

Bioassays of

San Jose Subdivision

Jacksonville, Duval County, Florida

NPDES #FL0023663

Sampled 10/30/00

August 2001

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

Bioassays of

San Jose Subdivision

Jacksonville, Duval County, Florida

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Biology Section
Bureau of Laboratories
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Introduction

San Joes Subdivision, 7128 Balboa Road, Jacksonville, Duval County, Florida, NPDES #FL0023663, tests performed on 31 October to 2 November 2000.

This complete mix activated-sludge wastewater treatment plant has a design flow of 2.25 MGD. Wastewater treatment consists of a bar screening, grit removal, aeration, clarification, and an ultraviolet light disinfection system. Treated wastewater is then discharged into the Class III marine waters of the St. John's River (facility summary provided by Jessica 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 in the sample was not detected in the lab. Total and unionized ammonia measured 2.97 mg/L and 0.050 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 October 31, 2000, 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 San Jose Subdivision, 7128 Balboa Road, Jacksonville, Duval County, Florida, NPDES# FL0023663, performed on 31 October to 2 Novermber 2000.

Facility:	San Jose Subdisvision			NPDES #	FL0023663	Facility Type:	Wastewater
Location:	7128 Balboa Road			Contact/District:	Ed Cordova/Northeast		Treatment Plant
County:	Duval			Test type:	static acute screen		
Sample Collection Date:	10/30/00	Time:	1200	# tests:	2	Receiving Water:	St. Johns River
Test Beginning Date:	10/31/00	Time:	1320	Chlorination Type:	Non-chlorinated		
Test Ending Date:	11/2/00	Time:	1310				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:	2.97	0.050

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	130	124
20% Dilute Mineral Water (cladocerans):	79	79
100% Sample:	134	297

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	-	8.4	24.7	-	24.7	7.9	-	7.9	190	292
Control B	0/20	5	5	5	-	-	8.4	-	-	24.7	-	-	8.0	-	210
Control C	0/20	5	5	5	-	-	8.4	-	-	24.6	-	-	7.9	-	200
Control D	0/20	5	5	5	-	-	8.4	-	-	24.5	-	-	8.0	-	200
100% A	20/0	5	5	5	7.6	-	8.6	24.8	-	24.6	7.1	-	8.1	920	995
100% B	20/0	5	5	5	-	-	8.6	-	-	24.6	-	-	8.1	-	1005
100% C	20/0	5	5	5	-	-	8.6	-	-	24.5	-	-	8.2	-	1020
100% D	20/0	5	5	5	-	-	8.6	-	-	24.4	-	-	8.2	-	1015

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 25.0-26.0°C.
Incubator #2 temperature range for the test period was 24.5-25.0°C.

Organism: *Cyprinella leedsi* Life stage: 10 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	8.2	8.5	24.7	24.2	24.1	8.0	7.7	7.7	275	285
Control B	0/500	5	5	5	7.9	8.3	8.5	24.6	23.8	24.0	8.0	7.9	7.9	260	270
Control C	0/500	5	5	5	7.9	8.3	8.5	24.5	23.8	23.9	7.9	7.9	7.9	255	260
Control D	0/500	5	5	5	7.9	8.2	8.5	24.5	24.0	23.9	8.0	7.7	7.8	255	260
100% A	500/0	5	5	5	7.5	8.0	8.2	24.9	23.7	24.0	6.8	7.7	7.8	950	940
100% B	500/0	5	5	5	7.4	8.0	8.3	24.8	23.7	23.8	6.6	7.5	7.6	960	950
100% C	500/0	5	5	5	7.4	8.1	8.3	24.7	23.9	23.7	6.4	7.5	7.7	955	965
100% D	500/0	5	5	5	7.4	8.0	8.3	24.7	24.2	23.7	6.4	7.3	7.6	955	945

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

Table 2. Results of chemical analyses on the effluent from San Jose Subdivision sampled on October 30, 2000.

Metals			
Calcium	66.6	mg/L	
Copper	1.7	µg/L	[1]
Iron	150	µg/L	
Lead	2	µg/L	
Magnesium	30.6	mg/L	
Silver	0.17	µg/L	
Zinc	20.3	µg/L	
Pesticides and Herbicides			
Atrazine	0.056	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: San José WWTP
County: St Johns
Contact / District: Ed Cordova / J. Martin | NE-DIST
NPDES Permit #: FL00
LIMS Sample #: 49170 0 LIMS Job #: TLH-2000-11-31-34
sample log 11-6-00
Test Type: ~~Screening~~ | Definitive
~~Static~~ | Static Renewal | Flow-through
Test Number: 1 of 1

Remarks:

Sample Collection: Date 10/30/00 Time 1200
Test Beginning: Date 10/31/00 Time 1320
Test Ending: Date 11/2/00 Time 1310
Organism Batch #: 57 Diluent Batch #: 34
Organism Age: 24hrs. SRT toxicant batch #: NA
Test organism: C. dubia

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) or Cond (µmhos/cm) 0 hr	24 h	48 h
CNTR.	A	5	5	5	8.2	—	8.4	24.7	—	24.7	7.9	—	7.9	190	—	292
	B	5	5	5	—	—	8.4	—	—	24.7	—	—	8.0	—	—	210
	C	5	5	5	—	—	8.4	—	—	24.6	—	—	7.9	—	—	200
	D	5	5	5	—	—	8.4	—	—	24.5	—	—	8.0	—	—	200
100%	A	5	5	5	7.6	—	8.6	24.8	—	24.6	7.1	—	8.1	920	—	995
	B	5	5	5	—	—	8.6	—	—	24.6	—	—	8.1	—	—	1005
	C	5	5	5	—	—	8.6	—	—	24.5	—	—	8.2	—	—	1030
	D	5	5	5	—	—	8.6	—	—	24.4	—	—	8.2	—	—	1015
measured by:		JA	SG	JA	SG	—	SG	SG	—	SG	SG	—	SG	—	—	SG
recorded by:		MF	SG	JA	SA	—	JA	SA	—	SA	SA	—	SA	SA	—	SA

* wrong Dilution (w.P.)

