

Bioassays of the City of

Bradenton Wastewater Treatment Plant

Bradenton, Manatee County, Florida

NPDES #FL0021369

Sampled 2/19/96

April 1996

Biology Section

Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan #870346G

Bioassays of the City of

Bradenton Wastewater Treatment Plant

Bradenton, Manatee County, Florida

NPDES #FL0021369

Biology Section
Bureau of Laboratories
April 1996

Introduction

City of Bradenton WWTP, Bradenton, Manatee County, Florida, NPDES #FL0021369, tests performed on 20 to 22 February, 1996.

This facility is located at 1st Street and 17th Avenue West, in Bradenton. The facility is a domestic WWTP system with a design capacity of 6 MGD and an annual average flow of 5.5 MGD. Treatment of wastewater includes chlorination, dechlorination using sulfur dioxide, denitrification, and aeration prior to discharge to the Manatee River. Of that discharge, 1.06 MGD of treated wastewater is diverted to the City of Bradenton reclaimed water reuse system (facility summary provided by Andrea Grainger, FDEP, Tampa).

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 (Table 1).

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

Conclusion

The sample of effluent collected from this facility on February 19, 1996, did not show toxicity.

Table 1. Data recorded during the 48-hour acute toxicity screening bioassays of a sample of effluent from the City of Bradenton WWTP, Bradenton, Manatee County, Florida, NPDES# FL0021369, performed on 20 to 22 February, 1996.

Facility: **City of Bradenton WWTP** — **NPDES #** **FL0021369** — Facility Type: **Domestic WWTP**
Location: 1 st St. and 17 th Ave. West, Bradenton — Contact/District: Kent Edwards/ Southwest
County: Manatee — Test type: static acute screen
Sample Collection Date: **2/19/96** Time: 1030 — # tests: 2 — Receiving Water: Manatee
Test Beginning Date: 2/20/96 Time: 1400 — Chlorination Type: **Dechlorinated** in
Test Ending Date: 2/22/96 Time: 1400 — facility dechlorination unit — **Page 1 of 1**

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

Concentrations	Sample/Diluent Volume(mL)	SURVIVAL # Alive 0 hr	24 hr	48 hr	pH 0 hour	24 hour	48 hour	Temperature[A] 0 hour	24 hour	48 hour	Dissolved Oxygen 0 hour	24 hour	48 hour	Conductivity Uncorrected µmhos/cm 0 hour	48 hour
Control A	0/20	5	5	5	8.0	-	8.0	23.9	-	25.7	7.8	-	7.6	180	180
Control B	0/20	5	5	5	-	-	8.1	-	-	25.9	-	-	7.6	-	190
Control C	0/20	5	5	5	-	-	8.1	-	-	25.9	-	-	7.6	-	195
Control D	0/20	5	5	5	-	-	8.1	-	-	25.8	-	-	7.6	-	195
100% A	20/0	5	5	5	7.6	-	8.4	23.7	-	26.0	8.4	-	7.8	1035	1040
100% B	20/0	5	5	5	-	-	8.4	-	-	26.0	-	-	7.8	-	1090
100% C	20/0	5	5	5	-	-	8.4	-	-	26.0	-	-	7.8	-	1100
100% D	20/0	5	5	5	-	-	8.4	-	-	25.9	-	-	7.7	-	1125

[A] Temperature of test incubator was continously recorded on a strip chart recorder.
Incubator temperature range for the test period was 24.4-25.5°C.

Organism: ***Cyprinella leedsi*** Age: 12 days

Concentrations	Sample/Diluent Volume(mL)	SURVIVAL # Alive 0 hr	24 hr	48 hr	pH 0 hour	24 hour	48 hour	Temperature[B] 0 hour	24 hour	48 hour	Dissolved Oxygen 0 hour	24 hour	48 hour	Conductivity Uncorrected µmhos/cm 0 hour	48 hour
Control A	0/500	5	5	5	7.7	8.1	8.5	25.0	23.7	23.7	7.8	8.0	8.0	255	245
Control B	0/500	5	5	5	7.7	8.1	8.5	24.9	23.7	23.9	7.8	8.0	8.0	255	245
Control C	0/500	5	5	5	7.7	8.1	8.5	24.9	23.7	23.9	7.8	8.0	8.0	255	250
Control D	0/500	5	5	5	7.8	8.1	8.5	24.8	23.8	23.9	7.8	8.0	8.0	255	250
100% A	500/0	5	5	5	7.5	7.9	8.3	24.5	23.7	23.9	7.1	7.9	8.0	1100	1095
100% B	500/0	5	5	5	7.5	7.9	8.3	24.4	23.6	23.9	7.0	7.8	7.9	1100	1085
100% C	500/0	5	5	5	7.5	7.9	8.3	24.4	23.6	23.8	6.8	7.8	7.9	1100	1090
100% D	500/0	5	5	5	7.5	7.9	8.2	24.4	23.8	23.9	6.8	7.7	7.9	1100	1095

[B] Temperature of test room was continously recorded on a strip chart recorder.
Room temperature range for the test period was 23.8-24.8°C.

