

~~Biological Assessment~~ of

Jacksonville University

Wastewater Treatment Plant

Duval County

NPDES #FL0023774

Sampled 4 March 1991

June 1991

Biology Section
Division of Administrative and Technical Services

Introduction

Toxicological and chemical data were collected on effluent from the Jacksonville University Wastewater Treatment Plant in Jacksonville, Duval County, Florida, on 4 March, 1991. These data will be used to evaluate the facility's permit criteria.

The plant is located on the campus of Jacksonville University. Treatment consists of screening, surge tanks, aeration, clarification, and chlorination. The average flow is approximately 0.90 MGD, which greatly exceeds the facility's design capacity of 0.20 MGD. Effluent is discharged into the St. Johns River, in a tidally influenced area which is the receiving water for waste from domestic and industrial sources, as well as urban runoff (see map in Appendix).

Numerous violations of permit limits have occurred at this treatment facility, particularly from September 1, 1988, to August 31, 1989 (see table in Appendix). Specific parameters involved were BOD_5, TSS, and fecal coliform bacteria. Since that time, violations of limits for TKN, fecal coliform bacteria, and flow have been documented, as well as failure to submit monthly reports. In January and March of 1991, the DER Northeast District Office performed analyses of total and fecal coliform bacteria, BOD_5, COD, and suspended solids. None of these measurements was in violation of permit limits.

Jacksonville University is negotiating with a private regional utility for wastewater services, and hopes to reach an agreement before the present permit expires.

Methods

The focus of this investigation was to determine the quality of the discharger's effluent. Acute screening toxicity bioassays, using *Ceriodaphnia dubia* and *Notropis leedsi* as test organisms, were performed on an effluent sample (Peltier and Weber 1985, FDER 1985). The effluent was analyzed for organic constituents (base neutrals, acid extractables, and pesticide extractables), metals, and nutrients. Methods used for all chemical analyses are on file at the Tallahassee DER Chemistry Laboratory.

The following personnel were involved in this investigation: Scott Bulgrin (DER Northeast District) and Lyn Burton, Marshall Faircloth, Russel Frydenborg, Kathleen Lurding, and Sandy McClure (Tallahassee Biology Laboratory).

Results and Discussion

Neither the chlorinated nor the dechlorinated effluent sample was acutely toxic to *Notropis leedsi* or *Ceriodaphnia dubia* (Appendix). Apparently the residual chlorine level of 0.04 mg/l measured in the sample was not sufficient to produce mortality in these test organisms.

All effluent organic constituents determined in the single grab sample were below detection limits, except for the tentative identification of traces of caffeine and cholesterol derivatives, and 25 µg/l of C_{18-30} aliphatics (Appendix). The following metals were found: barium (33 µg/l), copper (31 µg/l), iron (356 µg/l), and zinc (118 µg/l) (Appendix). This level of barium is not considered threatening to aquatic life. The concentration of zinc approached the threshold above which chronic effects begin to occur. Both the copper and iron concentrations present in the discharge exceeded their ambient water quality standards of 15 and 300 µg/l, respectively (17.302.530 FAC). Silver was found in the sample, but due to a detection limit of 0.2 µg/l, it cannot be determined if the actual concentration was above its Class III standard of 0.05 µg/l.

Effluent nutrients were relatively high (Appendix). Total and orthophosphorus were 1.1 and 0.86 mg P/l, respectively. TKN was found at its permit limit of 15 mg N/l, and effluent ammonia was determined to be 11 mg N/l. This ammonia concentration, in a high pH, saline area (which would elevate the unionized ammonia portion) is close to toxic levels. The latest 305(b) report gave this area of the St. Johns River a poor water quality rating, characterized by elevated nutrient levels and low macroinvertebrate diversity. The concentrations of nutrients nitrogen and phosphorus discharged by Jacksonville University WWTP contribute to this observed water quality degradation.

Conclusions

The effluent sample collected from Jacksonville University

Wastewater Treatment Plant was not toxic to the cladoceran, *Ceriodaphnia dubia*, nor to the bannerfin shiner, *Notropis leedsi*, in 48 hour static acute bioassays. No organic constituents of any consequence were detected, and low levels of the metals barium and zinc were found. However, concentrations of iron and copper were in violation of their ambient water quality standards. Silver was found in the sample, but due to a detection limit of 0.2 µg/l, it cannot be determined if the actual concentration was above its Class III standard of 0.05 µg/l.

