0.02	0.02	0.04	0.05	0.06	**0.08**	**0.11**	0.14	0.20	0.34	0.60	0.082
NO2-NO3	0.01	0.01	0.03	0.05	0.07	0.10	0.14	0.20	**0.32**	**0.64**	1.05	0.52
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	**0.39**	**0.74**	1.51	0.53
Ortho Phosphate	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	**0.27**	**0.59**	1.37	0.36

Units: Phytoplankton Chlorophyll *a* (µg/L), Periphyton Chlorophyll *a* (mg/m^2), Nutrients (mg/L), Turbidity (NTU), Taxa richness and diversity values are for macroinvertebrates. A percentile rank increase for parameters above the bold line indicates healthy conditions. A percentile rank increase for parameters below the bold line indicates unhealthy conditions.

Stream Condition Index

Florida State Hospital Control Site

Macroinvertebrate Dip Net (20 sweeps of most productive substrates)	**Value**	5	3	1	**Score**
Total Number of Taxa	59	**≥31**	30-16	<16	5
EPT Index	11	**≥7**	6-4	<4	5
# Chironomid Taxa	5	≥9	**8-5**	<5	3
% Contribution of Dominant Taxon	8.19	**≤22**	23-61	>61	5
% Diptera	35.34	-	**≤50**	>50	3
Florida Index	28	**≥16**	15-8	<8	5
% Suspension feeders/Filterers	12.72	**≥12**	11-6	<6	5
Total Score		**Panhandle**			**31**
Interpretation of Scores		**Excellent**			**27-33**
		Good			21-26
		Poor			14-20
		Severely Degraded			7-13

Summer Index Period: Stream Condition Index (SCI) for Florida Panhandle (April1996)

Florida State Hospital Test Site

Macroinvertebrate Dip Net (20 sweeps of most productive substrates)	**Value**	5	3	1	**Score**
Total Number of Taxa	43	**≥31**	30-16	<16	5
EPT Index	10	**≥7**	6-4	<4	5
# Chironomid Taxa	3	≥9	8-5	**<5**	1
% Contribution of Dominant Taxon	8.82	**≤22**	23-61	>61	5
% Diptera	29.41	-	**≤50**	>50	3
Florida Index	20	**≥16**	15-8	<8	5
% Suspension feeders/Filterers	12.25	**≥12**	11-6	<6	5
Total Score		**Panhandle**			**29**
Interpretation of Scores		**Excellent**			**27-33**
		Good			21-26
		Poor			14-20
		Severely Degraded			7-13

Summer Index Period: Stream Condition Index (SCI) for Florida Panhandle (April1996)

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (5-10-96)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		5/16/00	10:00	

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
N 30° 42' 05" W 84 49' 59.9	GADSEN	OUTFALL - FS HOSPITAL	

RIPARIAN ZONE/INSTREAM FEATURES

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

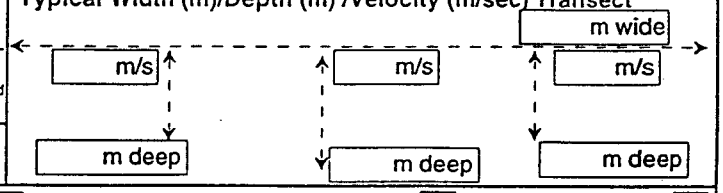
Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)

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

Local Watershed NPS Pollution (check box): No evidence ☐ Slight ☐ Moderate potential ☐ 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



Artificially Channelized ☐ no ☐ recent, severe ☐ some recovery ☐ mostly recovered

Artificially Impounded ☐ yes ☐ more sinuous

High Water Mark: _____ (m above present water level) + _____ (present depth in m) = _____ (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:			
Undercut banks/Roots				*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	0.69	24.85	6.94	8.36	421			
Mid-depth								
Bottom								

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

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

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

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

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

Weather Conditions/Notes:
0.4 MGD Floco D plant

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

SAMPLING TEAM:	SIGNATURE:	DATE
TR FD DH		5/16/00

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (5-10-96)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
	31010144	5/16/00	12:20	

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
N 30 41 50.5 W 84 49 37.6	GADSDEN	Control site Mosquito Cr N of FSU Hosp	