Investigators' Signatures
Shannon Geerards
Joshua Cyr
[signature]

A.A. Wolf
reviewer

form updated 3/3/99

Temperature Range °C
Incubator # 2 24.5 - 25.0°C
Room B246 25.0 - 26.0°C

Water-Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			N/A	NA	NA	SG
Lab Total Residual Cl2 (mg/L):		<0.03	<0.03	DPD	SG	SG
Alkalinity (mg/L as $CaCO_3$):		79	79 *	Hach	JA	SG
Hardness (mg/L as $CaCO_3$):		79	297	Hach	JA	SG
Total ammonia (mg/L as N):		<0.017	297	Orion	YMK	SG
Salinity:		≈0	≈0	YSI	SG	SG

* wP (SG) 10/31/00

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: San Jose' WWTP
County: St Johns
Contact / District: Ed Cordova / J. Martin / NE-DIST
NPDES Permit #: FL00
LIMS Sample #: 49174 00 LIMS Job #: TLH2000-10-31-49 34,
sample log 11-6-00 MF
Test Type: ~~Screening~~ | Definitive
Static | Static Renewal | Flow-through
Test Number: 2 of 2

Remarks:

Sample Collection: Date 10/30/00 Time 1200
Test Beginning: Date 10/31/00 Time 1350
Test Ending: Date 11/2/00 Time 1310
Organism Batch #: 86 Diluent Batch #: Well
Organism Age: 10 days SRT toxicant batch #: NA
Test organism: C. leeds.

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	F17	5	5	5	7.8	8.2	8.5	24.7	24.2	24.1	8.0	7.7	7.7	275	275	285
B	F18	5	5	5	7.9	8.3	8.5	24.6	23.8	24.0	8.0	7.9	7.9	260	260	270
C	F19	5	5	5	7.9	8.3	8.5	24.5	23.8	23.9	7.9	7.9	7.9	255	260	260
D	F20	5	5	5	7.9	8.2	8.5	24.5	24.0	23.9	8.0	7.7	7.8	255	260	260
100% A	F21	5	5	5	7.5	8.0	8.2	24.9	23.7	24.0	6.8	7.7	7.8	950	940	940
B	F22	5	5	5	7.4	8.0	8.3	24.8	23.7	23.8	6.6	7.5	7.6	960	950	950
C	F23	5	5	5	7.4	8.1	8.3	24.7	23.9	23.7	6.4	7.5	7.7	955	955	965
D	F24	5	5	5	7.4	8.0	8.3	24.7	24.2	23.7	6.4	7.3	7.6	955	945	945
measured by:		MF	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG
recorded by:		YMK	SG	SG	JA	YMK	JA	JA	YMK	JA	JA	YMK	JA	JA	YMK	YMK

Investigators' Signatures
Shannon Gerard
Marshall Faircloth

Temperature Range °C
Incubator # 3 24.5° - 26.0°C
Room B246 25.0° - 26.0°C

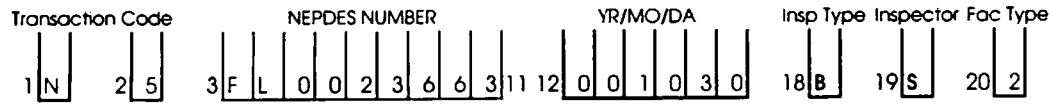
Water Quality Parameters	Salt Water / Well Water / 20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):		NA	NA	NA	SG
Lab Total Residual Cl2 (mg/L):	<0.03	<0.03	DR100	SG	SG
Alkalinity (mg/L as $CaCO_3$):	130	134	Hach	JA	SG
Hardness (mg/L as $CaCO_3$):	124	297	Hach	JA	SG
Total ammonia (mg/L as N):	<0.017	2.97	Denver	YMK	SG
Salinity:	0	0	YSI	SG	SG

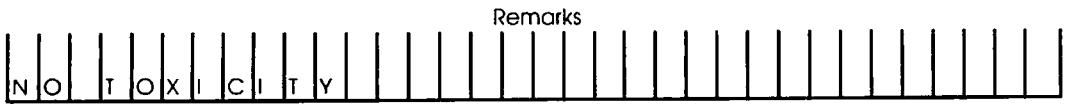
reviewer

form updated 3/3/99

The Bioassay of San Jose Subdivision effluent sampled on October 30, 2000, NPDES #FL0023663.

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

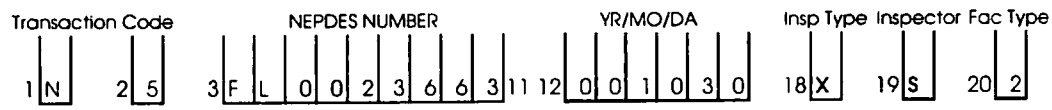


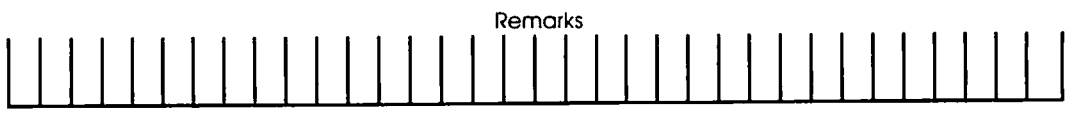


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The Priority Pollutants Analysis for Bioassay of San Jose Subdivision effluent sampled on October 30, 2000, NPDES #FL0023663.

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





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