Literature Cited

American Public Health Assoc., American Water Works Assoc., and Water Pollution Control Federation. 1989. Standard Methods for the Examination of Water and Wastewater, 17th ed. New York, N.Y. 1268 p.

Florida Department of Environmental Regulation. 1985. Quality assurance manual for performing acute toxicity tests. 2nd edition. Fla. Dept. Environmental Regulation, Biology Section, Tallahassee. 53 pp.

Peltier, W. H. and C. I. Weber. 1985. Methods for measuring the acute toxicity of effluents to freshwater and marine organisms. 3rd edition. EPA/600/4-85/013. U. S. EPA, Cincinnati, Ohio. 216 pp.

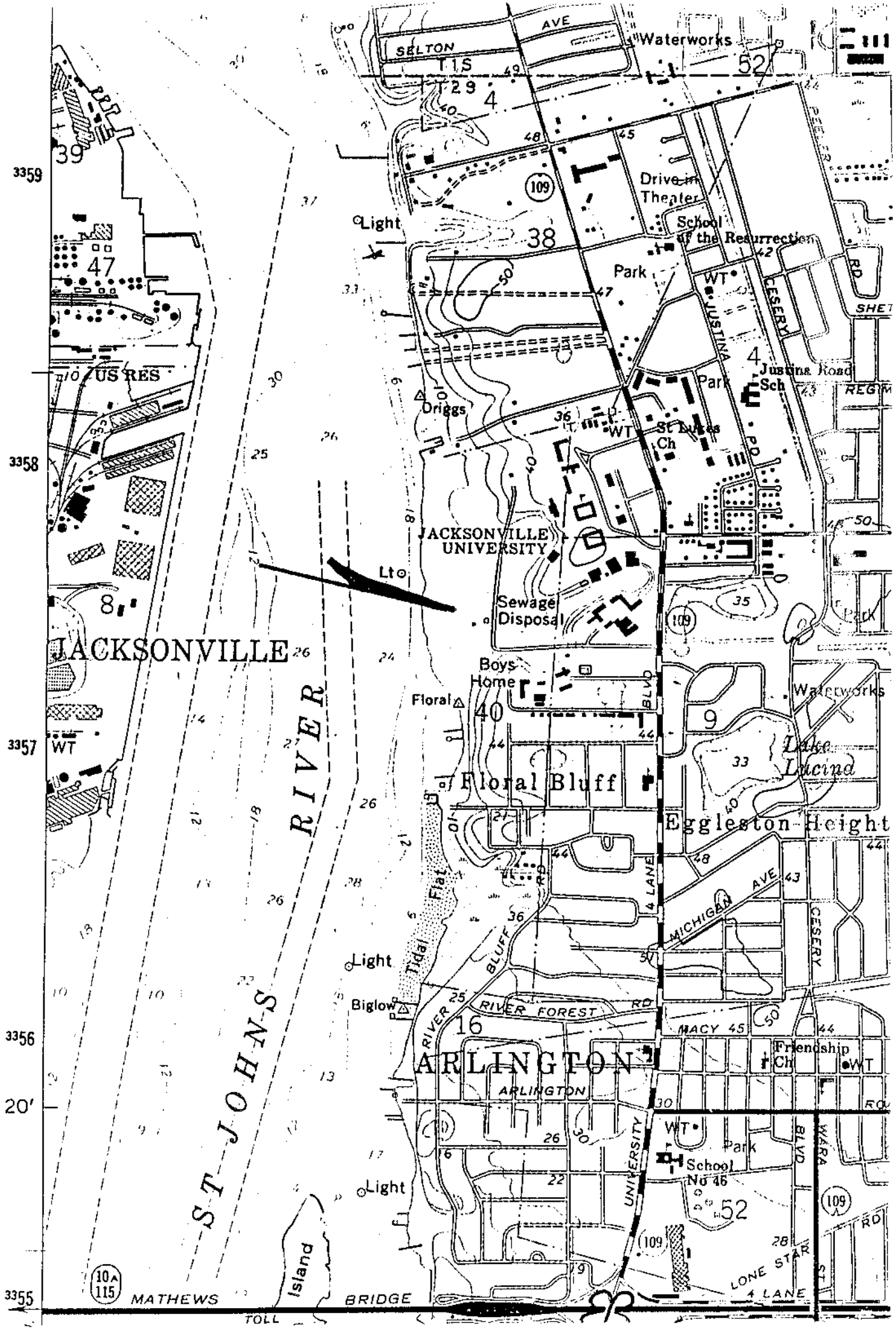

SELTON AVE
Waterworks
T1S
R29
Drive-in Theater
School of the Resurrection
Park
WT
JUSTINA
CESERY
Justina Road Sch
Light
Driggs
St Lukes Ch
JACKSONVILLE UNIVERSITY
Lt
Sewage Disposal
JACKSONVILLE
ST JOHNS RIVER
Boys Home
Floral
Floral Bluff
Lake Lucina
Egglesten Height
MICHIGAN AVE
4 LANE
TIDAL FLAT
BLUFF RD
Light
Biglow
RIVER FOREST RD
ARLINGTON
MACY
Friendship Ch
ARLINGTON
UNIVERSITY BLVD
WARA
Park
School No 46
Light
Island
MATHEWS BRIDGE
TOLL
LONE STAR
4 LANE
3359
3358
3357
3356
3355
20'

TABLE 1. VIOLATIONS of the Jacksonville University WWTP Facility (From BESD Citation) # W-89-22

1. The maximum permissible effluent limitation for five day biochemical oxygen demand (BOD_5) of 60 mg/l was exceeded on January 26, 1989, and April 12, 1989.

2. The weekly average effluent limitation for BOD_5 of 45 mg/l was exceeded for the weeks of January 22, 1989, and April 9, 1989.

3. The monthly average effluent limitation for BOD_5 of 30 mg/l was exceeded for the months of January 1989 and April 1989.

