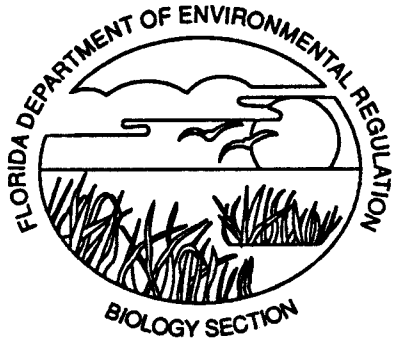


Bioassays of

Avondale Wastewater Treatment Plant

Pensacola, Escambia County, Florida

NPDES #FL0031801

Sampled 7/8/91

August 7, 1991

Biology Section
Division of Technical Services

Bioassays of

Avondale Wastewater Treatment Plant

Pensacola, Escambia County, Florida

NPDES #FL0031801

Biology Section
Bureau of Laboratories
August 7, 1991

Introduction

Avondale Wastewater Treatment Plant, Pensacola, Escambia County, Florida, NPDES #FL0031801, on 9 to 11 July, 1991.

This facility is located west of the intersection of Blue Angel Parkway and Muldoon Road in Pensacola. The facility has a design capacity of 2.0 MGD and an average flow of 0.6 MGD. Treatment includes screening, biological BOD removal, nitrification, denitrification, filtration, disinfection by chlorination, and dechlorination prior to discharge. Effluent is discharged to Bayou Marcus Creek, thence to Perdido Bay.

The toxicity tests discussed in this report were performed in accordance with methods described by Peltier and Weber, 1985, *Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms*, 3rd Edition, and by the FDER Biology Section, 1985, *Quality Assurance Manual for Performing Acute Toxicity Tests*, 2nd Edition.

Results and Discussion

The FDER Biology Section performed two static acute screening toxicity bioassays on a sample of effluent from this facility. The bioassay organisms used for these tests were the water flea, *Ceriodaphnia dubia*, and the fish, *Notropis leedsi*. The test results indicated that the effluent was not toxic to *N. leedsi*. Although the *C. dubia* test was invalidated due to excessive control mortality (due to an accident with one test vial), the organisms in the 100% effluent test concentration experienced only 10% mortality.

Total residual chlorine was not detected in the sample. No further chemical analyses were performed on the sample.

Conclusion

The sample of effluent from this facility was not toxic on 8 July, 1991.

Table 1. Concentration Series and Volumes Used for the Static Acute Screening Bioassays of the Avondale WWTP on 9-11 July, 1991.

Ceriodaphnia dubia (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	20 mL	0 mL	20 mL
100.0%	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%	0 mL	500 mL	500 mL

Table 2. Data collected during the static acute screening bioassays of a sample of effluent from the Avondale WWTP, Pensacola, Escambia County, Florida, NPDES# FL0031801, on 9 to 11 July, 1991.

Facility:	AVONDALE WWTP		NPDES #	FL0031801	Facility Type: WWTP
Location:	Blue Angel Pkwy & Muldoon Roads, Pensacola		Contact/District:	Glen Butts / NW	
County:	Escambia		Test type:	static acute screen	
Sample Collection Date:	7/8/91	Time: 0935	# tests:	2	Receiving Water: Perdido Bay
Test Beginning Date:	7/9/91	Time: 1130	Chlorination Type:	**plant dechlorination**	
Test Ending Date:	7/11/91	Time: 1130			Page 1 of 1

Total Residual Cl2	mg/l	Method
Field:	0.0	Hach
Lab:	0.0	Hach

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	0.00	0.00
Cond. Control Water (daphnids):	0.00	0.00
100% Sample:	0.00	0.00

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	115	120
Cond. Control Water (daphnids):	65	85
100% Sample:	115	140

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

Organism: ***Ceriodaphnia dubia*** Life stage: neonate
LC50: - Binomial: - Moving Average: - Probit: -

	SURVIVAL			Dissolved Oxygen			pH			Temperature			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	4 *	0 *	9.4	-	8.5	8.2	-	8.0	20.8	-	20.8	175	185
Control	5	5	4	-	-	8.5	-	-	8.0	-	-	-	-	-
Control	5	4	4	-	-	8.5	-	-	8.0	-	-	-	-	-
Control	5	5	5	-	-	8.5	-	-	8.0	-	-	-	-	-
100%	5	5	5	8.9	-	8.3	7.3	-	8.2	20.8	-	20.8	468	515
100%	5	5	4	-	-	8.3	-	-	8.2	-	-	-	-	-
100%	5	5	5	-	-	8.3	-	-	8.2	-	-	-	-	-
100%	5	5	4	-	-	8.3	-	-	8.2	-	-	-	-	-

* Splashed buffer into vial 7/10/91. Test invalidated due to excessive control mortality.