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
85			5	10			

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

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

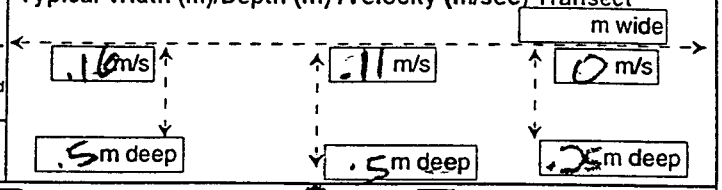
Width of riparian vegetation (m) on least buffered side: 20+ *List & map dominant vegetation on back*

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

Artificially Impounded ☐ yes

High Water Mark: 1.5 (m above present water level) + .5 (present depth in m) = 2.0 (m above bed)

Typical Width (m)/Depth (m) /Velocity (m/sec) Transect



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)	6	7	D+D	Sand	75%		
Leaf Packs or Mats	1	4		Mud/Muck/Silt	25		
Aquatic Vegetation				Other: shell			
Rock or Shell Rubble	2	1		Other:			
Undercut banks/Roots	3	8	T	*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):			Secchi (m):
Top								
Mid-depth	0.317	24.78	7.02	6.99	52.20			
Bottom								

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

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

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

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

Color (check box): Tannic: ☐ Green (algae): ☐ Clear: ☐ Other: ☒ sl. tannic

Weather Conditions/Notes:

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

SAMPLING TEAM: FB MHJREL

SIGNATURE: [signature]

DATE: 5/16/00

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (5-10-96)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
	31010145	5/16/00	1100	

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
N 30° 41' 48.8" W 84° 49 38.2"	Gadsen	Test site Mosquito Creek south of FS Hwy. 0-trail	

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
85			5	10			

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

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

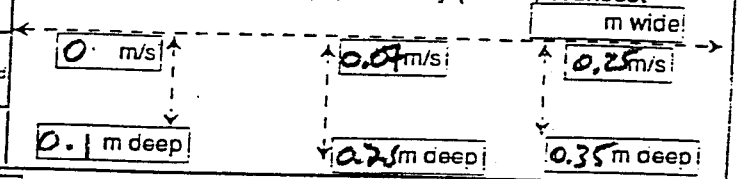
Width of riparian vegetation (m) on least buffered side: 20+ | List & map dominant vegetation on back

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

Artificially Impounded ☐ yes

High Water Mark: 1.5 (m above present water level) ÷ 0.3 (present depth in m) = 1.8 (m above bed)

Typical Width (m)/Depth (m) /Velocity (m/sec) Transect



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)	4	9	D/P	Sand	50.5		
Leaf Packs or Mats	0.5	1	D/V	Mud/Muck/Silt	35		
Aquatic Vegetation	—	0	D/V	Other: pipe clay	2.0		
Rock or Shell Rubble	3	1	D/V	Other:			
Undercut banks/Roots	5	9	D/V	*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):			Secchi (m):
Top								
Mid-depth	0.32	23.98	7.54	7.52	153			
Bottom								

System Type: Stream: 2 (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:
Construction upstream of discharge resulting in clay in stream

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

SAMPLING TEAM: JR MH FB

SIGNATURE:

DATE: 5/16/00

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (5-27-98)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
	31010144	5/16/00	

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Gadsen	Control Mosquito Creek North of FS Hospital Out Fall	

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity [12]	Four or more productive habitats present (snags tree roots, aquatic vegetation, leaf packs (partially decayed), undercut banks, rock). 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 (12) 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability [9]	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15 % productive habitat 10 (9) 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity [12]	Max. observed at typical transect: >0.25 m/sec. but < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: 0.1 to 0.25 m/sec 15 14 13 (12) 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect <0.05 m/sec, or spate occurring; > 1 m/sec 5 4 3 2 1
Habitat Smothering [13]	Less than 20% of habitats affected by sand or silt accumulation	20%-50% of habitats affected by sand or silt accumulation	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent
Primary Score [46]	20 19 18 17 16	15 14 (13) 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization [20]	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
Bank Stability Right Bank [10] Left Bank [10]	Stable. No evidence of erosion or bank failure. Little potential for future problems. (10) 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank [12] Left Bank [10]	Width of native vegetation (least buffered side) greater than 18 m (10) 9	Width of native vegetation (least buffered side) 12 m to 18 m 8 7 6	Width of native vegetation 6 to 12 m, human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank [10] Left Bank [10]	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions. (10) 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of streambank surfaces are vegetated and/or poor plant community (*e.g.* grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 3 2 1
Secondary Score [90]				

