

Bioassays of the City of

Bonifay Wastewater Treatment Facility

Bonifay, Holmes County, Florida

NPDES #FL0027731

Sampled 6/4/01

August 2001

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

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Introduction

City of Bonifay Wastewater Treatment Facility, 911 East Bay Avenue, Bonifay, Holmes County, NPDES# FL0027731, tests performed on 5 to 7 June 2001.

This domestic wastewater treatment facility has a design flow of 1.4 MGD and a mean flow of 0.576 MGD. The wastewater treatment consists of influent grit removal, screening, dual sequential batch reactors, post equalization, dual sand filters, chlorine disinfection, postaeration, and dechlorination using sodium dioxide. After treatment, the effluent is continuously discharged into Camp Branch Creek, which flows into the Class III fresh waters of Holmes Creek. Residuals are aerobically digested and are land applied.

A total plant kill occurred in 1999 that caused total suspended solids (TSS) and nitrogen violations from January through December of 2000. A 7-day chronic toxicity test conducted in February 2000 using the species *Pimephales promelas* was also in violation. In March of 2000, there were violations for the 7-day chronic toxicity test for *P. promelas* and carbonaceous biological oxygen demand five (CBOD5). An additional CBOD5 violation occurred for the month of April 2000. Consent Order #00-2004 was executed on January 29, 2001, for the TSS and nitrogen violations. The Order included requirements for corrective actions, penalties for the violations, and interim limits for TSS and nitrogen for the facility (facility summary provided by Angela Schrift, FDEP, Pensacola).

The toxicity tests discussed in this report were performed in accordance with methods described by Weber, 1993, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 4th Edition, EPA/600/4-90/027F.

Results and Discussion

The FDEP Biology Section performed two 48-hour static acute screening toxicity bioassays on a sample of effluent from this facility. The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. The test results did not indicate toxicity within 48 hours (Table 1).

Total residual chlorine and total ammonia in the sample were not detected in the lab. Further chemical analyses were performed on the sample, and several metals were identified (Table 2).

Conclusion

The sample of effluent collected from this facility on June 4, 2001, did not show acute toxicity to either test species within 48 hours.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the City of Bonifay Wastewater Treatment Facility, 911 East Bay Avenue, Bonifay, Holmes County, Florida, NPDES# FL0027731, performed on 5 to 7 June 2001.

Facility:	**City of Bonifay WWTF**		**NPDES #**	**FL0027731**	Facility Type: **Wastewater**
Location:	911 East Bay Avenue, Bonifay		Contact/District:	Glenn Butts/ Northwest	**Treatment Facility**
County:	Holmes		Test type:	static acute screen	
Sample Collection Date:	6/4/01	Time: 1020	# tests:	2	Receiving Water: Holmes River
Test Beginning Date:	6/5/01	Time: 1130	Chlorination Type:	Chlorinated	
Test Ending Date:	6/7/01	Time: 1245		sample collected after dechlorination	**Page 1 of 1**

Total Residual CL2	mg/L	Method
Field:	-	-
Lab:	<0.03	Hach

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	<0.017	<0.017
20% Diluted Mineral Water (cladocerans):	<0.017	<0.017
100% Sample:	<0.017	<0.017

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	140	128
20% Diluted Mineral Water (cladocerans):	84	84
100% Sample:	111	100

Salinity[C]	(ppt)
Control Water:	<1
100% Sample:	<1

[C] Salinity based on conductivity and temperature measurements.

Organism: ***Ceriodaphnia dubia*** Life stage: < 24 hours

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[A]			Dissolved Oxygen			Conductivity Uncorrected µmhos/cm	
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control A	0/20	5	5	5	8.3	-	8.2	25.5	-	24.2	7.9	-	7.8	180	225
Control B	0/20	5	5	5	-	-	8.3	-	-	23.9	-	-	7.9	-	210
Control C	0/20	5	5	5	-	-	8.3	-	-	23.6	-	-	8.1	-	205
Control D	0/20	5	5	5	-	-	8.4	-	-	23.6	-	-	8.2	-	220
100% A	20/0	5	5	5	7.9	-	8.5	23.9	-	24.0	7.9	-	8.1	345	400
100% B	20/0	5	5	5	-	-	8.5	-	-	24.0	-	-	8.1	-	395
100% C	20/0	5	5	5	-	-	8.6	-	-	23.9	-	-	8.2	-	395
100% D	20/0	5	5	5	-	-	8.5	-	-	23.7	-	-	8.1	-	400

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 24.5-26.0°C.
Incubator #2 temperature range for the test period was 24.5-25.5°C.

