

Bioassays of

Malibu Garden Apartments Wastewater Treatment Plant

Jacksonville, Duval County, Florida

NPDES #FL0035548

Sampled 7/17/95

October 1995

Biology Section

Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan #870346G

Bioassays of

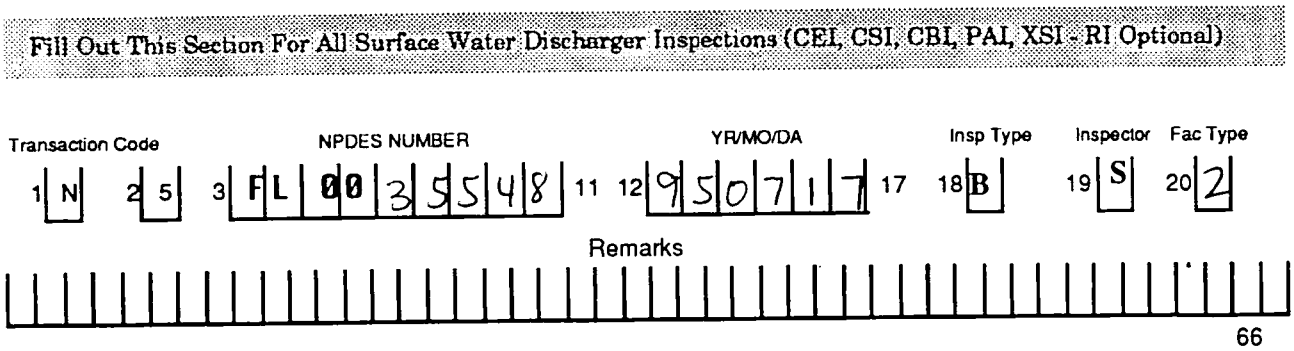
Malibu Garden Apartments Wastewater Treatment Plant

Jacksonville, Duval County, Florida

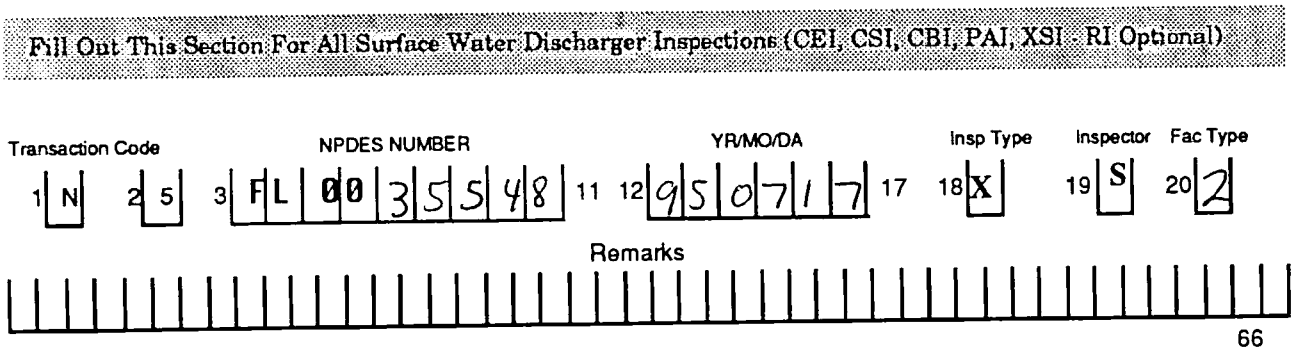
NPDES #FL0035548

Biology Section
Bureau of Laboratories
October 1995

The Bioassay of the Malibu Gardens Apartments WWTP effluent sampled on July 17, 1995, NPDES #FL0035548.



The Priority Pollutants Analysis for the Bioassay of Malibu Gardens Apartments WWTP effluent sampled on July 17, 1995, NPDES #FL0035548.



FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Malibu Gardens Apartments
County: Duval
Contact / District: Tim McKelvey / NE
NPDES Permit #: FL0035548
LIMS Sample #: 111111 LIMS Job #: 95-JUL-18-45

Sample Collection: Date 7-17-95 Time 1500
Test Beginning: Date 7-18-95 Time 1545
Test Ending: Date 7-20-95 Time 1530
Organism Batch #: 28 Diluent Batch #: well
Organism Age: 12 days
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 7.0 @ 7.0	23.4 @ 23.6	8.1 @ 25.6 °C	103.8 @ 102.1 1394 @ 1400 @ 24.6 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	25.3 @ 25.3	8.3 @ 23.6 °C	101.6 @ 102.1 1388 @ 1400 @ 23.9 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	24.2 @ 24.3 °C	8.4 @ 23.8 °C	102.7 @ 102.1 1400 @ 1400.8 @ 24.5 °C