Total Residual CL2	mg/L	Method
Field:	0.0	-
Lab:	<0.03	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	< 0.017	0.00
20% Dilute Mineral Water (cladocerans):	< 0.017	0.00
100% Sample:	<0.017	0.00

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	125	120
20% Dilute Mineral Water (cladocerans):	70	80
100% Sample:	115	225

Salinity	(ppt)
Control Water:	0
100% Sample:	0

Table 2. **Results of chemical analyses on the effluent from the City of Bradenton WWTP sampled on February 19, 1996.**

Metals		
Calcium	50.1	mg/L
Iron	406	µg/L
Magnesium	16.6	mg/L
Zinc	28	µg/L
Pesticides and Herbicides		
Atrazine	0.067	µg/L[I]
Base, Neutral, & Acid Extractable Organics		
none detected		

[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: City of Bradenton
County: Manatee
Contact / District: Kent Edwards / SW
NPDES Permit #: FL0021369
LIMS Sample #: 130256 (sampled log 2-28-96) LIMS Job #: 96-FEB-20-22

Sample Collection: Date 2/19/96 Time 1030
Test Beginning: Date 2/20/96 Time 1400
Test Ending: Date 2-22-96 Time 1400
Organism Batch #: 9 Diluent Batch #: 8
Organism Age: <24 hrs
Test Organism: Ceriodaphnia dubia

Test Type: ~~Screening~~ | Definitive
Static | Static Renewal | Flow-through

Test Number: 1 of 2

Remarks:

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0@7.0 9.0@9.0	23.0@23.0	8.1@25.3 °C	108.6@100.2 1412@1409@25.7 °C
24 hr	7.0@7.0 9.0@9.0	22.9@23.0	8.1@25.7 °C	108.0@106.2 1410@1401@24.9 °C
48 hr	7.0@7.0 9.0@9.0	22.8@22.9	8.1@25.7 °C	106.2@106.2 1408@1409@25.1 °C

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
CTL	A	5	5	5	8.0		8.0	23.9	8*	25.7	7.9		8.0	180		180
CTL	B	5	5	5			8.1		23.2	25.9			7.8			190
CTL	C	5	5	5			8.1			25.9			7.8			195
CTL	D	5	5	5			8.1			25.8			7.7			195
100%	A	5	5	5	7.6		8.4	23.7		26.0	7.4		7.8	1035		1040
100%	B	5	5	5			8.4			26.0			7.8			1090
100%	C	5	5	5			8.4			26.0			7.8			1100
100%	D	5	5	5			8.4			25.9			7.8			1125
Measured/Loaded by:		MK	MK	TM	TR		TM	TR		TM	TR		TM	TR		TM
Recorded by:		TR	MK	TM	TM		JRS	TM		JRS	TM		JRS	TM		JRS

Investigators' Signatures

Tina Mikulski
Gloria C Rodas
Marshall Faircloth
Joseph Smith
Jennifer Sparapani

reviewer

form updated 5/05/95

	Salt Water Well Water	Water Quality Parameters 20% Min Water	Sample	Method (2-20-96)	Measured by
Field Total Residual Cl2 (mg/L):					not measured
Lab Total Residual Cl2 (mg/L):	—	<0.03	DR-100	<0.03	TR
Alkalinity (mg/L as $CaCO_3$):	—	70	Hach	115	TR
Hardness (mg/L as $CaCO_3$):	—	80	Hach	225	TR
Total ammonia (mg/L as N):	—	<0.017	<0.017	Nessler	JN

Ammonia Meter #98136 Ammonia Meter Slope: -56.1 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: City of Bradenton
County: Manatee
Contact / District: Kent Edwards / SW
NPDES Permit #: FL00 21369
LIMS Sample #: 130256 LIMS Job #: 96-FEB-20-22

Sample Collection: Date 2/19/96 Time 10:30
Test Beginning: Date 2/20/96 Time 1415
Test Ending: Date 2-22-96 Time 1415
Organism Batch #: 9 Diluent Batch #: well
Organism Age: 12 days old
Test Organism: Cyprinella leedsi

