

Bioassays of

Azalea Mobile Home Park

Jacksonville, Duval County, Florida

NPDES #FL0040550

Sampled 2/19/01

June 2001

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

Bioassays of

Azalea Mobile Home Park

Jacksonville, Duval County, Florida

NPDES #FL0040550

Biology Section
Bureau of Laboratories
June 2001

Introduction

Azalea Mobile Home Park, 6301 Roosevelt Boulevard, Jacksonville, Duval County, Florida, NPDES #FL0040550, tests performed on 20 to 22 February 2001.

This wastewater treatment plant has a design flow of 0.025 MGD and an average flow of 0.017 MGD. The wastewater treatment system consists of a contact chamber, a reaeration tank, a secondary clarifier with a baffle and weir, a chlorine contact chamber, and a dechlorination pit. After treatment, the effluent is discharged into a drainage ditch, which flows into the Ortega River and then into the Class III fresh waters of St. Johns River. Residuals are stabilized in an aerated digestor prior to being hauled to a land application site (facility summary provided by J. Lippincott, 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 test results did not indicate toxicity by 48 hours (Table 1).

Total residual chlorine was detected at 0.11 mg/L in the sample. An aliquot of the original sample was dechlorinated using sodium thiosulfate and tested along with the original sample. An additional control for each test (well water for *C. leedsi*, 20% diluted mineral water for *C. dubia*) was also treated with sodium thiosulfate and tested. The purpose of the additional sodium thiosulfate controls was to test for any toxic effects of dechlorination. No toxic effects were observed in any of the controls. The total and unionized ammonia were 6.67 mg/L and 0.222 mg/L, respectively, in the original sample. Further chemical analyses were performed on the sample, and several metals, organics, and a pesticide were identified (Table 2).

Conclusion

The sample of effluent collected from this facility on February 19, 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 Azalea Mobile Home Park, 6301 Roosevelt Boulevard, Jacksonville, Duval County, Florida, NPDES# FL0040550 performed on 20 to 22 February 2001.

Facility:	**Azalea Mobile Home Park**			**NPDES #**	**FL0040550**	Facility Type:	**Wastewater**
Location:	6301 Roosevelt Boulevard			Contact/District:	J. Lippincott/ Northeast		**Treatment Facility**
County:	Duval			Test type:	static acute screen		
Sample Collection Date:	2/19/01	Time:	1000	# tests:	2	Receiving Water:	St. Johns River
Test Beginning Date:	2/20/01	Time:	1340	Chlorination Type:	Chlorinated		
Test Ending Date:	2/22/01	Time:	1340				**Page 1 of 2**

Total Residual CL2	mg/L	Method
Field:	0.42	-
Lab:	0.11	Hach

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	< 0.017	<0.017
20% Dilute Mineral Water (cladocerans):	< 0.017	<0.017
100% Sample:	6.67	0.222

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	136	129
20% Dilute Mineral Water (cladocerans):	81	77
100% Sample:	170	185

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

[C] Salinity based on conductivity and temperature measurements.

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	8.3	-	8.3	24.9	-	23.8	8.3	-	8.0	170	190
Control B	0/20	5	5	5	-	-	8.3	-	-	23.8	-	-	8.0	-	190
Control C	0/20	5	5	5	-	-	8.3	-	-	23.7	-	-	8.0	-	185
Control D	0/20	5	5	5	-	-	8.3	-	-	23.7	-	-	8.1	-	200
Control A [D]	0/20	5	5	5	8.3	-	8.3	24.8	-	23.6	- 8.3	-	8.1	175	195
Control B [D]	0/20	5	5	5	-	-	8.3	-	-	23.7	- -	-	8.0	-	180
Control C [D]	0/20	5	5	5	-	-	8.3	-	-	23.7	- -	-	8.0	-	190
Control D [D]	0/20	5	5	5	-	-	8.3	-	-	23.7	- -	-	8.0	-	185
100% A	20/0	5	5	5	7.7	-	8.3	24.9	-	23.8	- 7.3	-	8.1	585	600
100% B	20/0	5	5	5	-	-	8.4	-	-	23.8	- -	-	8.0	-	610
100% C	20/0	5	5	5	-	-	8.5	-	-	23.8	- -	-	8.1	-	600
100% D	20/0	5	5	5	-	-	8.5	-	-	23.8	- -	-	8.1	-	625
100% A [D]	20/0	5	5	5	7.8	-	8.5	25.0	-	23.8	7.5	-	8.1	620	635
100% B [D]	20/0	5	5	5	-	-	8.5	-	-	23.8	-	-	8.0	-	630
100% C [D]	20/0	5	5	5	-	-	8.5	-	-	23.7	-	-	8.0	-	630
100% D [D]	20/0	5	5	5	-	-	8.5	-	-	23.6	-	-	8.1	-	650

[D] These replicates are treated with sodium thiosulfate.

