

Bioassays of

Nassau Host Days Inn
Wastewater Treatment Plant

Yulee, Nassau County, Florida

NPDES #FL0116921

Sampled 3/26/01

August 2001

Biology Section
Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

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Wastewater Treatment Facility

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Biology Section
Bureau of Laboratories
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Introduction

Nassau Host Days Inn Wastewater Treatment Plant, 3250 Highway 17 North, Yulee, Nassau County, Florida, NPDES #FL0116921, tests performed on 27 to 29 March 2001.

This contact stabilization/conventional activated-sludge wastewater treatment plant has a design flow of 0.030 MGD and an annual average flow of 0.015 MGD. The wastewater treatment system consists of three 5,000-gallon (19 kiloliters) aeration basins, one 6,200-gallon (23.6 kiloliters) secondary clarifier, one 542-gallon (2.06 kiloliters) chlorine contact chamber, a dechlorination unit, one 5,000-gallon (19 kiloliters) aerobic digester, and one 1,200-gallon (4.56 kiloliters) reaeration basin. The effluent is dechlorinated using liquid sodium sulfite. The effluent is discharged into a constructed wetland with intermittent discharge into the Class III fresh waters of McQueen Swamp (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 not detected in the sample. The total and unionized ammonia concentrations in the sample were 1.48 mg/L and 0.038 mg/L, respectively. Further chemical analyses were performed on the sample, and several metals and a pesticide were identified (Table 2).

Conclusion

The sample of effluent collected from this facility on March 26, 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 Nassau Host Days Inn Wastewater Treatment Plant, 3250 Highway 17 North, Yulee, Nassau County, Florida, NPDES# FL0116921, performed on 27 to 29 March 2001.

Facility:	Nassau Host Days Inn WWTP			NPDES #	FL0116921	Facility Type:	Wastewater Treatment Plant
Location:	3250 Highway 17 North			Contact/District:	P. O'Connor/ Northeast		
County:	Nassau			Test type:	static acute screen		
Sample Collection Date:	3/26/01	Time:	0730	# tests:	2	Receiving Water:	Mc Queen Swamp
Test Beginning Date:	3/27/01	Time:	1110	Chlorination Type:	Chlorinated		
Test Ending Date:	3/29/01	Time:	1030		sample collected after dechlorination		Page 1 of 1

Total Residual CL2	mg/L	Method
Field:	-	-
Lab:	<0.03	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:	1.48	0.038

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	142	130
20% Dilute Mineral Water (cladocerans):	84	81
100% Sample:	200	325

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

[C] Salinity based on conductivity and temperature measurements.

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

	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	8.2	-	8.1	24.7	-	25.1	7.9	-	8.7	194	210
Control B	0/20	5	5	5	-	-	8.3	-	-	25.1	-	-	8.7	-	220
Control C	0/20	5	5	5	-	-	8.3	-	-	25.1	-	-	8.7	-	225
Control D	0/20	5	5	5	-	-	8.3	-	-	25.0	-	-	8.8	-	225
100% A	20/0	5	5	4	7.6	-	8.6	24.7	-	25.3	5.8	-	8.7	720	840
100% B	20/0	5	5	5	-	-	8.6	-	-	25.2	-	-	8.7	-	875
100% C	20/0	5	5	5	-	-	8.6	-	-	25.1	-	-	8.8	-	920
100% D	20/0	5	5	5	-	-	8.6	-	-	25.0	-	-	8.8	-	970

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 25.0-26.5°C.
Incubator #2 temperature range for the test period was 24.5-26.5°C.

Organism: *Cyprinella leedsi* Life stage: 14 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	7.8	8.1	8.3	24.5	24.7	25.1	7.4	7.6	8.4	260	295
Control B	0/500	5	5	5	7.8	8.1	8.3	24.1	24.6	24.5	7.4	7.7	8.4	255	280
Control C	0/500	5	5	5	7.8	8.2	8.4	23.7	24.6	25.0	7.5	7.7	8.3	255	290
Control D	0/500	5	5	5	7.8	8.2	8.4	23.1	24.6	24.7	7.5	7.7	8.4	255	285
100% A	500/0	5	5	5	7.6	8.2	8.3	24.1	24.7	24.9	6.0	7.3	8.1	780	840
100% B	500/0	5	5	5	7.6	8.2	8.3	24.4	24.6	24.6	6.1	7.4	8.1	790	830
100% C	500/0	5	5	5	7.6	8.2	8.3	24.3	24.5	24.3	5.6	7.4	7.8	790	815
100% D	500/0	5	5	5	7.6	8.2	8.3	24.2	24.4	24.7	5.6	7.4	8.0	790	830

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 25.0-26.5°C.
Incubator #3 temperature range for the test period was 23.0-25.5°C.