		Number Live			pH			Temperature (°C)			D.O. (mg/L)			UNCORRECTED Cond. (mmhos/cm) Cond ~~(µmhos/cm)~~		
Conc.	Chamber #	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h
Control A	021	5	5	5	7.9	8.3	8.3	24.0	22.9	23.7	8.4	8.4	8.3	245	250	250
Control B	104	5	5	5	7.9	8.3	8.3	24.0		23.7	8.5	8.4	8.3	245	240	250
Control C	105	5	5	5	7.9	8.3	8.3	23.9		23.6	8.5	8.5	8.3	245	245	250
Control D	22	5	5	5	7.9	8.3	8.3	23.9		23.6	8.6	8.6	8.4	245	255	260
100% A	520	5	5	5	8.1	8.1	8.1	23.8	22.9	23.7	8.5	7.9	8.4	570	565	580
100% B	85	5	5	5	8.1	8.1	8.1	23.7		23.7	8.4	7.9	8.3	570	565	580
100% C	506	5	5	5	8.1	8.0	8.1	23.7		23.6	8.4	8.1	8.2	570	570	580
100% D	501	5	5	5	8.1	8.0	8.1	23.7		23.6	8.4	8.0	8.3	570	570	585
Recorded by:		TM	MF	MF	LM	MF	JN	LM	MF	JN	LM	MF	JN	LM	MF	JN
Measured/Loaded by:		TM	MF	MF	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS	JLS

Investigators' Signatures
Robin C. Rader
Liz Mould
Jennifer Sparagana
Reviewer

Tina M. Kulbaki
Marshall Fairbanks

Salt Water | Well Water | 20% Min Water

Water Quality Parameters	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):	0.02	—	Ruth Bowman
Lab Total Residual Cl2 (mg/L):	<0.03	DR-100	TR
Alkalinity (mg/L as $CaCO_3$):	125	Hach	TR
Hardness (mg/L as $CaCO_3$):	210	Hach	TR
Total ammonia (mg/L as N):	1.29	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -57.4
Ammonia Blank: <0.017
Control Salinity: 0 ppt
Sample Salinity: 0 ppt

form updated 10/05/94

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Malibu Gardens Apartments
County: Duval
Contact / District: Tim McKelvey / NE
NPDES Permit #: FL0035548
LIMS Sample #: 111111 LIMS Job #: 95-JUL-18-45
sample log 7/26/95

Sample Collection: Date 7-17-95 Time 1500
Test Beginning: Date 7-18-95 Time 1520
Test Ending: Date 7-20-95 Time 1530
Organism Batch #: 29 Diluent Batch #: 29
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	23.4 @ 23.6	8.1 @ 25.6 °C	103.8 @ 102.1 1394 @ 1400 @ 24.6 °C
24 hr	___ @ 7.0 ___ @ ___	___ @ ___	___ @ ___ °C	___ @ ___ ___ @ ___ @ ___ °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	24.2 @ 24.3 °C	8.4 @ 23.8 °C	102.7 @ 102.1 1400 @ 1400.8 @ 24.5 °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) 0 hr	UNCORRECTED Cond. (µmhos/cm) 24 h	UNCORRECTED Cond. (µmhos/cm) 48 h
Control	A	5	5	5	8.1		8.2	23.9		23.9	8.0		8.3	190		205
Control	B	5	5	5	"		8.2	"		23.9	"		8.4	"		210
Control	C	5	5	5	"		8.2	"		23.9	"		8.4	"		215
Control	D	5	5	5			8.2			23.9			8.3			215
100%	A	5	5	5	8.2		8.4	23.9		23.9	8.0		8.3	550	570	~~1715~~
100%	B	5	5	5	"		8.4	"		24.0	"		8.3	"	600	~~1815~~
100%	C	5	5	5	"		8.4	"		24.0	"		8.2	"	620	~~1810~~
100%	D	5	5	5	"		8.4	"		24.0	"		8.2	"	630	~~1820~~
Recorded by:		TM	MF	MF	LM		JN	LM		JN	LM		JN	LM		JN
Measured/Loaded by:		TM	MF	MF	JLS		JLS	JLS		JLS	JLS		JLS	JLS		JLS

wrong value * in wrong place JN 7-20-95 (wrong) data sheet MF 9-21-95

Investigators' Signatures
Tina M. Kulaski
Marshall Faircloth
Kevin C. Radar
Jennifer Sparapani
Reviewer

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0.02	—	Ruth Bowman
Lab Total Residual Cl2 (mg/L):	—	<0.03	<0.03	DR-160	TR
Alkalinity (mg/L as $CaCO_3$):	—	70	125	Hach	TR
Hardness (mg/L as $CaCO_3$):	—	80	210	Hach	TR
Total ammonia (mg/L as N):	—	<0.017	1.29	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -57.4 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

form updated 10/05/94

Table 2. Results of chemical analyses on the effluent from the Malibu Gardens Apartments Wastewater Treatment Plant sampled on July 17, 1995.