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

Test Number: 2 of 2

Remarks:

Instrument Calibrations:	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	23.0 @ 23.0	8.1 @ 25.5 °C	108.6 @ 106.2 1412 @ 1407 @ 25.4 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	22.9 @ 23.0	8.1 @ 25.7 °C *1410	108.0 @ 106.2 ~~1240~~ @ 1409 @ 24.9 °C JN 2-21-96 misread / std. vol. low
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.8 @ 22.9	8.1 @ 25.7 °C	106.2 @ 106.2 1408 @ 1409 @ 25.1 °C

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) (Cond. (µmhos/cm)) 0 hr	24 h	48 h
CTL A	304	5	5	5	7.7	8.1	8.5	25.0	23.7	23.9	7.8	8.0	8.0	255	245	245
CTL B	147	5	5	5	7.7	8.1	8.5	24.9	23.7	23.9	7.8	8.0	8.0	255	245	245
CTL C	76	5	5	5	7.7	8.1	8.5	24.9	23.7	23.9	7.8	8.0	8.0	255	245	250
CTL D	348	5	5	5	7.8	8.1	8.5	24.8	23.8	23.9	7.8	8.0	8.0	255	250	250
100% A	309	5	5	5	7.5	7.9	8.3	24.5	23.7	23.9	7.1	7.9	8.0	1100	1085	~~1035~~ *1095
100% B	366	5	5	5	7.5	7.9	8.3	24.4	23.6	23.9	7.0	7.8	7.9	1100	1085	1085
100% C	610	5	5	5	7.5	7.9	8.3	24.4	23.6	23.8	6.8	7.8	7.9	1100	1085	1090
100% D	45	5	5	5	7.5	7.9	8.2	24.4	23.8	23.9	6.8	7.7	7.9	1100	1085	1095
Measured/Loaded by:		TR	MF	TM	TR	MF	TM	TR	MF	TM	TR	MF	TM	TR	MF	TM
Recorded by:		TR	MF	TM	TM	DW	JRS	TM	DW	JRS	TM	DW	JRS	TM	DW	JRS

*1095 Called out incorrectly 2-22-96 JRS

Investigators' Signatures

Tina M. Mikulski
John C. Rader
Mark W. Faulkner
Jennifer Sparrgrin

Reviewer

form updated 5/05/95

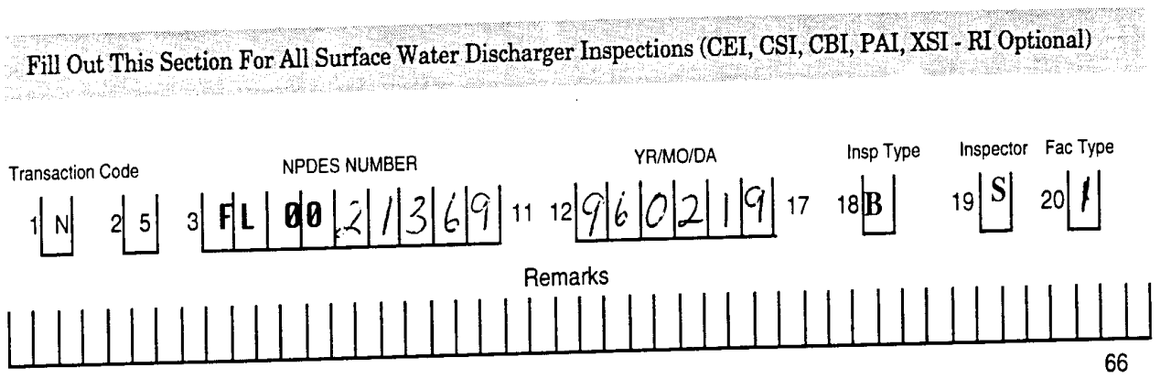
Salt Water (Well Water) | 20% Min Water

Water Quality Parameters

			Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			—	not measured	
Lab Total Residual Cl2 (mg/L):	<0.03	—	<0.03	DR-100	TR
Alkalinity (mg/L as $CaCO_3$):	125	—	115	Hach	TR
Hardness (mg/L as $CaCO_3$):	120	—	225	Hach	TR
Total ammonia (mg/L as N):	<0.017	—	<0.017	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -56.1 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

The Bioassay of the City of Bradenton WWTP effluent sampled on February 19, 1996, NPDES #FL0021369.



The Priority Pollutants Analysis for the Bioassay of the City of Bradenton WWTP effluent sampled on February 19, 1996, NPDES #FL0021369.