Organism: ***Cyrpinella leedsi*** Life stage: 10 days

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			Conductivity Uncorrected µmhos/cm	
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control A	0/500	5	5	5	8.0	8.3	8.5	24.2	24.6	25.0	7.9	7.3	7.4	270	295
Control B	0/500	5	5	5	8.1	8.3	8.5	24.2	24.8	24.7	7.9	7.4	7.5	260	270
Control C	0/500	5	5	5	8.1	8.3	8.5	24.1	24.9	24.2	7.9	7.5	7.6	260	275
Control D	0/500	5	5	5	8.1	8.3	8.5	24.1	24.7	23.9	7.9	7.4	7.7	260	275
100% A	500/0	5	5	5	7.9	8.2	8.3	24.4	24.5	24.3	7.8	7.3	7.6	345	360
100% B	500/0	5	5	5	7.9	8.2	8.3	24.3	24.5	24.2	7.8	7.4	7.6	340	360
100% C	500/0	5	5	5	7.9	8.2	8.3	24.2	24.6	24.5	7.8	7.5	7.5	350	360
100% D	500/0	5	5	5	7.9	8.2	8.4	24.2	24.9	25.0	7.8	7.4	7.4	340	365

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 24.5-26.0°C.
Incubator #3 temperature range for the test period was 24.5-25.0°C.

Table 2. Results of chemical analyses on the sample of effluent from City of Bonifay Wastewater Treatment Facility sampled on June 4, 2001.

Metals

Aluminum	210	µg/L	I
Cadmium	0.072	µg/L	I
Calcium	35.2	mg/L	A
Copper	0.63	µg/L	I
Iron	34	µg/L	I
Magnesium	4	mg/L	A
Selenium	1.3	µg/L	I

Pesticides and Herbicides

None detected

Base, Neutral, & Acid Extractable Organics

None detected

[A] Value reported is the mean of two or more determinations.
[I] Value reported is less than the minimum quantitation limit, and greater than or equal to the minimum detection limit.

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Bonifay WWTP
County: Holmes
Contact / District: Glenn Butts / Northwest
NPDES Permit #: FL0027731
LIMS Sample #: 526723 LIMS Job #: TLH-2001-06-05-04

Sample Collection: Date 6/4/01 Time 1020
Test Beginning: Date 6/5/01 Time 1130
Test Ending: Date 6/7/01 Time 1245
Organism Batch #: 26 Diluent Batch #: DMW#16
Organism Age: <24 hrs. SRT toxicant batch #: N/A

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

Test organism: C. dubia

Remarks:
(A) Sample arrived not on ice. Temperature measured 24.5°C @ time of initial check-in. 6/5/01 SG

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
CNTL	A	5	5	5	8.3	—	8.2	25.5	—	24.2	7.9	—	7.8	180	—	225
	B	5	5	5	—	—	8.3	—	—	23.9	—	—	7.9	—	—	210
	C	5	5	5	—	—	8.3	—	—	23.6	—	—	8.1	—	—	205
	D	5	5	5	—	—	8.4	—	—	23.6	—	—	8.2	—	—	220
100%	A	5	5	5	7.9	—	8.5	23.9	—	24.0	7.9	—	8.1	345	—	400
	B	5	5	5	—	—	8.5	—	—	24.0	—	—	8.1	—	—	395
	C	5	5	5	—	—	8.6	—	—	23.9	—	—	8.2	—	—	395
	D	5	5	5	—	—	8.5	—	—	23.7	—	—	8.1	—	—	400
measured by:		MF	SG	SG	JG	—	SG	SG	—	SG	SG	—	SG	SG	—	SG
recorded by:		SG	SG	SG	JG	—	JA	SG	—	JA	JA	—	JA	MK	—	JA

(B) Verified initial received temperature of sample with Receiving and they state sample was on ice at 9:30 AM on 6/5/01. Sample checked in to Bioassay Log Book at 24.5°C at 9:40 AM on 6/5/01. SG 6/8/01

(Possibly due to being shipped wrapped in insulating bubble-wrap? 6/19/01 SG)

Investigators' Signatures
Shannon Girardi
Tom Kotter
Sharon Cyr
Mandy Hambrick

Temperature Range °C
Incubator # 2 24.5 - 25.5°C
Room B244 24.5 - 26.0°C

Salt Water / Well Water

Water Quality Parameters	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):		—	—	—	—
Lab Total Residual Cl2 (mg/L):	<0.03	<0.03	DR100	SG	JA
Alkalinity (mg/L as $CaCO_3$):	84	111	Hach	JA	JA
Hardness (mg/L as $CaCO_3$):	84	100	Hach	JA	JA
Total ammonia (mg/L as N):	<0.017	<0.017	Denver	MK	JA
Salinity:	<1	<1	YSI	JA	JA

reviewer form updated 3/3/99

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Bonifay WWTP
County: Holmes
Contact / District: Glenn Butts / Northwest
NPDES Permit #: FL0027731
LIMS Sample #: 526723 LIMS Job #: TLH-2001-06-05.04
sample log
Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through
Test Number: 2 of 2