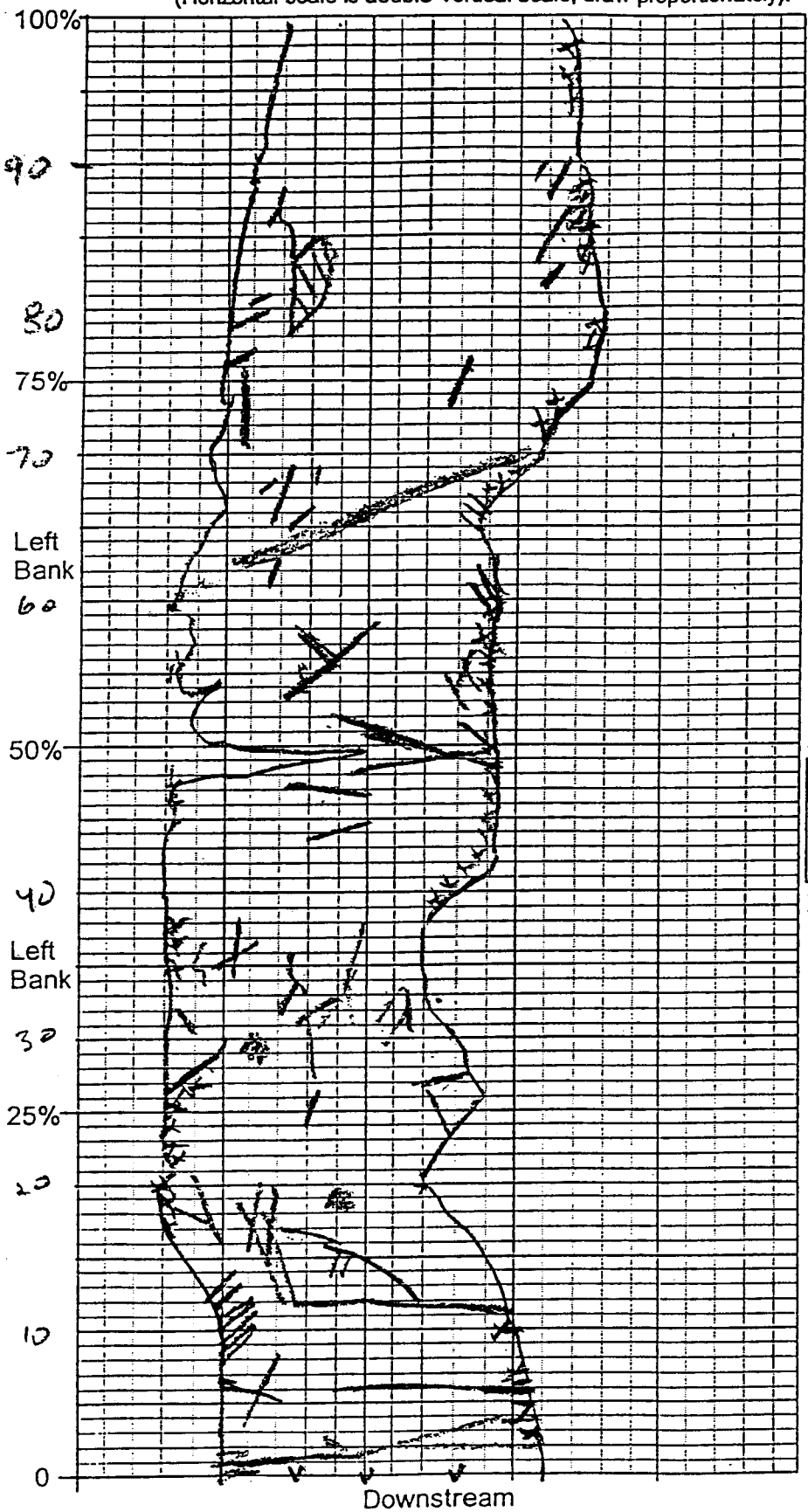
126 TOTAL SCORE

ANALYSIS DATE:	ANALYST:	SIGNATURE:
5/16/00	J. Richardson	

Site Map / Habitat Sketch

Length of grid represents 100m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

Field ID: Cntrl FS Hospital



Substrates: Code key, draw proportionate habitat abundance.

