

Bioassays of the City of
Cape Coral Wastewater Treatment Plant
Cape Coral, Lee County, Florida
NPDES #FL0030007
Sampled 3/8/93

March 1993

Biology Section
Division of Technical Services

Bioassays of the City of

Cape Coral Wastewater Treatment Plant

Cape Coral, Lee County, Florida

NPDES #FL0030007

Biology Section
Bureau of Laboratories
March 1993

Introduction

City of Cape Coral WWTP, Cape Coral, Lee County, Florida, NPDES #FL0030007, tests performed on 9 to 11 March, 1993.

This facility is located on 1800 Everest Parkway in Cape Coral (also known as Everest Parkway Water Reclamation Plant). The facility is permitted to operate a 7.3 mgd capacity advanced wastewater treatment plant. Treatment consists of a modified Bardenpho process and sand filtration followed by chlorine disinfection and dechlorination. Dechlorinated effluent is discharged to the Caloosahatchee River (NPDES files). The effluent was recently sampled and tested by DER in December, 1992.

The toxicity tests discussed in this report were performed according to methods described by Weber, 1991, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 4th Edition, EPA/600/4-90/027.

Results and Discussion

The FDER Biology Section performed two 48-hour static acute screening toxicity bioassays with a sample of effluent from this facility. The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Notropis leedsi*. The test results did not indicate toxicity.

Total residual chlorine of the sample was 0.04 mg/L in the laboratory. No total residual chlorine was detected in the field. Total and unionized ammonia concentrations were < 0.017 mg/L and 0.0 mg/L, respectively.

Conclusion

The sample of effluent collected from this facility on 8 March, 1993, did not show toxicity.

Table 1. Concentration series and volumes used for the 48-hour static acute screening bioassays of the City of Cape Coral WWTP effluent performed on 9 to 11 March, 1993.

Ceriodaphnia dubia (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	20 mL	0 mL	20 mL
100 %	0 mL	20 mL	20 mL

Notropis leedsi (bannerfin shiner)

Concentration	Dilution Water	Sample	Total Volume
Control	500 mL	0 mL	500 mL
100 %	0 mL	500 mL	500 mL

Table 2. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Cape Coral WWTP, Cape Coral, Lee County, Florida, NPDES# FL0030007, performed on 9 to 11 March, 1993.

Facility:	Cape Coral WWTP		NPDES #	FL0030007	Facility Type: WWTP
Location:	Cape Coral		Contact / District:	W. Anderson/S	
County:	Lee		Test type:	static acute screen	
Sample Collection Date:	3/8/93	Time: 1040	# tests:	2	Receiving Water: Caloosahatchee River
Test Beginning Date:	3/9/93	Time: 1230	Chlorination Type:	Chlorinated	
Test Ending Date:	3/11/93	Time: 1225			Page 1 of 1

Total Residual Cl2	mg/l	Method
Field:	0.00	
Lab:	0.04	DR-100

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

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	115	120
20% Dilute Mineral Water (cladocerans):	65	70
100% Sample:	155	290

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

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

	SURVIVAL			pH			Temperature			Dissolved Oxygen			Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 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	5	5	5	8.4	-	8.4	23.0	-	23.8	8.6	-	8.0	145	155
Control	5	5	5	-	-	8.4	-	-	-	-	-	8.0	-	155
Control	5	5	5	-	-	8.3	-	-	-	-	-	8.1	-	160
Control	5	5	5	-	-	8.4	-	-	-	-	-	8.1	-	160
100%	5	5	5	7.5	-	8.6	23.2	-	23.8	8.6	-	7.8	1460	1440
100%	5	5	5	-	-	8.6	-	-	-	-	-	7.8	-	1470
100%	5	5	5	-	-	8.6	-	-	-	-	-	7.8	-	1550
100%	5	5	5	-	-	8.6	-	-	-	-	-	7.8	-	1570

Organism: ***Notropis leedsi*** Age: 10 days

	SURVIVAL			pH			Temperature			Dissolved Oxygen			Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 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	5	5	5	7.9	8.3	8.4	23.5	23.2	23.0	7.8	8.3	7.9	245	240
Control	5	5	4	7.9	8.3	8.4	-	-	-	7.9	8.3	8.0	245	240
100%	5	5	5	7.3	8.0	8.3	23.7	23.2	23.0	8.5	8.3	7.8	1610	1590
100%	5	5	5	7.3	8.0	8.3	-	-	-	8.5	8.3	7.9	1615	1540

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: Cape Coral WWTP
Location:
County: Lee
Contact/District: W Anderson / South
NPDES Permit #: FL00 30007 Outfall #:
93 MAR 09 28 S12:31

Sample Collection: Date 3/8/93 Time 10:40
Test Beginning: Date 3/9/93 Time 12:30
Test Ending: Date 3/11/93 Time 12:25
Organism Batch #: 11 Diluent Batch #: 4
Organism Age: Neonates < 24 hours
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
0 hr	7.0 @ 7.0 9.0 @ 9.0	22.4 @ 22.4	8.4 @ 23.9	973 @ 1,000 9710 @ 10,000 (24.1)
24 hr	7.0 @ 7.0 9.0 @ 9.0	22.9 @ 23.0	8.5 @ 23.6	980 @ 1,000 (24.) 9890 @ 10,000
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.6 @ 22.7	8.5 @ 23.4	970 @ 1,000 (24.) 9720 @ 10,000