4. The annual average effluent limitation for BOD_5 of 20 mg/l was exceeded for the period September 1, 1988, through August 31, 1989.

5. The maximum permissible effluent limitation for total suspended solids (TSS) of 60 mg/l was exceeded on the following dates:

December 8, 1988	April 12, 1989
January 26, 1989	June 7, 1989

6. The weekly average effluent limitation for TSS of 45 mg/l was exceeded for the weeks of January 22, 1989, and April 9, 1989.

7. The monthly average effluent limitation for TSS of 30 mg/l was exceeded for the following months:

December 1988	April 1989
January 1989	June 1989

8. The annual average effluent limitation for TSS of 20 mg/l was exceeded for the period September 1, 1988, through August 31, 1989.

1. The maximum permissible effluent limitation for fecal coliform of 800 per 100 ml of sample was exceeded on the following dates:

January 26, 1989	April 20, 1989
January 10, 1989	June 7, 1989

2. The annual average effluent limitation for fecal coliform of 200 per 100 ml of sample was exceeded for the period September 1, 1988, through August 31, 1989.

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: CKS JAXONVILLE UNIVERSITY
Address/City:
County: DUVAL
Contact/District: SCOTT BURGIN NE
NPDES Permit #: FL0023744 **Outfall #:**

Sample Collection: Date 3-4-91 Time 1000
Test Beginning: Date 3-5-91 Time 1530
Test Ending: Date 3/7/91 Time 1315
Test Organism: N. LEEDSI C. DUBIA
Life Stage/Age: <24 hrs

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

Remarks: * Nobody detected
** body detected MF

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7.0, 9.09	5.86@22	1473@24.2	216@23.6
24 hr	7.0, 9.09	8.2@23°C	1496@23.9	22.2@23.8
48 hr	7.0, 9.09	8.4@20°C	1496@23.9	243@22.6