Table 2. Results of chemical analyses on the effluent from Nassau Host Days Inn Wastewater Treatment Plant sampled on March 26, 2001.

Metals	
Calcium	67.8 mg/L
Copper	2.2 µg/L
Iron	194 µg/L
Magnesium	34.6 mg/L
Zinc	22 µg/L
Pesticides and Herbicides	
Chlorpyrifos Ethyl	0.091 µg/L [1]
Base, Neutral, & Acid Extractable Organics	
None detected	

[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: Nassau Hist
County: Nassau
Contact / District: J O'Connor / NE-Dist
NPDES Permit #: ~~100~~ FL0116921
LIMS Sample #: 515614 LIMS Job #: TLH-2001-03-27-13
sample log: 3/30/01 mf
Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through
Test Number: 1 of 2

Remarks:

Sample Collection: Date 3/26/01 Time 0730
Test Beginning: Date 3/27/01 Time 11:20
Test Ending: Date 3/29/01 Time 10:30
Organism Batch #: 16 Diluent Batch #: #7
Organism Age: 24 hrs. SRT toxicant batch #: NA
Test organism: C. dubia

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	5	5	5	8.2	—	8.1	24.7	—	25.1	7.9	—	8.7	194	—	210
	B	5	5	5	—	—	8.3	—	—	25.1	—	—	8.7	—	—	220
	C	5	5	5	—	—	8.3	—	—	25.1	—	—	8.7	—	—	225
	D	5	5	5	—	—	8.3	—	—	25.0	—	—	8.8	—	—	225
100%	A	5	5	4 10	7.6	—	8.6	24.7	—	25.3	5.8	—	8.7	720	—	840
	B	5	5	5	—	—	8.6	—	—	25.2	—	—	8.7	—	—	875
	C	5	5	5	—	—	8.6	—	—	25.1	—	—	8.8	—	—	920
	D	5	5	5	—	—	8.6	—	—	25.0	—	—	8.8	—	—	970
measured by:		SG	SG	SG	DH	—	SG	DH	—	SG	DH	—	SG	DH	—	SG
recorded by:		JH	JH	SG	JH	—	JH	JH	—	JH	JH	—	JH	JH	—	SG

Investigators' Signatures

reviewer

form updated 3/3/99

Temperature Range °C
Incubator # 2 24.5 - 26.5 °C
Room B246 25.0 - 26.5 °C

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			NA	NA	NA	SG
Lab Total Residual Cl2 (mg/L):		<0.03	<0.03	DR100	DH/SG	SG
Alkalinity (mg/L as $CaCO_3$):		64	200	Hach	SG/JA	SG
Hardness (mg/L as $CaCO_3$):		61	125	Hach	SG/JA	SG
Total ammonia (mg/L as N):		<0.017	1.48	Denver	YNK	SG
Salinity:		<1	<1	YSI	JA	SG

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Nassau Host
County: Nassau
Contact / District: Pat O'Connor / NE-Dist
NPDES Permit #: ~~FL00~~ FL0116921
LIMS Sample #: 515614 LIMS Job #: TLH-2001-03-27-13
sample log 3/26/01 mv
Test Type: Screening | Definitive
Static / Static Renewal | Flow-through
Test Number: 2 of 2

Remarks:

Sample Collection: Date 3/26/01 Time 0730
Test Beginning: Date 3/27/01 Time 11:10
Test Ending: Date 3/29/01 Time 10:30
Organism Batch #: 21/22 Diluent Batch #: Well
Organism Age: 14 days SRT toxicant batch #: NA
Test organism: C. vogdsi