[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 23.5-25.0°C.

continued

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Azalea Mobile Home Park, 6301 Roosevelt Boulevard, Jacksonville, concluded Duval County, Florida, NPDES# FL0040550 performed on 20 to 22 February 2001.

Facility:	**Azalea Mobile Home Park**	**NPDES #**	**FL0040550**	Facility Type:	**Wastewater**
Location:	6301 Roosevelt Boulevard	Contact/District:	J. Lippincott/ Northeast		**Treatment Facility**
County:	Duval	Test type:	static acute screen		
Sample Collection Date:	2/19/01 Time: 1000	# tests:	2	Receiving Water:	St. Johns River
Test Beginning Date:	2/20/01 Time: 1340	Chlorination Type:	Chlorinated		
Test Ending Date:	2/22/01 Time: 1340				**Page 2 of 2**

Total Residual CL2	mg/L	Method
Field:	0.42	-
Lab:	0.11	Hach

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	< 0.017	<0.017
20% Dilute Mineral Water (cladocerans):	< 0.017	<0.017
100% Sample:	6.67	0.222

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
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20% Dilute Mineral Water (cladocerans):	81	77
100% Sample:	170	185

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

[C] Salinity based on conductivity and temperature measurements.

Organism: *Cyprinella leedsi* Life stage: 12 days

	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	0/500	5	5	5	7.9	8.3	8.4	24.2	25.3	23.8	8.1	7.5	7.7	255	290
Control B	0/500	5	5	5	7.9	8.3	8.4	24.1	25.3	23.9	8.1	7.6	7.8	255	290
Control C	0/500	5	5	5	7.9	8.4	8.4	24.0	25.1	24.3	8.1	7.7	7.7	255	280
Control D	0/500	5	5	5	7.9	8.4	8.4	24.0	24.6	24.5	8.1	7.7	7.6	255	275
Control A [D]	0/500	5	5	5	7.9	8.3	8.5	24.9	25.2	24.6	7.5	7.4	7.5	260	270
Control B [D]	0/500	5	5	5	7.9	8.3	8.4	25.1	25.1	24.5	7.5	7.5	7.5	260	265
Control C [D]	0/500	5	5	5	7.9	8.3	8.4	25.3	25.1	24.4	7.5	7.6	7.6	260	265
Control D [D]	0/500	5	5	5	7.9	8.3	8.4	25.4	24.6	24.4	7.4	7.5	7.7	260	265
100% A	500/0	5	5	5	7.7	8.2	8.4	25.2	24.6	24.4	7.2	6.8	7.6	600	580
100% B	500/0	5	5	5	7.7	8.2	8.3	25.1	24.8	24.4	7.2	6.9	7.4	605	610
100% C	500/0	5	5	5	7.7	8.2	8.3	25.1	24.9	24.3	7.1	6.8	6.6	615	610
100% D	500/0	5	5	5	7.7	8.2	8.3	25.2	24.8	24.3	7.2	6.8	6.7	620	615
100% A [D]	500/0	5	5	5	7.7	8.2	8.2	25.2	24.8	24.3	7.3	6.3	6.3	625	610
100% B [D]	500/0	5	5	5	7.7	8.2	8.2	25.2	24.9	24.4	7.4	6.5	6.6	625	620
100% C [D]	500/0	5	5	5	7.7	8.2	8.3	25.2	24.8	24.4	7.5	6.6	6.8	625	615
100% D [D]	500/0	5	5	5	7.7	8.2	8.3	25.2	24.8	24.4	7.5	6.7	6.8	625	625

[D] These replicates are treated with sodium thiosulfate.

[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 #3 temperature range for the test period was 24.5-25.0°C.

Table 3. Results of chemical analyses on the effluent from Azalea Mobile Home Park sampled on February 19, 2001.

Metals		
Aluminum_308	360	µg/L
Cadmium	0.047	µg/L [1]
Calcium	41.3	mg/L
Copper	3.9	µg/L
Iron	150	µg/L
Lead	0.56	µg/L [1]
Magnesium	21	mg/L
Zinc	23	ug/L [1]
Pesticides and Herbicides		
Atrazine	0.3	µg/L
Base, Neutral, & Acid Extractable Organics		
m,p-Cresols	11	µg/L
Phenol	2	µg/L [1]

[1] 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: Azalea MHP Final Effluent
County: Duval
Contact / District: J. Lippincott / NE
NPDES Permit #: FL00 40550
LIMS Sample #: 509701 **LIMS Job #:** TLH-2001-02-20-01
sample log 2/23/01
Test Type: Screening | Definitive
(Static) | Static Renewal | Flow-through
Test Number: 1 of 2