N. LEEDSI

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
CONTROL	25	5	5	5	8.6	8.4	8.3	7.7	8.1	8.3	18.4	21.7	21.2			
CONTROL	37	5	5	5	8.7	8.6	8.4	7.7	8.1	8.3				238		244
100%	46	5	5	5	8.5	7.4	7.8	7.4	8.0	8.2	24.0	21.4	21.1			
100%	48	5	5	5	8.4	7.4	7.8	7.4	8.0	8.1				657		621
de-Cl⁻	188	5	4†	4**	8.6	7.4	7.6	7.5	8.0	8.2	22.0	21.5	21.2			
de-Cl⁻	190	5	5	5	8.6	7.5	7.6	7.5	8.0	8.1				689		627
CONTROL	A	5	5	5	8.7	8.3	8.4	8.1	8.2	8.1	21.0	22.2	21.9	166		205
↓	B	5	5	5			8.5			8.1						
	C	5	5	4			8.5			8.1						
↓	D	5	5	5			8.5			8.1						
100%	A	5	5	5	8.4	7.8	8.4	7.5	8.2	8.4	22.5	22.2	21.8	547		584
↓	B	5	5	5			8.4			8.4						
	C	5	5	5			8.4			8.4						
↓	D	6	6	6			8.4			8.4						
de-Cl⁻	A	5	5	5	8.6	7.9	8.4	7.5	8.2	8.4	22.0	22.2	21.8	542		598
	B	5	5	5			8.4			8.4	22.0 KML					
↓	C	5	5	5			8.4			8.4						
	D	6	6	6			8.4			8.4						
Measured/Loaded by:		RBF	MF	MF	RBF	MF	MF	RBF	MF	MF	RBF	MF	MF	RBF		MF
Recorded by:		RBF	MF	MF	KML	MF	MF	KML	MF	MF	KML	MF	MF	KML		MF

Investigators' Signatures

K A Lunding
Darbell Faircloth
Russell Frydenborg

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl₂:					
Lab Tot. Resid. Cl₂:			.04	Hach	KML
Alkalinity:	114	59	163	HACH	KML
Hardness:	121	79	215	HACH	KML
Total Ammonia:					

Ammonia meter slope:

Sample ID: 14473/91-MAR-05-07-01 Matrix: W-EFFLUENT
Location: Jacksonville University effluent WWTP
Field ID:
Collected: 4-MAR-1991 10:10 By: Scott Bulgrin
Authorized: 22-MAR-1991 By: Liang T. Lin
Type: Grab Sample
Lab Comments:
Field Comments:

Analysis ID: W-BNA
base-neutral-acid water analysis
Analyzed: 12-MAR-1991 By: Laura Harrison
Authorized: 20-MAR-1991 By: Laura Harrison

Storet#	Analyte	Value	Units
34205	Acenaphthene	2 U	ug/L
34200	Acenaphthylene	2 U	ug/L
39330	Aldrin	8 U	ug/L
34220	Anthracene	2 U	ug/L
34526	Benzo(a)anthracene	2 U	ug/L
34230	Benzo(b)fluoranthene	2 U	ug/L
34242	Benzo(k)fluoranthene	2 U	ug/L
34247	Benzo(a)pyrene	4 U	ug/L
34521	Benzo(g,h,i)perylene	5 U	ug/L
34292	Benzyl butyl phthalate	2 U	ug/L
	a-BHC	8 U	ug/L
39337	b-BHC	8 U	ug/L
39340	d-BHC	8 U	ug/L
	g-BHC	8 U	ug/L
39120	Benzidine	25 U	ug/L
34273	Bis(2-chloroethyl)ether	2 U	ug/L
34278	Bis(2-chloroethoxy)methane	2 U	ug/L
34283	Bis(2-chloroisopropyl)ether	2 U	ug/L
39100	Bis(2-ethylhexyl)phthalate	2 U	ug/L
34636	4-Bromophenyl phenyl ether	2 U	ug/L
34581	2-Chloronaphthalene	2 U	ug/L
34641	4-Chlorophenyl phenyl ether	2 U	ug/L
34320	Chrysene	2 U	ug/L
39310	4,4'-DDD	8 U	ug/L
39320	4,4'-DDE	8 U	ug/L
39300	4,4'-DDT	8 U	ug/L
34556	Dibenzo(a,h)anthracene	5 U	ug/L
39110	Di-n-butyl phthalate	2 U	ug/L
34536	1,2-Dichlorobenzene	2 K	ug/L
34566	1,3-Dichlorobenzene	2 U	ug/L
34571	1,4-Dichlorobenzene	2 U	ug/L
34631	3,3'-Dichlorobenzidine	5 U	ug/L
39380	Dieldrin	8 U	ug/L
34336	Diethylphthalate	2 U	ug/L
34341	Dimethylphthalate	2 U	ug/L
34611	2,4-Dinitrotoluene	2 U	ug/L
34626	2,6-Dinitrotoluene	2 U	ug/L