Organism: ***Notropis leedsi*** Age: 0 days
LC50: - Binomial: - Moving Average: - Probit: -

	SURVIVAL			Dissolved Oxygen			pH			Temperature			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	9.5	7.7	7.6	7.8	7.6	8.1	21.1	21.8	21.8	-	-
Control	5	5	5	9.6	7.7	7.7	7.8	7.7	8.1	-	-	-	242	245
100%	5	5	5	9.4	7.3	7.8	7.3	7.7	8.0	20.9	22.0	21.0	-	-
100%	5	5	5	9.4	7.5	7.9	7.3	7.9	8.0	-	-	-	493	494

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DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: Avondale WWTP
Address/City:
County: Escambia
Contact/District: Glenn Pattis
NPDES Permit #: Outfall #:

Sample Collection: Date 7/9/91 Time 0935
Test Beginning: Date 7/9/91 Time 1130
Test Ending: Date 7/11/91 Time 1130
Test Organism: Ceriodaphnia dubia
Life Stage/Age: < 24 hours

Test Number: 1 of 2 Test Type: Screening | Definitive
Static | Static Renewal | Flow-through

Remarks: NO residual chlorine
? Post dechlorination?
* adjusted pH buffering cap. 7/10/91 10:00am

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	10 / 7.09	9.14-21.5 @ 23°		21.5-23
24 hr	10 / 7.05	8.86-22 @ 23°		19.5-22 C
48 hr	7.94	9.0 @ 21°	1317	20-22

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control		5	4*	0	9.4		6.5	8.2		8.0	20.1		20.8	1[illegible]		[illegible]
Control		5	5	4			5.5			8.0				1.75		
Control		5	4	4			5.5			8.0						
Control		5	5	5			5.5			8.0						
100%		5	5	5	8.7		5.3	7.3		8.2	20.8		20.5	[illegible]		[illegible]
100%		5	5	4			5.2			8.2						
100%		5	5	5			5.2			8.2						
100%		5	5	4			5.3			8.2						
Measured/Loaded by:		MT	MT	MT	MF		[illegible]	MF		MT	MT		MT	[illegible]		[illegible]
Recorded by:		MT	MT	MT	MF		[illegible]	MF		MT	MT		MT	[illegible]		[illegible]

Investigators' Signatures
Marshall Faircloth
[illegible]

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:			0.0	HACH	E. Pattis
Lab Tot. Resid. Cl2:			0.0	[illegible]	MT
Alkalinity:	115	65	115	[illegible]	[illegible]
Hardness:	120	35	119	Hach	MT
Total Ammonia:	0.0	0.0	0.0	Hach	MT

Ammonia meter slope:

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: Auntbali WWTP
Address/City:
County: Escambia
Contact/District: G. Butts / North East
NPDES Permit #: Outfall #:

Sample Collection: Date 7/8/91 Time 0935
Test Beginning: Date 7/9/91 Time 1130
Test Ending: Date 7/11/91 Time 1130
Test Organism: Mysidopsis bahia
Life Stage/Age: 7 days

Test Number: 2 of 2 Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Remarks: * conductivity [illegible] pH column

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	~~1342~~ 7.0 7.9 @ 9 (mf* 7-9)	8.% 21.5°C	1342 @ 20 1351	20.5 @ 23.5°C
24 hr	7 @ 7.9 @ 9	8.5 @ 22°	1328 @ 22.5 1337	19.3 @ 22°
48 hr	7 @ 7.9 @ 9	9.0 @ 21°	1345 @ 23 / @ 1354	20.1 @ 22.7

Conc.	Chamber #	Number Live 0	Number Live 24	Number Live 48	DO (mg/l) 0	DO (mg/l) 24	DO (mg/l) 48	pH 0	pH 24	pH 48	Temp. (°C) 0	Temp. (°C) 24	Temp. (°C) 48	Cond. (µmhos/cm) 0	Cond. (µmhos/cm) 24	Cond. (µmhos/cm) 48
Control	63	5	5	5	9.5	7.7	7.6	7.8	7.6	8.1	21.1	21.8	21.9	242	246	245
Control	142	5	5	5	9.6	7.7	7.7	7.8	7.7	8.1						
100%	68	5	5	5	9.4	7.3	7.8	7.3	7.7	8.0	20.9	22.0	21.0	493	499	494
100%	25	5	5	5	9.4	7.5	7.7	7.3	7.9	5.0						
Measured/Loaded by:		mf	mf	mf	mf	mf	mf	mf	mf	mf	mf	mf	mf	mf	mf	mf
Recorded by:		AB	AJ	mf	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Investigators' Signatures

Marshall Fairbanks
[signature]

[signature]
Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:			0.0	[illegible]	G. Butts
Lab Tot. Resid. Cl2:			0.0	Hach	mf
Alkalinity:	115	65	115	Hach	[illegible]
Hardness:	130	85	140	Hach	[illegible]
Total Ammonia:	0.0	0.0	0.0	Hach	[illegible]

Ammonia meter slope: ______________