Conc.	Chamber #	Number Live 0	24	48	pH 0	24	48	Temperature (°C) 0	24	48	D.O. (mg/L) 0	24	48	Cond. (mmhos/cm) Cond. (µmhos/cm) 0	24	48
Control	A	5	5	5	8.4		8.4	23.0		23.8	8.6		8.0	145		155
Control	B	5	5	5			8.4						8.0			155
Control	C	5	5	5			8.3						8.1			160
Control	D	5	5	5			8.4						8.1			160
100%	A	5	5	5	7.5		8.6	23.2		23.8	8.6		7.8	1460		1440
100%	B	5	5	5			8.6						7.8			1470
100%	C	5	5	5			8.6						7.8			1550
100%	D	5	5	5			8.6						7.8			1570
Measured/Loaded by:		TM/TR	TR	TM	TM		TM	TM		TM	TM		TM	TM		TM
Recorded by:		TR	TR	TM	TR		TR	TR		TR	TR		TR	TR		TR

Investigators' Signatures

Marshall Faircloth
Tina Mikulski
Robin Rader

Reviewer

form updated 10/20/92

Water Quality Parameters

	~~Salt Water~~ Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2:			0.00		WA
Lab Total Residual Cl2:	0.02	0.02	0.04	DR-100	TM
Alkalinity:	115	65	155	Hach	TM
Hardness:	120	70	890	Hach	TM
Total Ammonia:	<0.017	<0.017	<0.017	orion	MF

Cl_2 Blank: _____ Ammonia Meter Slope: -54.4 Ammonia Blank: <0.017 Sample Salinity: _____ ppt

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: Cape Coral WWTP
Location:
County: Lee
Contact/District: W Anderson / South
NPDES Permit #: FL00 30007 (93/09/09 25) Outfall #: 5 (231)

Sample Collection: Date 3/8/93 Time 10:40
Test Beginning: Date 3/9/93 Time 1230
Test Ending: Date 3/11/93 Time 1225
Organism Batch #: 10 Diluent Batch #: Lab 4
Organism Age: 10 days
Test Organism: Mysidopsis bahia

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
0 hr	7.0 @ 7.0 9.0 @ 9.0	22.4 @ 22.4	8.4 @ 23.9	973 @ 1,000 ≈ 24.1 9710 @ 10,000
24 hr	7.0 @ 7.0 9.0 @ 9.0	22.9 @ 23.0	8.5 @ 23.6	980 @ 1,000 @ 24.5 9800 @ 10,000
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.6 @ 22.7	8.5 @ 23.4	970 @ 1,000 @ 24.3° 9720 @ 10,000

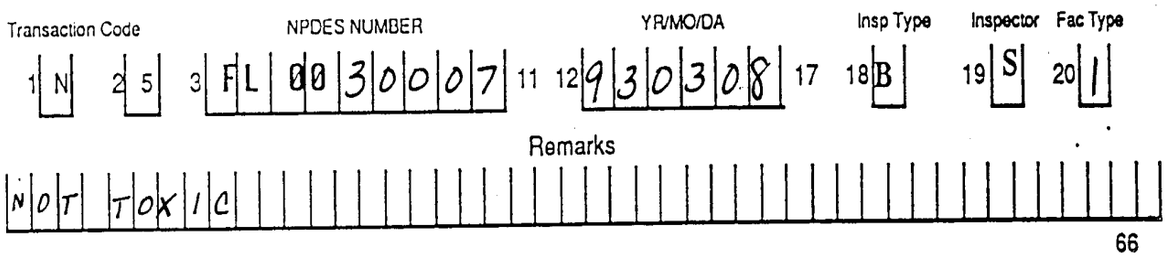
Conc.	Chamber #	Number Live			pH			Temperature (°C)			D.O. (mg/L)			Cond. (mmhos/cm) Cond. (µmhos/cm)		
		0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	203	5	5	5	7.9	8.3	8.4	23.5	23.2	23.0	7.8	8.3	7.9	245	240	240
Control	70	5	5	4	7.9	8.3	8.4				7.9	8.3	8.0	245	240	240
100%	88	5	5	5	7.3	8.0	8.3	23.7	23.2	23.0	8.5	8.3	7.8	1610	1595	1590
100%	147	5	5	5	7.3	8.0	8.3				8.5	8.3	7.9	1615	1535	1540
Measured/Loaded by:		TR	TM	TR	TM	TR	TM	TM	TR	TM	TM	TR	TM	TM	TR	TM
Recorded by:		TR	TR	TR	TR	TM	TR	TR	TM	TR	TR	TM	TR	TR	TM	TR

Investigators' Signatures

Marshall Faircloth
Tina Mikulski
Robin Rader

Water Quality Parameters	~~Salt Water~~/ Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2:			0.00		WA
Lab Total Residual Cl2:	0.02	0.02	0.04	DR-100	TM
Alkalinity:	115	65	155	Hach	TM
Hardness:	120	70	290	Hach	TM
Total Ammonia:	<0.01	<0.01	<0.01	Orion	MF
	Ammonia	Ammonia	Sample		

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)

