

Bioassays of

South Hutchinson Island Wastewater Treatment Plant

Jensen Beach, St. Lucie County, Florida

NPDES #FL0139475

Sampled 10/1/01

January 2002

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

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Biology Section
Bureau of Laboratories
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Introduction

St. Lucie County Utilities, South Hutchinson Island Wastewater Treatment Plant, 7601 South Ocean Drive, Jensen Beach, St. Lucie County, Florida, NPDES #FL0139475, tests performed on 2 to 4 October 2001.

This domestic wastewater treatment facility has a design flow of 1.6 MGD and typical flow ranging from 0.008 to 0.281 MGD. The wastewater treatment system consists of the activated-sludge process, filtration, chlorination, and dechlorination by the addition of sodium bisulfite. After treatment the effluent may be discharged into the Class III marine waters of the Atlantic Ocean. Discharge is the alternative disposal method to a reclaimed water system, causing the effluent discharge and flow to be highly variable and dependent on reclaimed water use (facility summary provided by William Thiel, FDEP, Port St. Lucie).

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 collected from this facility. The test species used for these bioassays were the waterflea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyrprinella leedsi*. The test results did not indicate toxicity to either test species within 48 hours (Table 1).

Total residual chlorine and total ammonia were not detected in the sample in the laboratory. Further chemical analyses were performed on the sample, and several metals were identified (Table 2).

Conclusion

The sample of effluent collected from this facility on October 1, 2001, did not show acute toxicity to the either test species within 48 hours.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the St. Lucie County Utilities South Hutchinson Island Wastewater Treatment Plant, 7601 South Ocean Drive, Jensen Beach, St. Lucie County, Florida, NPDES# FL0139475 performed from 2 to 4 October 2001

Facility:	**South Hutchinson Island WWTP**		**NPDES #**	**FL0139475**	Facility Type:	**Wastewater**	**Analysts:**	Della Parker-Hanson
Location:	7601 South Ocean Drive		Contact/District:	T. Davis/Southwest		**Treatment Plant**		Joshua Ayres
County:	St. Lucie		Test type:	static acute screen				Marshall Faircloth
Sample Collection Date:	10/1/01	Time: 1040	# tests:	2	Receiving Water:	Atlantic Ocean		Eva Pastora
Test Beginning Date:	10/2/01	Time: 1600	Chlorination Type:	chlorinated				Daisys Tamayo
Test Ending Date:	10/4/01	Time: 1530		sample collected after dechlorination		**Page 1 of 1**	**Reviewer:**	David Whiting

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

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[A]			Dissolved Oxygen			Conductivity Uncorrected ìmhos/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	-	8.4	25.1	-	24.8	7.6	-	7.9	180	200
Control B	0/20	5	5	5	-	-	8.4	-	-	24.8	-	-	7.9	-	185
Control C	0/20	5	5	5	-	-	8.4	-	-	24.7	-	-	8.0	-	185
Control D	0/20	5	5	5	-	-	8.4	-	-	24.7	-	-	8.0	-	185
100% A	20/0	5	5	5	7.1	-	8.1	24.9	-	24.6	7.6	-	8.0	970	1120
100% B	20/0	5	5	5	-	-	8.1	-	-	24.6	-	-	8.0	-	1140
100% C	20/0	5	5	5	-	-	8.1	-	-	24.5	-	-	8.1	-	1105
100% D	20/0	5	5	5	-	-	8.1	-	-	24.6	-	-	8.1	-	1145

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 24.8-26.0 °C.
Incubator #2 temperature range for the test period was 26.0-26.5°C.

Organism: ***Cyprinella leedsi*** Life stage: 8 days

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			Conductivity Uncorrected ìmhos/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	8.4	8.4	23.6	24.0	24.2	7.7	7.8	7.7	270	285
Control B	0/500	5	5	5	7.9	8.4	8.5	23.5	24.0	24.0	7.7	7.8	7.9	265	305
Control C	0/500	5	5	5	7.9	8.4	8.5	23.5	24.0	24.0	7.7	7.8	7.8	270	295
Cotnrol D	0/500	5	5	5	7.9	8.4	8.5	23.6	24.1	24.0	7.7	7.8	7.8	270	330
100% A	500/0	5	5	5	7.0	7.8	8.0	24.0	23.7	24.1	7.7	7.8	7.6	990	1105
100% B	500/0	5	5	4	7.0	7.6	8.0	24.0	23.9	24.0	7.7	7.4	7.6	1020	1120
100 % C	500/0	5	5	5	7.0	7.6	8.0	24.1	24.0	24.0	7.7	7.3	7.7	1025	1085
100% D	500/0	5	5	5	7.0	7.8	8.0	24.2	24.0	24.2	7.6	7.3	7.7	1025	1160

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 24.8-26.0°C.
Incubator #3 temperature range for the test period was 24.0-25.0°C.

Data Transcription Verification	
date:	1/9/02
by:	Cathy Oaks
	Della Parker-Hanson

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
Control water (water flea):	<0.017	<0.017
100% Sample:	<0.017	<0.017

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control water (fish):	152	143
Control water (water flea):	77	86
100% Sample:	78	209

Table 2. Results of chemical analyses on the effluent from St. Lucie County Utilites South Hutchinson Island Wastewater Treatment plant sampled on October 1, 2001.

Metals

Calcium	57.8	mg/L	
Copper	2.64	µg/L	
Magnesium	13.8	mg/L	
Selenium	0.82	µg/L	[I]
Zinc	27	µg/L	

Pesticides and Herbicides

None detected

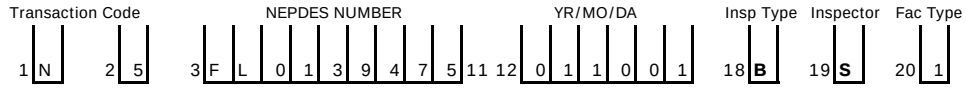
Base, Neutral, & Acid Extractable Organics

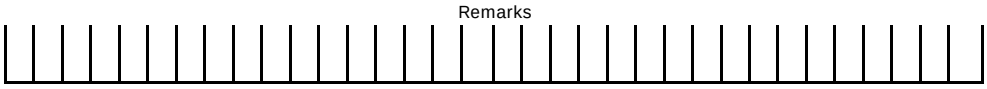
None detected

[I] The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

The Bioassay of St. Lucie County Utilites South Hutchinson Island Wastewater Treatment Plant effluent sampled on October 1, 2001, NPDES #FL0139475.

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

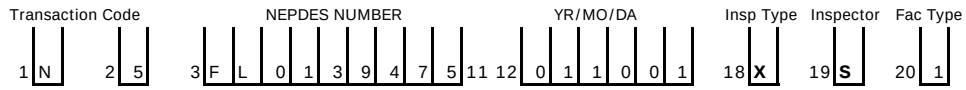


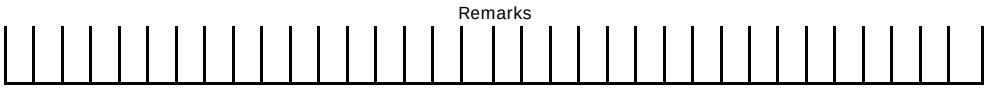


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The Priority Pollutants Analysis for Bioassay of St. Lucie County Utilites South Hutchinson Island Wastewater Treatment Plant effluent sampled on October 1, 2001, NPDES #FL0139475.

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