Continued on Page 3

14473/91-MAR-05-07-01/W-BNA Continued from Page 2

Storet#	Analyte	Value	Units
34596	Di-n-octyl phthalate	2 U	ug/L
34361	Endosulfan-I	8 U	ug/L
34356	Endosulfan-II	8 U	ug/L
34351	Endosulfan-sulfate	8 U	ug/L
39390	Endrin	8 U	ug/L
34366	Endrin-aldehyde	8 U	ug/L
34376	Fluoranthene	2 U	ug/L
34381	Fluorene	2 U	ug/L
39410	Heptachlor	8 U	ug/L
39420	Heptachlor-epoxide	8 U	ug/L
39700	Hexachlorobenzene	2 U	ug/L
34391	Hexachlorobutadiene	2 U	ug/L
34396	Hexachloroethane	2 U	ug/L
34386	Hexachlorocyclypentadiene	5 U	ug/L
34403	Indeno(1,2,3-cd)pyrene	5 U	ug/L
34408	Isophorone	2 U	ug/L
34696	Naphthalene	2 U	ug/L
34447	Nitrobenzene	2 U	ug/L
34438	N-Nitrosodimethylamine	2 U	ug/L
34428	N-Nitrosodi-n-propylamine	2 U	ug/L
34433	N-Nitrosodiphenylamine	2 U	ug/L
34671	PCB-1016	1.0E+03 U	ug/L
39488	PCB-1221	1.0E+03 U	ug/L
39492	PCB-1232	1.0E+03 U	ug/L
39496	PCB-1242	1.0E+03 U	ug/L
39500	PCB-1248	1.0E+03 U	ug/L
39504	PCB-1254	1.0E+03 U	ug/L
39508	PCB-1260	1.0E+03 U	ug/L
	PCB-1262	1.0E+03 U	ug/L
34461	Phenanthrene	2 U	ug/L
34469	Pyrene	2 U	ug/L
39400	Toxaphene	1.0E+03 U	ug/L
34551	1,2,4-Trichlorobenzene	2 U	ug/L
34462	4-Chloro-3-methyl phenol	2 U	ug/L
34586	2-Chlorophenol	2 U	ug/L
34601	2,4-Dichlorophenol	2 U	ug/L
34606	2,4-Dimethylphenol	2 U	ug/L
34616	2,4-Dinitrophenol	15 U	ug/L
34657	2-Methyl-4,6-dinitrophenol	15 U	ug/L
34591	2-Nitrophenol	2 U	ug/L
34646	4-Nitrophenol	15 U	ug/L
39032	Pentachlorophenol	5 U	ug/L
34694	Phenol	2 U	ug/L
34621	2,4,6-Trichlorophenol	2 U	ug/L

Comments (1) Tentative identification of
(2) traces of caffeine and cholesterol derivs.,
(3) and C18-30 aliphatics at 25 ug/L.
(4)
(5)
(6)

14471/91-MAR-05-06-01 Continued from Page 2

Analysis ID: W-ICP-23
ICP multielement analysis for water samples
Analyzed: 17-APR-1991 By: Kate Brackett
Authorized: 1-MAY-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
01106	Aluminum	NR	ug/L
01002	Arsenic	20 U	ug/L
01097	Antimony	NR	ug/L
01007	Barium	33	ug/L
01012	Beryllium	NR	ug/L
01027	Cadmium	3 U	ug/L
00916	Calcium	NR	mg/L
01034	Chromium	10 U	ug/L
01037	Cobalt	NR	ug/L
01042	Copper	31	ug/L
01045	Iron	356	ug/L
01051	Lead	18 T	ug/L
00927	Magnesium	NR	mg/L
01055	Manganese	NR	ug/L
01067	Nickel	5 U	ug/L
00937	Potassium	NR	mg/L
01147	Selenium	30 U	ug/L
01077	Silver	3 U	ug/L
00929	Sodium	NR	mg/L
01082	Strontium	NR	ug/L
01059	Thallium	NR	ug/L
01087	Vanadium	NR	ug/L
01092	Zinc	118 A	ug/L
Comment	NONE		

