

Bioassays of

Atlantic Beach - Donner Road Wastewater Treatment Facility

Atlantic Beach, Duval County, Florida

NPDES #FL0038776

Sampled 8/3/92

September 1992

Biology Section
Division of Technical Services

Bioassays of

Atlantic Beach - Donner Road Wastewater Treatment Facility

Atlantic Beach, Duval County, Florida

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Biology Section
Bureau of Laboratories
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Introduction

Atlantic Beach - Donner Road WWTF, Atlantic Beach, Duval County, Florida, NPDES #FL0038776, tests performed on 4 to 6 August, 1992.

This facility is located at 475 Donner Road in Atlantic Beach. The wastewater treatment facility has a 2.0 MGD capacity. Treatment of wastewater consists of contact stabilization, chlorination, and dechlorination. Treated effluent is discharged to the St. Johns River.

The toxicity tests discussed in this report were performed in accordance with 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 bioassay organisms used for these tests were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Notropis leedsi*. The test results did not indicate toxicity to the fish, *Notropis leedsi*. In the *C. dubia* test, however, 100% mortality occurred within 24 hours of test initiation. The test results indicate that the sample was highly toxic to the water flea.

Total residual chlorine and total ammonia were not detected in the sample. Further chemical analyses were performed on the sample and indicated the presence of the metals as shown in Table 2. The metals detected do not appear to be present in toxic concentrations. Aliphatics(13 µg/L), aromatic (2 µg/L), and unidentified organic compounds (2 µg/L) were detected in the sample as well as the trip blank. None of the 24 pesticides for which this sample was analyzed were detected. This does not rule out other pesticides as a possible cause of toxicity.

Conclusion

The sample of effluent from this facility, which was collected on 3 August, 1992, did not show toxicity to *N. leedsi*. The sample was highly toxic to *C. dubia*. The cause of toxicity was not determined.

Table 1. Concentration Series and Volumes Used for the 48-hour Static Acute Screening Bioassays of the Atlantic Beach - Donner Road WWTF effluent performed on 4 to 6 August, 1992.

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. Results of chemical analyses on the effluent from Atlantic Beach - Donner Road WWTF, sampled on 3 August, 1992.

Pesticides & Herbicides

none detected

Metals

Aluminum	81	µg/L	A
Calcium	65.6	mg/L	A
Copper	6	µg/L	T
Iron	39	µg/L	A
Magnesium	25.8	mg/L	A
Zinc	29	µg/L	A

A Value reported is the mean of two or more determinations.
T Value reported is less than the practical quantitation limit.

Base-Neutral & Acid Extractables

Aliphatics, aromatics, and unidentified compounds were detected in both the effluent sample and trip blank.

Table 3. Data recorded during the 48-hour static acute screening bioassays of a sample of effluent from the Atlantic Beach - Donner Road WWTF, Atlantic Beach, Duval County, Florida, NPDES #FL0038776, on 4 to 6 August, 1992.

Facility:	**Atlantic Beach-Donner Road WWTF**		**NPDES #**	**FL0038776**	Facility Type: **Wastewater Treatment Facility**
Location:	Atlantic Beach		Contact/District:	Jeff Martin / NE	
County:	Duval		Test type:	static acute screen	
Sample Collection Date:	**8/3/92**	Time: 1230	# tests:	2	Receiving Water: St. Johns River
Test Beginning Date:	8/4/92	Time: 1400	Chlorination Type:	**Dechlorinated at Plant**	
Test Ending Date:	8/6/92	Time: 1300		**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):	114	120
Cond. Control Water (daphnids):	67	73
100% Sample:	128	282

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

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

*Test terminated at 1300 hrs on 8/5/92 due to complete mortality in 100% effluent.

	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	24 hour
Control	5	5	*	8.2	8.1	-	23.8	25.0	-	8.2	8.3	-	154	166
Control	5	5	*	-	8.1	-	-	-	-	-	8.3	-	-	-
Control	5	5	*	-	8.1	-	-	-	-	-	8.3	-	-	-
Control	5	5	*	-	8.1	-	-	-	-	-	8.3	-	-	-
100%	5	0	*	7.6	8.4	-	24.0	25.0	-	8.3	8.6	-	916	936
100%	5	0	*	-	8.4	-	-	-	-	-	8.6	-	-	-
100%	5	0	*	-	8.4	-	-	-	-	-	8.6	-	-	-
100%	5	0	*	-	8.4	-	-	-	-	-	8.6	-	-	-

Organism: ***Notropis leedsi*** Age: 11 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	8.2	8.3	23.8	23.2	23.3	8.4	8.5	8.4	-	-
Control	5	5	5	7.9	8.2	8.3	-	-	-	8.4	8.5	8.4	244	238
100%	5	5	5	7.6	8.0	8.2	25.0	23.2	23.2	8.4	8.6	8.4	-	-
100%	5	5	5	7.6	8.0	8.2	-	-	-	8.4	8.6	8.4	956	924

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: ATLANTIC BEACH - DONNER ROAD WWTP
Address/City: _____
County: _____
Contact/District: S J. MARTIN / NE
NPDES Permit #: FL00 Outfall #: _____

Sample Collection: Date 8/3/92 Time 1230
Test Beginning: Date 8/4/92 Time 1400
Test Ending: Date 8-5-92 Time 1300
Test Organism: C. DUBIA
Life Stage/Age: <24 HRS

Test Number: 1 of 2 Test Type: (Screening) Definitive 38718 92-AUG-04-18
(Static) Static Renewal | Flow-through

Remarks:
TEST TERMINATED AT 1300 HRS DUE TO COMPLETE MORTALITY IN 100% EFFLUENT.