Sample Collection: Date 2/19/01 Time 1000
Test Beginning: Date 2/20/01 Time 1340
Test Ending: Date 2/22/01 Time 1340
Organism Batch #: 10 **Diluent Batch #:** Dmw#3
Organism Age: 24hrs. SRT toxicant batch #: —
Test organism: C. dubia

Remarks:

	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
	CNTL. A	A	5	5	5	8.3	—	8.3	24.9	—	23.8	8.3	—	8.0	170	—	190
	B	B	5	5	5	—	—	8.3	—	—	23.8	—	—	8.0	—	—	190
	C	C	5	5	5	—	—	8.3	—	—	23.7	—	—	8.0	—	—	185
	D	D	5	5	5	—	—	8.3	—	—	23.7	—	—	8.1	—	—	200
+ $Na_2S_2O_4$	CNTL. A	A	5	5	5	8.3	—	8.3	24.9	—	23.6	8.3	—	8.1	175	—	195
	B	B	5	5	5	—	—	8.3	—	—	23.7	—	—	8.0	—	—	180
	C	C	5	5	5	—	—	8.3	—	—	23.7	—	—	8.0	—	—	190
	D	D	5	5	5	—	—	8.3	—	—	23.7	—	—	8.0	—	—	195
	100% A	A	5	5	5	7.7	—	8.3	24.9	—	23.7	7.3	—	8.1	585	—	600
	B	B	5	5	5	—	—	8.4	—	—	23.8	—	—	8.0	—	—	610
	C	C	5	5	5	—	—	8.5	—	—	23.8	—	—	8.1	—	—	600
	D	D	5	5	5	—	—	8.5	—	—	23.7	—	—	8.1	—	—	605
+ $Na_2S_2O_4$	100% A	A	5	5	5	7.8	—	8.5	25.0	—	23.8	7.5	—	8.1	620	—	635
	B	B	5	5	5	—	—	8.5	—	—	23.7	—	—	8.0	—	—	630
	C	C	5	5	5	—	—	8.5	—	—	23.7	—	—	8.0	—	—	630
	D	D	5	5	5	—	—	8.5	—	—	23.6	—	—	8.1	—	—	650
	measured by:		DPH	JA	JA	DPH	—	YML	DPH	—	YML	DPH	—	YML	DPH	—	YML
	recorded by:		JA	JA	JA	JG	—	JA	JG	—	JA	JG	—	JA	JG	—	JA

Investigators' Signatures
Shannon Girard
Dyan Marie Hanson
Josie Ogur
Nasser Kattan

Temperature Range °C
Incubator # 2 23.5 - 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):			0.42	NA	J. Lippincott	JG
Lab Total Residual Cl2 (mg/L):		<0.03	0.11	DR100	JA	JA
Alkalinity (mg/L as $CaCO_3$):		81	170	Hach	JA	JA
Hardness (mg/L as $CaCO_3$):		77	185	Hach	JA	JA
Total ammonia (mg/L as N):		<0.017	6.67	Denver	YML/DPH	JA
Salinity:		<0	<1	YSI	DPH	JG

reviewer

form updated 3/3/99

[illegible] Biology Section — Acute Bioassay Bench Sheet

Sample Source: Azalea MHP Final Effluent
County: Duval
Contact / District: J Lippincott / NE
NPDES Permit #: FL00 40550
LIMS Sample #: 56701 LIMS Job #: 14-2001-02-26-01
sample log: 2/23/01
Test Type: ~~Screening~~ | Definitive
Static | Static Renewal | Flow-through
Test Number: 2 of 2

Sample Collection: Date 2/19/01 Time 1000
Test Beginning: Date 2/20/01 Time 1335
Test Ending: Date 2/27/01 Time 1340
Organism Batch #: 11 Diluent Batch #: Well
Organism Age: 12 days SRT toxicant batch #: —
Test organism: C. dubia