Sample ID: 14472/91-MAR-05-06-02 Matrix: W-TRIP-BLK
Location: Jacksonville University Trip Blank
Field ID:
Collected: 4-MAR-1991 08:00 By: Scott Bulgrin
Authorized: 1-MAY-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

14472/91-MAR-05-06-02 Continued on Page 4

Sample ID: 14471/91-MAR-05-06-01 Matrix: W-EFFLUENT
Location: Jacksonville University effluent WWTP
Field ID:
Collected: 4-MAR-1991 10:10 By: Scott Bulgrin
Authorized: 1-MAY-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

Analysis ID: AG-G-W
Silver in water by furnace AA
Analyzed: 24-APR-1991 By: Jack Merritt
Authorized: 26-APR-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
01077	Silver	0.2 K	ug/L

Analysis ID: CD-G-W
Cadmium by graphite furnace for water samples
Analyzed: 11-APR-1991 By: Jack Merritt
Authorized: 18-APR-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
01027	Cadmium	0.2 K	ug/L

Analysis ID: HG-H-W
Mercury by cold vapor using hydride sys.-water
Analyzed: 21-MAR-1991 By: Laurie Roughton
Authorized: 2-APR-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
71900	Mercury	0.1 U	ug/L

Analysis ID: SE-G-W
Selenium in water by furnace AA
Analyzed: 17-APR-1991 By: Jack Merritt
Authorized: 26-APR-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
01147	Selenium	4 U	ug/L

 Continued on Page 3

Sample ID: 14469/91-MAR-05-05-01 Matrix: W-EFFLUENT
Location: Jacksonville University effluent WWTP
Field ID:
Collected: 4-MAR-1991 10:10 By: Scott Bulgrin
Authorized: 1-MAY-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

Analysis ID: W-PO4
Orthophosphate analysis for water samples
Analyzed: 5-MAR-1991 By: Lei Wei
Authorized: 1-MAY-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
70507	O-Phosphate-P	0.86 A	mg P/L

Sample ID: 14470/91-MAR-05-05-02 Matrix: W-TRIP-BLK
Location: Jacksonville University Trip Blank
Field ID:
Collected: 4-MAR-1991 08:00 By: Scott Bulgrin
Authorized: 1-MAY-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

Analysis ID: W-PO4
Orthophosphate analysis for water samples
Analyzed: 5-MAR-1991 By: Lei Wei
Authorized: 1-MAY-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
70507	O-Phosphate-P	0.020 U	mg P/L

********** END OF REPORT **********

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2846 Industrial Plaza Drive • Tallahassee, FL 32301 • (904) 878-3994 • Fax (904) 878-9504

LOG NO: T1-00855

Received: 02 APR 91

Dr. Yuh-Hsu Pan
DER-Chemistry Section
2600 Blairstone Road
Tallahassee, Florida 32399-2400

Project: T174/District/Nutrient

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
00855-1	14469	Client
00855-2	14470	
00855-3	14894	
00855-4	14895	
00855-5	14896 JAX UNIV EFF.	

PARAMETER	00855-1	00855-2	00855-3	00855-4	00855-5
Chloride, mg/l	36	<1.0	9.0	12	<1.0
Fluoride, mg/l	0.46	<0.20	<0.20	<0.20	<0.20
Sulfate as SO4, mg/l	110	5.7	11	12	<5.0

RECEIVED
MAY 22 1991
CHEMISTRY SECTION

Sample ID: 14469/91-MAR-05-05-01 Matrix: W-EFFLUENT
Location: Jacksonville University effluent WWTP
Field ID:
Collected: 4-MAR-1991 10:10 By: Scott Bulgrin
Authorized: 1-MAY-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

Analysis ID: W-PO4
Orthophosphate analysis for water samples
Analyzed: 5-MAR-1991 By: Lei Wei
Authorized: 1-MAY-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
70507	O-Phosphate-P	0.86 A	mg P/L