- / Snags
- X Roots/undercut banks
- Leaf Packs (or mats)
- Macrophytes
- Bar
- V Velocity Measure
-

Velocity:
Note where velocity measures were taken.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetaton is altered or eliminated.

Plants observed/other notes:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (5-27-98)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
	31010145	5/16/00	

REMARKS:	COUNTY:	LOCATION: Test Site Mosquito Creek S of FS Hosp. on FA 11	FIELD ID/NAME:

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity [11]	Four or more productive habitats present (snags tree roots, aquatic vegetation, leaf packs (partially decayed), undercut banks, rock). 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 (11)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability [4]	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15 % productive habitat 10 9 (8) 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity [12]	Max. observed at typical transect: >0.25 m/sec. but < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: 0.1 to 0.25 m/sec 15 14 13 (12) 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect <0.05 m/sec, or spate occurring; > 1 m/sec 5 4 3 2 1
Habitat Smothering [WH]	Less than 20% of habitats affected by sand or silt accumulation	20%-50% of habitats affected by sand or silt accumulation	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent
Primary Score [42]	20 19 18 17 16	15 14 13 12 (11)	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization [20]	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
Bank Stability Right Bank [10] Left Bank [10]	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank [10] Left Bank [10]	Width of native vegetation (least buffered side) greater than 18 m (10) 9	Width of native vegetation (least buffered side) 12 m to 18 m 8 7 6	Width of native vegetation 6 to 12 m, human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank [10] Left Bank [10]	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions. 10 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of streambank surfaces are vegetated and/or poor plant community (*e.g.* grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 3 2 1
Secondary Score [80]				