Instrument Calibrations:

	pH	DO	Temp	Cond @24.0
0 hr	7@7, 10@10	8.5@24.0	23.9@ 23.9	962@1000 9620@10000
24 hr	7@7, 10@10	8.4 25°C	24.2 24.2°	486 @ 1K 9830 @10K
48 hr				

Conc.	Chamber #	Number Live 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	DO (mg/L) 0	24	48	Cond. (µmhos/cm) 0	24	48
control	A	5	5		8.2	8.1		23.8	25.0		8.2	8.3		154	166	
control	B	5	5			8.1						8.3				
control	C	5	5			8.1						8.3				
control	D	5	5			8.1						8.3				
100%	A	5	0		7.6	8.4		24.0	25.0		8.3	8.6		916	936	
100%	B	5	0			8.4						8.6				
100%	C	5	0			8.4						8.6				
100%	D	5	0			8.4						8.6				
Measured/Loaded by:		MF	MF		MF	MF		MF	MF		MF	MF		MF	MF	
Recorded by:		MF	KP		KP	KP		KP	KP		KP	KP		KP	KP	

Investigators' Signatures
Kim Pearce
Marshall Faircloth
Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:			0.0	Hach	JM
Lab Tot. Resid. Cl2:	0.0	0.0	0.0	Hach	MF
Alkalinity:	114	67	128	Hach	KP
Hardness:	120	73	282	Hach	KP
Total Ammonia:	0.0	0.0	0.0	Orion	MF

Ammonia Meter Slope: -55.6
Ammonia Blank: 0.0
Salinity Sample: .0 ppt

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: ATLANTIC BEACH - DONNER ROAD WWTP
Address/City: _____
County: _____
Contact/District: J. MARTIN / NE
NPDES Permit #: FL00 _____ Outfall #: _____

Sample Collection: Date 8-3-92 Time 1230
Test Beginning: Date 8-4-92 Time 1400
Test Ending: Date 8-6-92 Time 1400
Test Organism: Notropis leedsi
Life Stage/Age: 11 DAYS

Test Number: 2 of 2 Test Type: (Screening) / Definitive 38718 92-AUG-04-18
(Static) / Static Renewal | Flow-through

Remarks:

Instrument Calibrations:

	pH	DO	Temp	Cond @24.0
0 hr	7@7;10@10	8.5@24.0	23.9 @ 23.9	962@1000 9620@10000
24 hr	7@7;10@10	8.4@25.0	24.2 @ 24.2	986@1K 9830@10K
48 hr	7@7;10@10	8.5@24°C	24.5 24.5	989@1K @24.4°C 9830@10K

Conc.	Chamber #	Number Live 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	DO (mg/L) 0	24	48	Cond. (µmhos/cm) 0	24	48
control	57	5	5	5	7.9	8.2	8.3	23.8	23.2	23.3	8.4	8.5	8.4			
control	10	5	5	5	7.9	8.2	8.3				8.4	8.5	8.4	244	242	238
100%	30	5	5	5	7.6	8.0	8.2	25.0	23.2	23.2	8.4	8.6	8.4			
100%	68	5	5	5	7.6	8.0	8.2				8.4	8.6	8.4	956	918	924
Measured/Loaded by:		MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by:		MF	KP	MF	KP	KP	KP	KP	KP	KP	KP	KP	KP	KP	KP	KP

Investigators' Signatures

Kim Pearce
Marshall Brecht

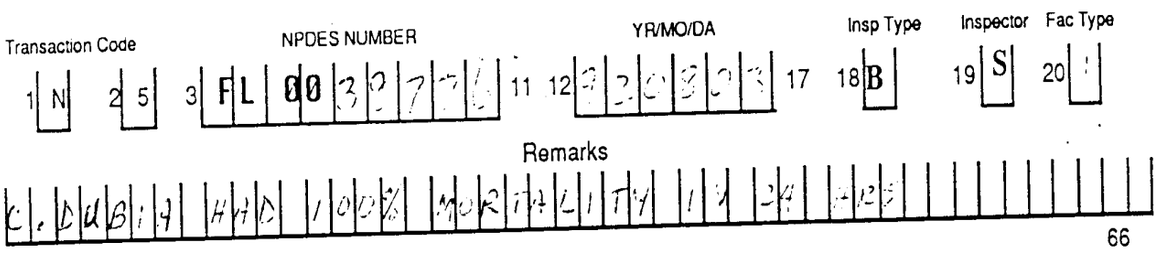
Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:			0.0	Hach	JM
Lab Tot. Resid. Cl2:	0.0	0.0	0.0	Hach	MF
Alkalinity:	114	67	128	Hach	KP
Hardness:	120	73	282	Hach	KP
Total Ammonia:	0.0	0.0	0.0	Orion	MF

Ammonia Meter Slope: -55.6
Ammonia Blank: 0.0
Salinity Sample: 0 ppt

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)

