

Bioassays of the City of

Monticello Wastewater Treatment Plant

Monticello, Jefferson County, Florida

NPDES #FL0027839

Sampled 4/15/02

November 2002

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

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Introduction

City of Monticello WWTP, Mamie Scott Drive, Monticello, Jefferson County, Florida, NPDES # FL0027839, tests performed on 16 to 18 April 2002.

This Wastewater Treatment Plant has a 1.0 MGD maximum monthly average daily flow capacity. This facility consists of an activated-sludge extended-aeration system, which includes pretreatment, nitrification, secondary clarification, disinfection with chlorine gas, dechlorination with sulfur dioxide gas, digestion of residuals, as well as recirculation and storage of effluent in a holding pond. From the holding pond the effluent is pumped to a nearby 33-acre manmade wetland that is part of the Class III surface waters of Wolf Creek Swamp (facility information provided by David Kriger, FDEP, Tallahassee).

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

The FDEP Biology Section performed two 48-hour static acute screening toxicity bioassays on a sample of effluent collected from the outfall of this facility. The freshwater species the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*, were used in the bioassays. Test results did not indicate toxicity to either test species by 48 hours (Table 1).

Total ammonia was not detected in the bioassay sample but was measured at 0.049 mg/L in the preserved chemical analysis sample. Total residual chlorine was 0.07 mg/L in the bioassay sample, which is above the Florida Class III fresh-water surface water quality criterion of ≤0.01 mg/L (FAC 62-302.530). Additional samples of effluent were collected from this facility and analyzed for herbicides, nutrients, metals, organic compounds, and pesticides. Several metals and nutrients were detected (Table 2). The concentration of Iron, 9.080 mg/L, exceeds the Florida Class III fresh-water surface water criterion of ≤1.0 mg/L (FAC 62-302.530).

Conclusions

The sample of effluent collected from this facility on April 15, 2002, did not show acute toxicity to organisms of either test species. The concentrations of total residual chlorine and iron were above the Florida Class III fresh-water surface water quality criteria (FAC 62-302.530).

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the City of Monticello WWTP, Mamie Scott Drive, Monticello, Jefferson County, Florida, NPDES# FL0027839, performed from 16 to 18 April 2002.

Facility:	**City of Monticello WWTP**		**NPDES #**	**FL0027839**	Facility Type: **WWTP**	**Analysts:**	Della Parker-Hanson
Location:	Mamie Scott Drive		Contact/District:	Kriger/NW			Joshua Ayres
County:	Jefferson		Test type:	static acute screen			Gary Hardie
Sample Collection Date:	4/15/2002	Time: 1225	# tests:	2	Receiving Water: Wolf Creek Swamp		Marshall Faircloth
Test Beginning Date:	4/16/2002	Time: 1400	Chlorination Type:	dechlorinated			
Test Ending Date:	4/18/2002	Time: 1330			**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 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	8.1	-	8.0	24.1	-	23.6	8.0	-	7.9	165	190
Control B	0/20	5	5	5	-	-	8.1	-	-	23.6	-	-	7.9	-	190
Control C	0/20	5	5	5	-	-	8.2	-	-	23.6	-	-	7.9	-	180
Control D	0/20	5	5	5	-	-	8.2	-	-	23.6	-	-	7.9	-	190
100% A	20/0	5	5	5	7.4	-	8.4	24.2	-	23.5	6.5	-	8.1	150	275
100% B	20/0	5	5	5	-	-	8.5	-	-	23.3	-	-	8.2	-	270
100% C	20/0	5	5	5	-	-	8.5	-	-	23.3	-	-	8.4	-	270
100% D	20/0	5	5	5	-	-	8.5	-	-	23.4	-	-	8.5	-	270

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 24.5-26.0 °C.
Incubator #3 temperature range for the test period was 24.0-25.0°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	7.9	8.4	8.4	24.0	25.2	25.1	7.8	7.4	7.5	250	285
Control B	0/500	5	5	5	7.9	8.4	8.4	24.0	24.8	25.9	7.9	7.2	7.5	255	285
Control C	0/500	5	5	5	7.9	8.4	8.4	24.0	24.3	25.1	8.0	7.4	7.4	255	280
Control D	0/500	5	5	5	7.9	8.4	8.4	23.9	24.2	24.5	8.0	7.5	7.4	250	280
100% A	500/0	5	5	5	7.4	7.9	8.0	24.1	24.1	24.1	7.0	7.1	7.7	255	280
100% B	500/0	5	5	5	7.4	7.9	8.0	24.2	24.0	25.5	6.7	6.9	7.7	255	275
100 % C	500/0	5	5	5	7.4	7.9	8.0	24.3	24.0	25.8	6.4	6.6	6.8	255	280
100% D	500/0	5	5	5	7.4	7.9	8.0	24.2	24.7	25.5	6.3	6.7	6.6	250	275

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 24.5-26.0°C.
Incubator #3 temperature range for the test period was 24.0-25.0°C.

LIMS	
Job number:	TLH-2002-04-15-05
sample number:	587613

Data Transcription Verification	
date:	9/4/2002
by:	Joshua Ayres
	Christa Pierini

Total Residual CL2	mg/L	Method
Field:	-	-
Lab:	0.07	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):	136	130
Control water (water flea):	76	79
100% Sample:	89	63

Table 2. Results of chemical analyses on the effluent from the City of Monticello WWTP sampled on April 15, 2002.

Metals

Copper	0.83	ug/L	[I]
Calcium	18.8	mg/L	
Iron_271	9,080	ug/L	
Magnesium	4.5	mg/L	
Zinc	3.7	ug/L	[I]

Pesticides and Herbicides

None detected

Base, Neutral, & Acid Extractable Organics

None detected

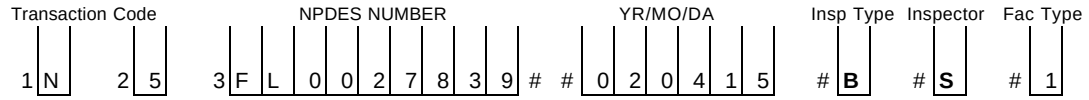
Nutrients

Total Kjeldahl Nitrogen	2	mg N/L	[A]
Total Phosphorus	1.3	mg P/L	[A]
Total suspended solids	57	mg/L	[A]
Orthophosphate	0.046	mg P/L	
Ammonia-N	0.049	mg N/L	

[I] The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
[A] The reported value is an average of two or more values.

The Bioassay of City of Monticello WWTP effluent sampled on April 15, 2002, NPDES # FL0027839.

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

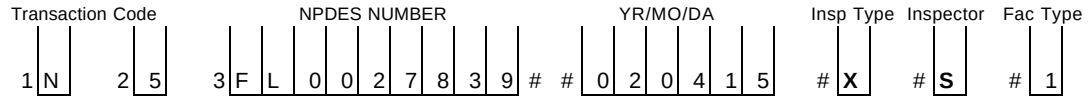


Remarks

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The Priority Pollutants Analysis for Bioassay of City of Monticello WWTP effluent sampled on April 15, 2002, NPDES # FL0027839.

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



Remarks

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