Metals

Calcium	46.8	mg/L[A]
Iron	80	µg/L[A]
Magnesium	24.1	mg/L[A]
Zinc	11	µg/L[I]

Pesticides and Herbicides

Diazinon	0.22	µg/L[I]

Base, Neutral, and 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.

Table 1. Data recorded during the 48-hour static acute screening toxicity bioassays of a sample of effluent from the Malibu Gardens Apartments WWTP, Jacksonville, Duval County, Florida, NPDES# FL0035548, performed on 18 to 20 July, 1995.

Facility:	**Malibu Gardens Apartments WWTP**			NPDES #	FL0035548	Facility Type:	**Wastewater Treatment Plant**
Location:	5930 Lenox Avenue, Jacksonville			Contact/District:	T. McKelvey/Northeast		
County:	Duval			Test type:	static acute screen		
Sample Collection Date:	7/17/95	Time:	1500	# tests:	2	Receiving Water:	Cedar River
Test Beginning Date:	7/18/95	Time:	1520	Chlorination Type:	The sample was collected after being		
Test Ending Date:	7/20/95	Time:	1530		dechlorinated in the treatment process.		**Page 1 of 1**

Total Residual CL2	mg/L	Method
Field:	0.02	-
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:	1.29	0.095

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	125	120
20% Dilute Mineral Water (cladocerans):	70	80
100% Sample:	125	210

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

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

	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	8.1	-	8.2	23.9	-	23.9	8.0	-	8.3	190	205
Control B	0/20	5	5	5	-	-	8.2	-	-	23.9	-	-	8.4	-	210
Control C	0/20	5	5	5	-	-	8.2	-	-	23.9	-	-	8.4	-	215
Control D	0/20	5	5	5	-	-	8.2	-	-	23.9	-	-	8.3	-	215
100% A	20/0	5	5	5	8.2	-	8.4	23.9	-	23.9	8.0	-	8.3	550	570
100% B	20/0	5	5	5	-	-	8.4	-	-	24.0	-	-	8.3	-	600
100% C	20/0	5	5	5	-	-	8.4	-	-	24.0	-	-	8.2	-	620
100% D	20/0	5	5	5	-	-	8.4	-	-	24.0	-	-	8.2	-	630

[A] Temperature of the test incubator was continously recorded on a strip chart recorder. Incubator temperature range for the test period was 23.6-24.6°C.

Organism: ***Cyprinella leedsi*** Age: 12 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	7.9	8.3	8.3	24.0	22.9	23.7	8.4	8.4	8.3	245	250
Control B	0/500	5	5	5	7.9	8.3	8.3	24.0	-	23.7	8.5	8.4	8.3	245	250
Control C	0/500	5	5	5	7.9	8.3	8.3	23.9	-	23.6	8.5	8.5	8.3	245	250
Control D	0/500	5	5	5	7.9	8.3	8.3	23.9	-	23.6	8.6	8.6	8.4	245	260
100% A	500/0	5	5	5	8.1	8.1	8.1	23.8	22.9	23.7	8.5	7.9	8.4	570	580
100% B	500/0	5	5	5	8.1	8.1	8.1	23.7	-	23.7	8.4	7.9	8.3	570	580
100% C	500/0	5	5	5	8.1	8.0	8.1	23.7	-	23.6	8.4	8.1	8.2	570	580
100% D	500/0	5	5	5	8.1	8.0	8.1	23.7	-	23.6	8.4	8.0	8.3	570	585

[B] Temperature of the test room was continously recorded on a strip chart recorder. The room temperature range for the test period was 23.5-24.0°C.

Introduction

Malibu Garden Apartments WWTP, Jacksonville, Duval County, Florida, NPDES #FL0035548, tests performed on 18 to 20 July, 1995.

This extended-aeration wastewater treatment facility is located at 5930 Lenox Avenue in Jacksonville. The facility has a design flow of 20 TGD and provides secondary treatment of sewage. Effluent is chlorinated for disinfection and then dechlorinated prior to discharge into a ditch which leads to the Cedar River (facility summary provided by Kathleen Gerard, FDEP, Jacksonville).

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 tests results did not indicate toxicity (Table 1). Total residual chlorine was not detected in the sample. Total and unionized ammonia concentrations were 1.29 mg/L and 0.095 mg/L, respectively. Further chemical analyses were performed on the sample and several metals were identified as well as the pesticide, diazinon (Table 2).

Conclusion

The sample of effluent collected from this facility on July 17, 1995, did not show toxicity.