

Bioassays of

Avondale Wastewater Treatment Plant

Pensacola, Escambia County, Florida

NPDES #FL0031801

Sampled 5/6/96

July 1996

Biology Section

Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan #870346G

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Biology Section
Bureau of Laboratories
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Introduction

Avondale WWTP, 3050 Fayal Drive, Pensacola, Escambia County, Florida, NPDES #FL0031801, tests performed on 7 to 9 May, 1996.

This wastewater treatment plant has a design flow of 2.0 MGD and an annual average flow of 1.402 MGD (February, 1995 – January, 1996). Wastewater is biologically treated and undergoes a process of equalization, nitrification/ denitrification, clarification, filtration, chlorination, and dechlorination. Effluent is discharged into Marcus Creek (facility summary provided by Lisa Kelly, 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 tests results did not indicate toxicity (Table 1).

Total residual chlorine of the sample was 0.02 mg/L in the field but was not detected in the laboratory. Total ammonia was 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 May 6, 1996, did not show toxicity.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Avondale WWTP, Pensacola, Escambia County, Florida, NPDES# FL0031801, performed on 7 to 9 May, 1996.

Facility:	**Avondale WWTP**		**NPDES #**	**FL0031801**	Facility Type: **Wastewater Treatment Plant**
Location:	3050 Fayal Drive, Pensacola		Contact/District:	Glenn Butts	
County:	Escambia		Test type:	static acute screen	
Sample Collection Date:	5/6/96	Time: 1023	# tests:	2	Receiving Water: Marcus Creek
Test Beginning Date:	5/7/96	Time: 1300	Chlorination Type:	**Dechlorinated**[A]	
Test Ending Date:	5/9/96	Time: 1350			**Page 1 of 1**

[A] Sample collected after plant dechlorination unit.

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:	<0.017	0.00

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	125	120
20% Dilute Mineral Water (cladocerans):	80	90
100% Sample:	115	155

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

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

	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	0/20	5	5	5	8.0	-	8.3	24.5	-	24.3	7.6	-	7.9	185	200
Control B	0/20	5	5	5	-	-	8.3	-	-	24.2	-	-	7.8	-	195
Control C	0/20	5	5	5	-	-	8.3	-	-	24.1	-	-	7.9	-	200
Control D	0/20	5	5	5	-	-	8.3	-	-	24.1	-	-	7.9	-	195
100% A	20/0	5	5	5	7.1	-	8.4	25.3	-	24.4	7.8	-	7.9	535	535
100% B	20/0	5	5	5	-	-	8.4	-	-	24.3	-	-	7.8	-	540
100% C	20/0	5	5	5	-	-	8.4	-	-	24.3	-	-	7.8	-	535
100% D	20/0	5	5	5	-	-	8.4	-	-	24.2	-	-	7.8	-	545

[B] Temperature of test incubator was continously recorded on a strip chart recorder. Incubator temperature range for the test period was 24.4-25°C.

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

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[C]			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	8.2	8.2	25.4	24.6	24.6	7.4	7.7	7.6	255	255
Control B	0/500	5	5	5	7.9	8.2	8.2	25.4	24.6	24.6	7.4	7.7	7.7	255	255
Control C	0/500	5	5	5	7.9	8.2	8.2	35.4	24.5	24.3	7.4	7.7	7.8	255	250
Control D	0/500	5	5	5	7.9	8.2	8.2	25.4	24.5	24.3	7.5	7.8	7.8	255	250
100% A	500/0	5	5	5	7.1	7.8	8.1	25.8	24.6	24.6	8.0	7.6	7.7	560	555
100% B	500/0	5	5	5	7.1	7.8	8.1	25.8	24.7	24.6	8.0	7.6	7.7	560	555
100% C	500/0	5	5	5	7.1	7.8	8.1	25.8	24.6	24.6	8.1	7.6	7.5	560	555
100% D	500/0	5	5	5	7.1	7.8	8.1	25.8	24.6	24.5	8.1	7.6	7.5	560	550

[C] Temperature of test room was continously recorded on a strip chart recorder. Room temperature range for the test period was 25.5-27°C.

Table 2. Results of chemical analyses on the effluent from the Avondale Wastewater Treatment Plant sampled on May 6, 1995.

Metals

Calcium	58.1	mg/L[A]
Iron	31	µg/L[A]
Magnesium	2.62	mg/L[A]
Zinc	96	µg/L

Pesticides and Herbicides

Atrazine	0.088	µg/L[I]

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: Avondale WWTP
County: Escambia
Contact / District: Glenn Batts / Northwest
NPDES Permit #: FL0031801
LIMS Sample #: 138814 LIMS Job #: 96-MAY-07-26 (13 # MF 5-8-96)

Sample Collection: Date 5-6-96 Time 1023
Test Beginning: Date 5-7-96 Time 1300
Test Ending: Date 5-9-96 Time 1350
Organism Batch #: 21 Diluent Batch #: 21
Organism Age: 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
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	23.6 @ 23.6	8.1 @ 26.2 °C	109.8 @ 105.4 9630 @ 9809 @ 25.3 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.0 @ 24.1	8.2 @ 25.5 °C	106.9 @ 105.4 1022 @ 1025 @ 25.0 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.8 @ 23.9	8.1 @ 26.0 °C	106.4 @ 105.4 1049 @ 1025 @ 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
ctrl	A	5	5	5	8.0		8.3	24.5		24.3	7.6		7.9	185		200
ctrl	B	5	5	5			8.3			24.2			7.8			195
ctrl	C	5	5	5			8.3			24.1			7.9			200
ACtrl	D	5	5	5			8.3			24.1			7.9			195
100%	A	5	5	5	7.1		8.4	25.3		24.4	7.8		7.9	535		535
100%	B	5	5	5			8.4			24.3			7.8			540
100%	C	5	5	5			8.4			24.3			7.8			535
100%	D	5	5	5			8.4			24.2			7.8			545
Measured/Loaded by:		MF	MF	MF	MF		MF	MF		MF	MF		MF	MF		MF
Recorded by:		MF	MF	MF	LM		JN	LM		JN	LM		JN	LM		JN