Sample Collection: Date 6/4/01 Time 1020
Test Beginning: Date 6/5/01 Time 1130
Test Ending: Date 6/7/01 Time 1245
Organism Batch #: 46 Diluent Batch #: well
Organism Age: 10 days SRT toxicant batch #: NA
Test organism: C. dubia

Remarks:
(A) Sample arrived not on ice. Initial check-in temperature measured 24.5°C. 6/5/01 (SG)

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) (µmhos/cm) 0 hr	UNCORRECTED Cond. (µmhos/cm) 24 h	UNCORRECTED Cond. (µmhos/cm) 48 h
CNTL A	A1	5	5	5	8.0	8.3	8.5	24.2	24.6	25.0	7.9	7.3	7.4	270	270	295
B	#2	5	5	5	8.1	8.3	8.5	24.2	24.9	24.7	7.9	7.4	7.5	260	270	270
C	-3	5	5	5	8.1	8.3	8.5	24.1	24.9	24.2	7.9	7.5	7.6	260	275	275
D	-4	5	5	5	8.1	8.3	8.5	24.1	24.7	23.9	7.9	7.4	7.7	260	270	275
100% A	+5	5	5	5	7.9	8.2	8.3	24.4	24.5	24.3	7.8	7.3	7.6	345	350	340
B	#6	5	5	5	7.9	8.2	8.3	24.3	24.5	24.2	7.8	7.4	7.6	340	355	360
C	#7	5	5	5	7.9	8.2	8.3	24.2	24.6	24.5	7.8	7.5	7.5	350	355	360
D	#8	5	5	5	7.9	8.2	8.4	24.2	24.9	25.0	7.8	7.4	7.4	340	360	365
measured by:		MF	SG	SG	SG	MF	SG	SG	MF	SG	SG	MF	SG	SG	MF	SG
recorded by:		SG	SG	SG	SG	SG	JA	YK	SG	JA	YK	SG	JA	YK	SG	JA

(B) Verified initial received temperature of sample with Receiving, and they state sample was received on ice at 9:30 AM on 6/5/01. Sample checked in to Bioassay Log Book at 24.5°C at 9:40 AM on 6/8/01.

(SG) 6/8/01

(Possibly due to being shipped wrapped in insulating bubble-wrap? 6/19/01 SG)

Investigators' Signatures

Temperature Range °C
Incubator # 3 24.5°-25.0°C
Room B246 24.5°-26.0°C

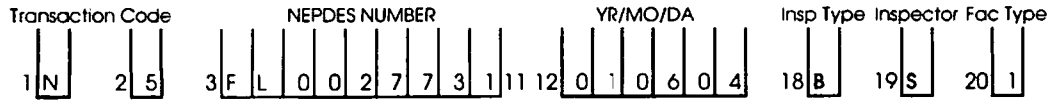
Water Quality Parameters	Salt Water (Well Water)	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):						
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR100	SG	JA
Alkalinity (mg/L as $CaCO_3$):	140		111	Hach	JA	JA
Hardness (mg/L as $CaCO_3$):	128		100	Hach	JA	JA
Total ammonia (mg/L as N):	<0.017		<0.017	Denver	YMK	JA
Salinity:	<1		<1	YSI	JA	JA

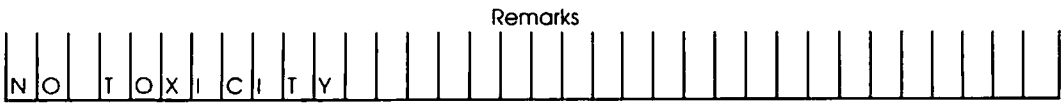
reviewer

form updated 3/3/99

The Bioassay of City of Bonifay Wastewater Treatment Facility effluent sampled on June 4, 2001, NPDES #FL0027731.

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

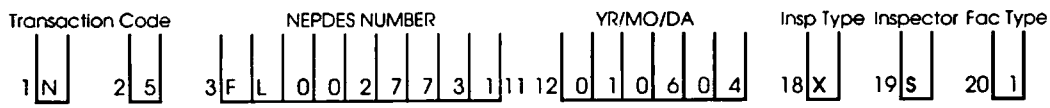


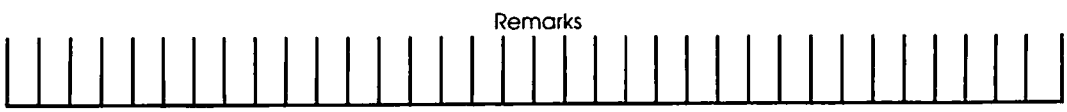


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The Priority Pollutants Analysis for Bioassay of City of Bonifay Wastewater Treatment Facility effluent sampled on June 4, 2001, NPDES #FL0027731.

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





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