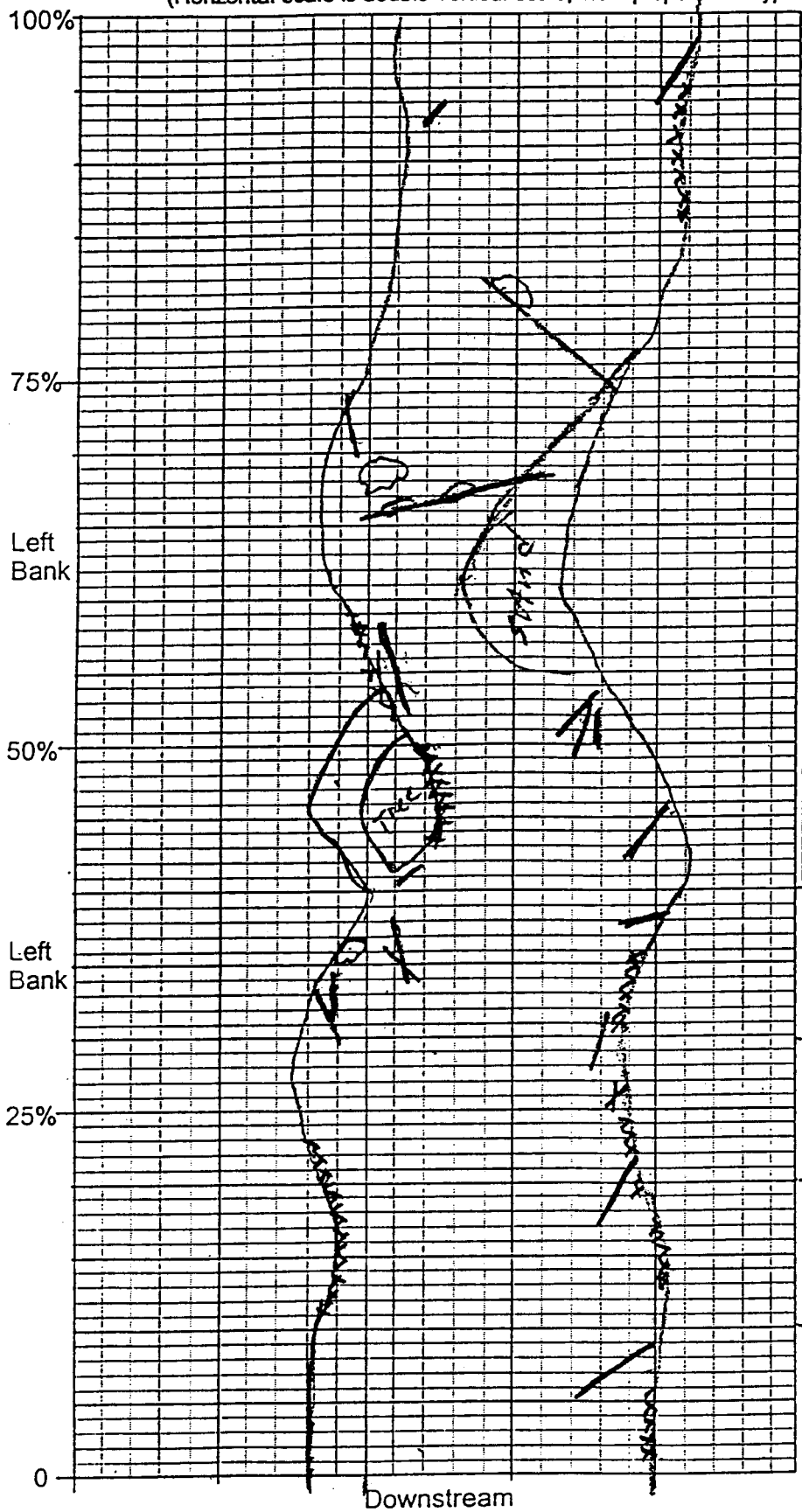
[122] TOTAL SCORE

ANALYSIS DATE:	ANALYST:	SIGNATURE:
5/16/00	MW	

Site Map / Habitat Sketch

Length of grid represents 100m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

Field ID: Test FS Hospital



Substrates: Code key, draw proportionate habitat abundance.

- Snags
- Roots/undercut banks
- Leaf Packs (or mats)
- Macrophytes
- _____
- _____
- _____

Velocity:
Note where velocity measures were taken.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetaton is altered or eliminated.

Plants observed/other notes:

Requestor	NW Dist
Sample Location	FS Hosp Gadsden
Date/Time Rec'd	5-16-00 / 1500
Date/Time Tested	5-16-00 / 1510
Date/Time Read	5-17-00 / 1400
Date Finished	5-22-00

V.9/19/96

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BIOLOGY SECTION

MICROBIOLOGY DATA SHEET

Method Used	SM9222B+D
Med. Batch	MEO5004+MEO5004
Job ID	TLH2000-15-17-2 2
Ent. Comp.	[illegible] 6/8/00
Verified	[illegible] 6/8/00
Collector	Richardson/Heys/Burl
Analyst	K. Whidden

Sample #	Field ID	Dilution				Total Count	Dilution				Total Count	Remarks
		10	1	0.1	100	TC/100mL	50	10	1	100	FC/100	
456326	Gadsden FS Hosp. Eff.	17	2			170 /	1	<1			2 /	
456327	Control FS Hosp Bd.	35	5			350 /	7	1			14 /	
456328	Test FS Hosp Bd.	>100	48	7		4800 /	>100	33	6		66 /	
Blank	before				<1	<1				<1	<1	
Blank	After				<1	<1				<1	<1	
TC		metallic sheen				no sheen						
LTB	24hours 48hours		+	+	+	+ =	=					
B+LB	24hours 48hours		+	+	+	+ =	=					
FC		blue coloring				yellow						
LTB	24hours 48hours		+	+	+	+	=					
EC	24hours		+	+	+	+	-					

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: FL ST. Hospital
County: Gadsden
ontact / District: Glenn Butts / NW-DIST
NPDES Permit #: FL0031402
LIMS Sample #: 456314 LIMS Job #: TLH2000-05-17-20-01

Sample Collection: Date 5/16/00 Time 11:00
Test Beginning: Date 5/17/00 Time 10:30
Test Ending: Date 5/19/00 Time 13:20
Organism Batch #: 26 Diluent Batch #: Dilut # 14
Organism Age: 24 hrs. SRT toxicant batch #: —

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

Remarks:

Test organism: C. dubia

Conc.	Chamber #	Number Live 0 hr	24 h	48 h	pH 0 hr	24 h	48 h	Temperature (°C) 0 hr	24 h	48 h	D.O. (mg/L) 0 hr	24 h	48 h	UNCORRECTED Cond. (mmhos/cm) (Cond. (µmhos/cm)) 0 hr	24 h	48 h
Cont.	A	5	5	5	8.2	—	8.2	25.2	—	23.9	8.1	—	7.8	285	—	291
	B	5	5	5	—	—	8.3	—	—	23.8	—	—	7.8	—	—	234
	C	5	5	5	—	—	8.4	—	—	23.8	—	—	7.8	—	—	227
	D	5	5	4 ID	—	—	8.4	—	—	23.6	—	—	7.9	—	—	236
100%	A	5	5	5	7.7	—	8.6	25.9	—	24.1	7.8	—	7.7	420	—	~~455~~ 460
	B	5	5	5	—	—	8.6	—	—	23.9	—	—	7.7	—	—	455
	C	5	5	5	—	—	8.6	—	—	23.8	—	—	7.7	—	—	460
	D	5	5	5	—	—	8.6	—	—	23.7	—	—	7.7	—	—	490
measured by:		SG	SG	KL	DPH	—	KL	DPH	—	KL	DPH	—	KL	DPH	—	KL
recorded by:		DPH	SG	KL	SG	—	SG	SG	—	SG	SG	—	SG	SG	—	SG

5/19/00 receiving number

Investigators' Signatures

Temperature Range °C
Incubator # 3 24.5° - 25.5°C
Room B24L 24.5° - 26.0°C

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			N/A	N/A	N/A	SG
Lab Total Residual Cl2 (mg/L):		<0.03	<0.03	DR100	KL	SG
Alkalinity (mg/L as $CaCO_3$):		86	141	Hach	SG	SG
Hardness (mg/L as $CaCO_3$):		86	131	Hach	SG	SG
Total ammonia (mg/L as N):		<0.017	<0.017	Denver	SG	SG
Salinity:		~0	≈0	Yci	KL	SG

reviewer

form updated 3/3/99

Periphyton taxa list and densities (#/cm^2) for Florida State Hospital, collected via glass microscope slides in Mosquito Creek, on May 16, 2000.

	Control Site	Test Site
Bacillariophyceae		
Achnanthes exigua	–	7
Achnanthes lanceolata	–	49
Cocconeis placentula	–	171
Eunotia arcus	–	7
Eunotia sp.	–	147
Melosira varians	–	7
Navicula radiosa	–	2
Navicula sp.	–	3
Surirella sp.	–	2
Synedra sp.	–	11
Chlorophyceae		
Staurastrum sp.	–	1
Cyanophyceae		
Lyngbya sp.	–	1
Oscillatoria sp.	–	1
Euglenophyceae		
Trachelomonas sp.	–	1

Phytoplankton taxa list and densities (#/cm^2) Florida State Hospital, collected via subsurface water bottle sampling in Mosquito Creek, on May16, 2000.

	Control Site	Test Site
Bacillariophyceae		
Achnanthes exigua	1	2
Achnanthes lanceolata	4	2
Achnanthes minutissima	1	–
Amphipleura lindheimeri	1	–
Caloneis bacillum	–	1
Cocconeis placentula	2	2
Cyclotella sp.	6	4
Cymbella minuta minuta	1	1
Cymbella tumida tumida	1	1
Diploneis ovalis	–	1
Eunotia sp.	3	1
Frustulia rhomboides	1	–
Gomphonema sp.	1	1
Gomphonema parvulum	2	8
Gyrosigma spenceri	1	–
Melosira sp.	1	1
Navicula sp.	4	–
Navicula capitata capitata	1	–
Navicula constans	–	1
Navicula cryptocephala	5	–
Navicula cryptotenella	3	3
Navicula cuspidata	4	–
Navicula decussis	2	–
Navicula elginensis	8	1
Navicula minima	2	3
Navicula mutica	–	1
Navicula pupula	1	6
Navicula radiosa	–	2
Navicula viridula	6	3
Nitzschia sp.	5	7
Nitzschia amphibia	1	1
Nitzschia gracilis	2	1
Nitzschia palea	11	8
Nitzschia reversa	1	1
Pinnularia sp.	–	1
Surirella sp.	–	1
Synedra sp.	3	–
Synedra delicatissima	2	–

Phytoplankton taxa list and densities (#/cm^2) Florida State Hospital, collected via subsurface water bottle sampling in Mosquito Creek, on May16, 2000.