Investigators' Signatures

Marshall Faircloth

reviewer

form updated 5/05/95

	Salt Water / Well Water	Water Quality Parameters: 20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0.02	—	Barbara Ruth
Lab Total Residual Cl2 (mg/L):		<0.03	<0.03	DR106	DB
Alkalinity (mg/L as $CaCO_3$):		80	115	HACH	DB
Hardness (mg/L as $CaCO_3$):		90	155	HACH	DB
Total ammonia (mg/L as N):		<0.017	<0.017	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -57.3 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Avondale WWTP
County: Escambia
Contact / District: Glenn Butts / Northwest
NPDES Permit #: FL00 31801
LIMS Sample #: 138214 LIMS Job #: 96-MAY-07-13

Sample Collection: Date 5-6-96 Time 1023
Test Beginning: Date 5-7-96 Time 1300
Test Ending: Date 5-9-96 Time 1350
Organism Batch #: 31 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	23.6 @ 23.6	8.1 @ 26.2°C	109.8 @ 105.4 9630 @ 9801 @ 25.3 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.0 @ 24.1	8.2 @ 25.5°C	106.9 @ 105.4 1022 @ 1025 @ 25.0 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.8 @ 23.9	8.1 @ 26.0°C	106.4 @ 105.4 1049 @ 1025 @ 25.1 °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
Ctrl A	317	5	5	5	7.9	8.2	8.2	25.4	24.6	24.6	7.4	7.7	7.6	255	255	255
Ctrl B	218	5	5	5	7.9	8.2	8.2	25.4	24.6	24.6	7.4	7.7	7.7	255	255	255
Ctrl C	65	5	5	5	7.9	8.2	8.2	25.4	24.5	24.3	7.4	7.7	7.8	255	250	250
Ctrl D	58	5	5	5	7.9	8.2	8.2	25.4	24.5	24.3	7.5	7.8	7.8	255	250	250
100%	118	5	5	5	7.1	7.8	8.1	25.8	24.6	24.6	8.0	7.6	7.7	560	550	555
100%	148	5	5	5	7.1	7.8	8.1	25.8	24.7	24.6	8.0	7.6	7.7	560	550	555
100%	1610	5	5	5	7.1	7.8	8.1	25.8	24.6	24.6	8.1	7.6	7.5	560	550	555
100%	11	5	5	5	7.1	7.8	8.1	25.8	24.6	24.5	8.1	7.6	7.5	560	550	550
Measured/Loaded by:		TM	MF	DS	MF	JMF	MF	MF	MF	MF	MF	MF	MF	DMF	MF	MF
Recorded by:		MF	MF	MF	LM	JN	JN	LM	JN	JN	LM	JN	JN	LM	JN	JN

Investigators' Signatures

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Marshall Faircloth
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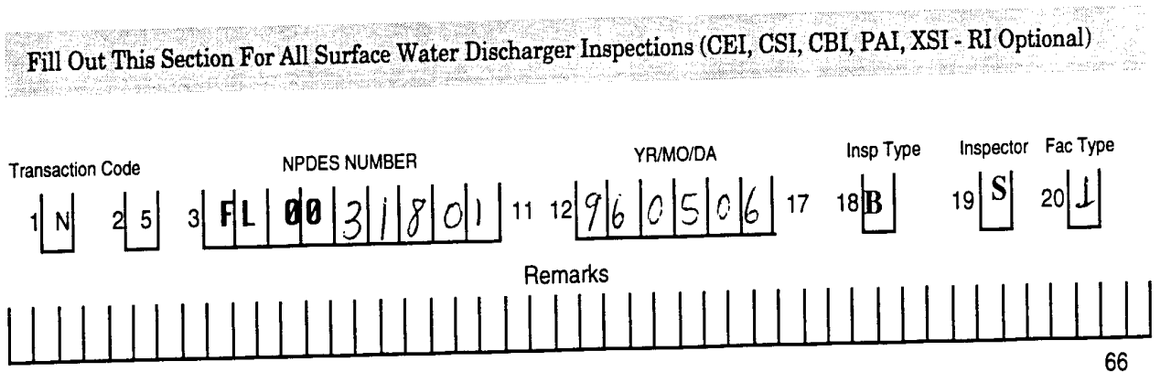
form updated 5/05/95

Water Quality Parameters	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0.02	—	Barbara Ruth 5-7-96
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR100	DB
Alkalinity (mg/L as $CaCO_3$) *:	~~115~~ 125		115	HACH	DB
Hardness (mg/L as $CaCO_3$) *:	~~155~~ 120		155	HACH	DB
Total ammonia (mg/L as N):	<0.017		<0.017	Orion	JN

* Wrote on wash bottle plastic DB 5-7-96

Ammonia Meter #98136 Ammonia Meter Slope: -57.3 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

The Bioassay of the Avondale WWTP effluent sampled on May 6, 1996, NPDES #FL0031801.



The Priority Pollutants Analysis for the Bioassay of the Avondale WWTP effluent sampled on May 6, 1996, NPDES #FL0031801.