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~~ µmhos/cm) 0 hr	Cond. (µmhos/cm) 24 h	Cond. (µmhos/cm) 48 h
CNTL.	A	5	5	5	7.8	8.1	8.3	24.5	24.7	25.1	7.4	7.6	8.4	260	300	295
	B	5	5	5	7.8	8.1	8.3	24.1	24.6	24.5	7.4	7.7	8.4	255	225	280
	C	5	5	5	7.8	8.2	8.4	23.7	24.6	25.0	7.5	7.7	8.3	255	220	290
	D	5	5	5	7.8	8.2	8.4	23.1	24.6	24.7	7.5	7.7	8.4	255	280	285
100%	A	5	5	5	7.6	8.2	8.3	24.1	24.7	24.9	6.0	7.3	8.1	750	800	840
	B	5	5	5	7.6	8.2	8.3	24.4	24.6	24.6	6.1	7.4	8.1	790	810	830
	C	5	5	5	7.6	8.2	8.3	24.3	24.5	24.3	5.6	7.4	7.8	790	805	815
	D	5	5	5	7.6	8.2	8.3	24.2	24.4	24.7	5.6	7.4	8.0	790	805	830
measured by:		SG	SG	SG	DPH	MF	SG	DPH	MF	SG	DPH	MF	SG	DPH	MF	SG
recorded by:		YMK	DPH	SG	JA	DPH	YMK	JA	DPH	YMK	JA	DPH	YMK	SL	DPH	YMK

Investigators' Signatures
Shannon Gerard
Della Mackenthun
Jasser Lotfi
Marshall Fowler
reviewer

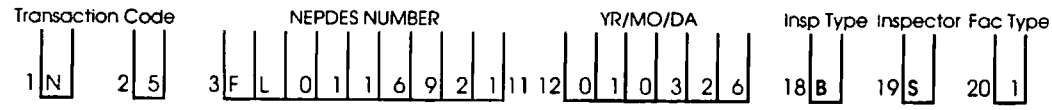
Temperature Range °C
Incubator # 3 23.0 - 25.5 °C
Room B246 25.0 - 26.5 °C

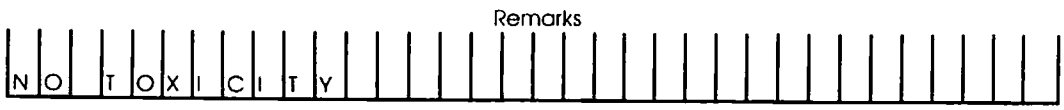
Water Quality Parameters	Salt Water: Well Water	Salt Water: 20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			NA	NA	NA	SG
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR100	DPH/SG	SG
Alkalinity (mg/L as $CaCO_3$):	142		200	Hach	SG/JA	SG
Hardness (mg/L as $CaCO_3$):	130		325	Hach	SG/JA	SG
Total ammonia (mg/L as N):	<0.017		1.48	Denver	YMK	SG
Salinity:	<1		<1	Ysi	JA	SG

form updated 3/3/99

The Bioassay of Nassau Host Days Inn Wastewater Treatment Plant effluent sampled on March 26, 2001, NPDES #FL0116921.

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

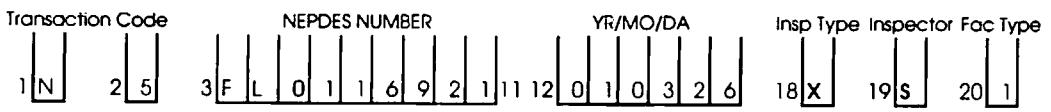


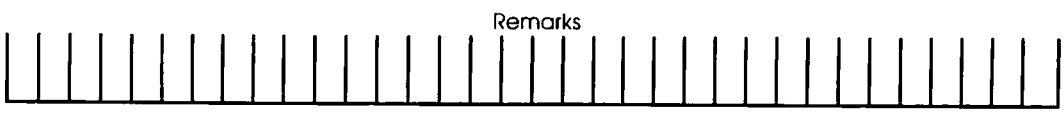


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The Priority Pollutants Analysis for Bioassay of Nassau Host Days Inn Wastewater Treatment Plant effluent sampled on March 26, 2001, NPDES #FL0116921.

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





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