	Control Site	Test Site
Bacillariophyceae		
Synedra rumpens familaris	2	1
Undetermined Diatomaceae	–	1
Chlorophyceae		
Ankistrodesmus falcatus	4	1
Chlamydomonas sp.	2	–
Chlorella sp.	2	–
Coelastrum sp.	1	–
Crucigenia sp.	4	–
Scenedesmus sp.	2	–
Scenedesmus bijuga	3	2
Scenedesmus brasiliensis	1	–
Scenedesmus quadricauda	5	–
Undetermined Chlorophyceae	3	–
Cryptophyceae		
Cryptomonas sp.	–	1
Cyanophyceae		
Anabaena sp.	2	–
Dactylococcopsis sp.	6	–
Oscillatoria sp.	2	–
Dinophyceae		
Glenodinium sp.	1	–
Euglenophyceae		
Euglena sp.	1	–

Benthic macroinvertebrate taxa list for Florida State Hospital collected via 20 discrete dip net sweeps in Mosquito Creek, on May 16, 2000.

	Control Site	Test Site
Acariformes		
Albia sp.	–	2
Arrenurus sp.	1	–
Hygrobates sp.	4	–
Trombidiformes	–	1
Amphipoda		
Hyalella azteca	15	9
Coleoptera		
Dineutus sp.	1	–
Dubiraphia vittata	3	1
Macronychus glabratus	–	1
Microcylloepus pusillus	8	1
Scirtes sp.	1	–
Stenelmis sp.	6	1
Diptera		
Ablabesmyia mallochi	11	5
Ablabesmyia rhamphe grp.	4	1
Atrichopogon sp.	1	–
Ceratopogonidae	–	2
Cricotopus bicinctus	1	–
Dicrotendipes modestus	1	–
Endotribelos hesperium	1	–
Labrundinia pilosella	5	–
Labrundinia sp.	–	1
Microtendipes sp.	1	–
Nanocladius sp.	1	–
Nilotanypus fimbriatus	1	–
Palpomyia / Bezzia grp.	1	–
Pentaneura inconspicua	10	–
Phaenopsectra sp.	3	–
Polypedilum convictum	–	2
Polypedilum halterale grp.	–	1
Polypedilum illinoense grp.	10	7
Polypedilum laetum	1	–
Polypedilum scalaenum grp.	1	2
Rheocricotopus robacki	2	1
Simulium sp.	–	1
Stenochironomus sp.	8	–
Synorthocladius sp.	1	–

Benthic macroinvertebrate taxa list for Florida State Hospital collected via 20 discrete dip net sweeps in Mosquito Creek, on May 16, 2000.

	Control Site	Test Site
Diptera		
Tanytarsus sp.	1	–
Tanytarsus sp. A Epler	1	–
Tanytarsus sp. C Epler	1	–
Tanytarsus sp. L Epler	3	1
Tanytarsus sp. S Epler	2	–
Tanytarsus sp. U Epler	5	–
Thienemanniella sp. A Epler	–	1
Tribelos sp.	–	2
Tvetenia discoloripes grp.	1	1
Undetermined Chironomidae	3	2
Ephemeroptera		
Acerpenna pygmaea	–	1
Caenis sp.	10	3
Callibaetis floridanus	–	1
Leptophlebiidae	–	1
Stenacron sp.	4	–
Tricorythodes albilineatus	10	1
Undetermined Ephemeroptera	–	1
Gastropoda		
Ancylidae	2	2
Elimia sp.	2	–
Melanoides tuberculata	–	3
Micromenetus dilatatus	19	–
Micromenetus sp.	–	5
Physella sp.	8	5
Pyrogophorus platyrachis	1	–
Undetermined Gastropoda	–	2
Hemiptera		
Veliidae	–	1
Lepidoptera		
Undetermined Lepidoptera	–	1
Nemertea		
Prostoma rubrum	4	–
Odonata		
Coenagrionidae	1	–
Enallagma sp.	–	1
Undetermined Odonata	1	–

Benthic macroinvertebrate taxa list for Florida State Hospital collected via 20 discrete dip net sweeps in Mosquito Creek, on May 16, 2000.