Sample ID: 14470/91-MAR-05-05-02 Matrix: W-TRIP-BLK
Location: Jacksonville University Trip Blank
Field ID:
Collected: 4-MAR-1991 08:00 By: Scott Bulgrin
Authorized: 1-MAY-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

Analysis ID: W-PO4
Orthophosphate analysis for water samples
Analyzed: 5-MAR-1991 By: Lei Wei
Authorized: 1-MAY-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
70507	O-Phosphate-P	0.020 U	mg P/L

********** END OF REPORT **********

Ross Hyatt Woody

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2846 Industrial Plaza Drive • Tallahassee, FL 32301 • (904) 878-3994 • Fax (904) 878-9504

LOG NO: T1-00784

Received: 26 MAR 91

Dr. Yuh-Hsu Pan
DER-Chemistry Section
2600 Blairstone Road
Tallahassee, Florida 32399-2400

Project: T165/District 0325

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
00784-1	C-527	Client
00784-2	C-528	
00784-3	C-529	
00784-4	C-530	
00784-5	C-531	

5 U EFFLUENT — STARKE EFFLUENT

PARAMETER	00784-1	00784-2	00784-3	00784-4	00784-5
Ammonia-N, mg/l	<0.030	0.047	<0.030	11	5.6
Total Kjeldahl Nitrogen-N, mg/l	1.0	0.45	0.43	15	10
Total Phosphorus, mg/l	0.28	2.3	0.11	1.1	3.1
Nitrate + Nitrite-N, mg/l	0.11	0.37	0.34	0.10	0.11

RECEIVED
DEPT. ENVIRONMENTAL REG.
APR 22 1991
CHEMISTRY SECTION

Department of Environmental Regulation

Results of Fifth Year Inspections

Discharger: Jacksonville University Wastewater Treatment Plant
County: Duval
NPDES Number: FL0023774
State Permit Expiration Date: 14 July 1991

Toxics Sampling Inspection (XSI)

Date Sampled: 4 March 1991

Results: Violation of numeric water quality standards for copper (31 µg/l) and iron (356 µg/l). Silver present at < 0.2 µg/l. Non-toxic concentrations of barium (33 µg/l) and zinc (118 µg/l) present. No organic priority pollutants found.

Compliance Biomonitoring Inspection (CBI)

Date Sampled: 4 March 1991

Results: No toxicity to *Ceriodaphnia dubia* or *Notropis leedsi.*

Impact Bioassessment Inspection (IBI)

Date Sampled: Not sampled

Results:

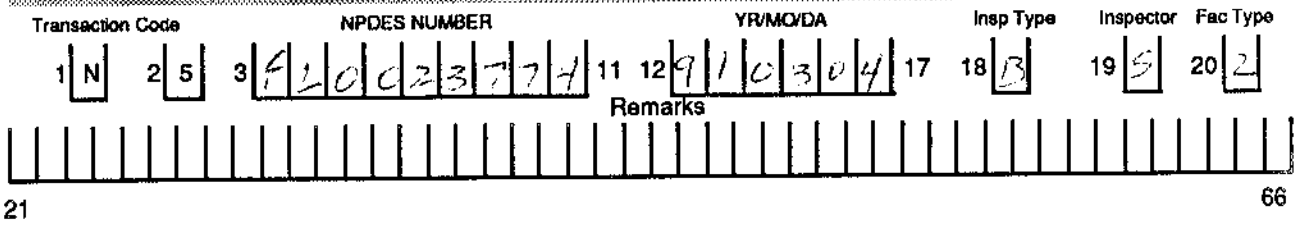
Water Quality Inspection (WQI)

Date Sampled: 4 March 1991

Results: Elevated nutrient concentrations: Total phosphorus (1.1 mg P/l), ortho-phosphorus (0.86 mg P/l), TKN (15 mg N/l), NH_3 (11 mg N/l), and NO_2NO_3 (0.1 mg N/l). These nutrient levels contribute to the reported water quality degradation in the bend area of the St. Johns River, as noted by the 1990 305(b) Water Quality Assessment.

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.

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)