Remarks: (A) 600 (5%) Limiting Error

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
CNTR A	E1	5	5	5	7.9	8.3	8.4	24.2	25.3	23.8	8.1	7.5	7.7	255	290	290
B	E2	5	5	5	7.9	8.3	8.4	24.1	25.3	23.9	8.1	7.6	7.6	255	300	310
C	E3	5	5	5	7.9	8.4	8.4	24.0	25.1	24.3	8.1	7.7	7.7	255	270	280
D	E4	5	5	5	7.9	8.4	8.4	24.0	24.6	24.5	8.1	7.7	7.6	255	270	275
CNTR A	E5	5	5	5	7.9	8.3	8.5	24.9	25.2	24.6	7.5	7.4	7.5	260	265	270
B	E6	5	5	5	7.9	8.3	8.4	25.1	25.1	24.5	7.5	7.5	7.5	260	270	265
C	E7	5	5	5	7.9	8.3	8.4	25.3	25.1	24.4	7.5	7.6	7.6	260	270	265
D	E8	5	5	5	7.9	8.3	8.4	25.4	24.6	24.4	7.4	7.5	7.7	260	265	265
100% A	E9	5	5	5	7.7	8.2	8.4	25.2	24.6	24.4	7.2	6.8	7.6	600	5[illegible]	580
B	E10	5	5	5	7.7	8.2	8.3	25.1	24.8	24.4	7.2	6.9	7.4	605	625	610
C	E11	5	5	5	7.7	8.2	8.3	25.1	24.9	24.3	7.1	6.8	6.6	615	620	610
D	E12	5	5	5	7.7	8.2	8.3	25.2	24.8	24.3	7.2	6.8	6.7	620	625	615
100% A	E13	5	5	5	7.7	8.2	8.2	25.2	24.8	24.3	7.3	6.3	6.3	625	630	610
B	E14	5	5	5	7.7	8.2	8.2	25.2	24.9	24.4	7.4	6.5	6.6	625	620	620
C	E15	5	5	5	7.7	8.2	8.3	25.2	24.8	24.4	7.5	6.6	6.8	625	625	615
D	E16	5	5	5	7.7	8.2	8.3	25.2	24.8	24.4	7.5	6.7	6.8	625	630	625
measured by:		YMK	DPH	JA	DPH	YMK	YMK	DPH	YMK	YMK	DPH	YMK	YMK	DPH	YMK	YMK
recorded by:		DPH	JA	JA	SG	JA	JA	SG	JA	JA	SG	JA	JA	SG	JA	JA

+ NH4Cl, Cu
+ NH4Cl, Cu

Investigators' Signatures
Stephanie Gerardi
Dulce Ibarra-Alonso
Joshua Chin
Kasser Kattan

Temperature Range °C
Incubator # 3 24.5 - 25.0°C
Room B346 24.5 - 26.0°C

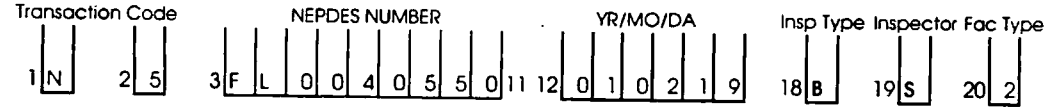
Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):	[illegible]		0.42	NA	Lippincott	SG
Lab Total Residual Cl2 (mg/L):	<0.03		0.11	DR100	JA	SG
Alkalinity (mg/L as $CaCO_3$):	136		170	Hach	JA	SG
Hardness (mg/L as $CaCO_3$):	129		185	Hach	JA	SG
Total ammonia (mg/L as N):	<0.017		6.67	Delvo	YMK/DPH	SG
Salinity:	<1		<1	YSI	DPH	SG

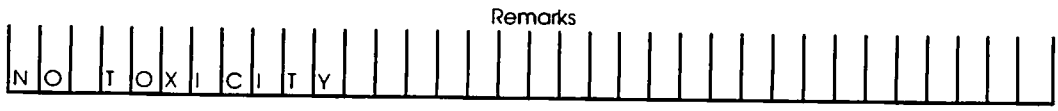
A H Wilke
reviewer

form updated 3/3/99

The Bioassay of Azelea Mobile Home Park effluent sampled on February 19, 2001, NPDES #FL0040550.

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

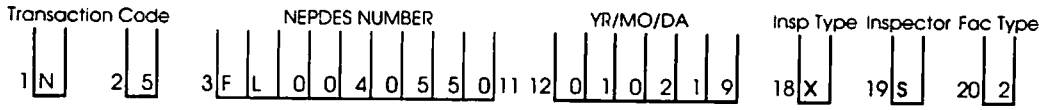


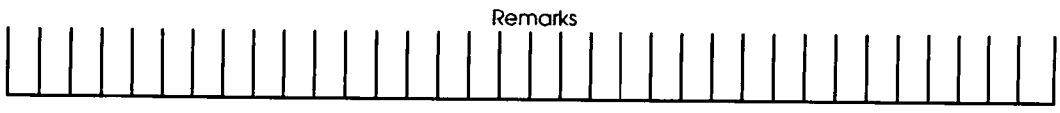


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The Priority Pollutants Analysis for Bioassay of Azalea Mobile Home Park effluent sampled on February 19, 2001, NPDES #FL0040550.

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





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