	Control Site	Test Site
Oligochaeta		
Aulodrilus pigueti	–	6
Haber speciosus	–	1
Limnodrilus hoffmeisteri	–	3
Nais communis complex	1	–
Pristinella sima	–	1
Slavina appendiculata	3	–
Pelecypoda		
Corbicula fluminea	3	–
Eupera cubensis	8	–
Sphaeriidae (mollusca)	2	2
Undetermined Pelecypoda	–	2
Turbellaria		
Planariidae	2	–
Trichoptera		
Ceraclea sp.	2	–
Cheumatopsyche sp.	2	1
Hydropsyche sp.	4	4
Hydropsychidae	–	2
Hydroptila sp.	3	3
Macrostemum carolina	1	–
Nectopsyche exquisita	1	–
Nectopsyche sp.	1	–
Oecetis persimilis	8	–
Oecetis sp.	–	1
Oxyethira sp.	6	1
Polycentropus sp.	1	–
Triaenodes sp.	–	1
Polycentropodidae	1	–

Benthic macroinvertebrate taxa list for Florida State Hospital collected via Hester-Dendy artificial substrates in Mosquito Creek, on May 16, 2000. Densities, in number/m^2, represent the mean of three replicates.

	Control Site	Test Site
Acariformes		
Atractides sp.	2	–
Hygrobates sp.	–	2
Undetermined Trombidiformes	1	–
Coleoptera		
Ancyronyx variegatus	1	1
Dineutus sp.	2	1
Macronychus glabratus	2	7
Microcylloepus pusillus	2	4
Diptera		
Ablabesmyia mallochi	21	–
Ablabesmyia rhamphe grp.	23	–
Ablabesmyia sp.	1	–
Atrichopogon sp.	–	1
Conchapelopia sp.	–	1
Corynoneura sp.	–	5
Cricotopus bicinctus	1	1
Cricotopus / Orthocladius sp.	1	–
Dicrotendipes neomodestus	2	–
Hemerodromia sp.	1	17
Labrundinia neopilosella	1	–
Labrundinia pilosella	1	–
Microtendipes pedellus grp.	1	–
Nilotanypus fimbriatus	–	5
Nilothauma sp.	3	–
Orthocladiinae	–	3
Pentaneura inconspicua	6	1
Phaenopsectra obediens	4	–
Polypedilum convictum grp.	–	3
Polypedilum fallax	5	–
Polypedilum scalaenum grp.	1	–
Rheocricotopus robacki	–	9
Rheotanytarsus distinctissimus grp.	2	5
Rheotanytarsus exiguus grp.	3	58
Rheotanytarsus sp.	–	11
Tanytarsus sp. A Epler	5	–
Tanytarsus sp. C Epler	1	–

Benthic macroinvertebrate taxa list for Florida State Hospital collected via Hester-Dendy artificial substrates in Mosquito Creek, on May 16, 2000. Densities, in number/m^2, represent the mean of three replicates.

	Control Site	Test Site
Diptera		
Tanytarsus sp. G Epler	1	–
Tanytarsus sp. L Epler	16	–
Thienemanniella similis	–	1
Thienemanniella sp. A Epler	–	1
Thienemanniella xena	–	3
Thienemanniella sp.	2	4
Tribelos fuscicornis	8	–
Tvetenia sp.	–	67
Undetermined Chironomidae	8	4
Ephemeroptera		
Baetidae	–	19
Baetis sp.	–	8
Caenis sp.	76	–
Heptageniidae	4	1
Isonychia sp.	–	12
Stenacron sp.	2	–
Stenonema exiguum	8	9
Stenonema smithae	4	2
Stenonema sp.	18	7
Tricorythodes albilineatus	230	20
Gastropoda		
Ancylidae	2	5
Ferrissia sp.	6	–
Ferrissia hendersoni	9	–
Laevapex sp.	1	–
Micromenetus dilatatus	1	–
Physella sp.	2	–
Planorbella sp.	1	–
Odonata		
Undetermined Odonata	1	–
Trichoptera		
Cernotina sp.	2	–
Cheumatopsyche sp.	–	14
Hydropsyche sp.	6	83
Macrostemum carolina	–	1
Oecetis georgia	9	2
Oecetis persimilis	1	–

Benthic macroinvertebrate taxa list for Florida State Hospital collected via Hester-Dendy artificial substrates in Mosquito Creek, on May 16, 2000. Densities, in number/m^2, represent the mean of three replicates.

	Control Site	Test Site
Trichoptera		
Oecetis sp.	–	1
Oxyethira sp.	1	–
Polycentropus sp.	1	–
Triaenodes sp.	–	1
Hydropsychidae	–	13
Undetermined Trichoptera	–	1

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 FL0031482 11	12 000516 17	18 X	19 S	20 1

Remarks

21 66

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 FL0031482 11	12 000516 17	18 B	19 S	20 1

Remarks

21 66