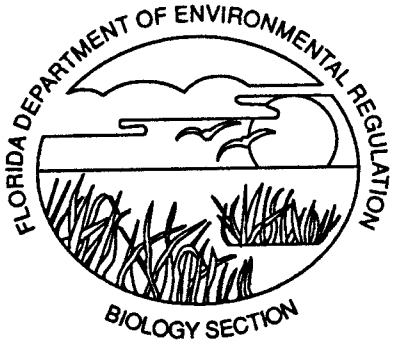
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Bioassays of

Key West Sewage Treatment Plant

Key West, Monroe County, Florida

NPDES #FL0025976

Sampled 4/1/91

May 2, 1991

Biology Section

Division of Administrative and Technical Services

Bioassays of

Key West Sewage Treatment Plant

Key West, Monroe County, Florida

NPDES #FL0025976

Biology Section
Bureau of Laboratories
May 2, 1991

Introduction

Key West Sewage Treatment Plant, Key West, Monroe County, Florida, NPDES #FL0025976, on 2 to 4 April, 1991.

This facility is located on Fleming Key at the Trumbo Annex in Key West. The design flow is 7.2 MGD and the average flow is 6.9 MGD. Treatment utilizes an activated sludge treatment process consisting of screening and grit removal, aeration, clarification, and chlorine disinfection. The effluent is dechlorinated at the plant prior to discharge. Due to infiltration, the salinity of the influent to this facility ranges from a few ppt to as high as 17 ppt; thus, the discharge is often saline. Discharge is to the Atlantic Ocean.

The toxicity tests discussed in this report were performed in accordance with methods described by Peltier and Weber, 1985, *Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms*, 3rd Edition, and by the FDER Biology Section, 1985, *Quality Assurance Manual for Performing Acute Toxicity Tests*, 2nd Edition.

Results and Discussion

A static definitive bioassay was performed on a sample of discharge from this facility using the test organism, *Mysidopsis bahia*. The bioassay indicated that the sample from this facility was not toxic to *M. bahia*. Neither total ammonia nor total chlorine were detected in the sample. No further chemical analyses were performed on the sample.

Conclusion

The sample of discharge from this facility was not toxic on 1 April, 1991.

Table 1. Concentration Series and Volumes Used for Key West STP Static Bioassays, April 2-4, 1991.

Mysidopsis bahia (mysid shrimp)

Concentration	Dilution Water	Sample	Total Volume
Control	500 mL	0 mL	500 mL
25.0%	375 mL	125 mL	500 mL
50.0%	250 mL	250 mL	500 mL
75.0%	125 mL	375 mL	500 mL
100.0%	0 mL	500 mL	500 mL

Table 2. Data recorded during the static acute bioasssay of a sample of discharge from the City of Key West STP, Trumbo Point, Key West, Monroe County, Florida, NPDES#0025976, on 2 to 4 April, 1991.

Facility:	**Key West STP**			**NPDES #**	**FL0025976**	Facility Type:	**Sewage Treatment**
Location:	Trumbo Point Annex, Fleming Key, Key West			Contact/District:	G. Rios / South		
County:	Monroe			Test type:	Static Definitive		
Sample Collection Date:	**4/1/91**	Time:	1136	# tests:	1	Receiving Water:	Atlantic Ocean
Test Beginning Date:	4/2/91	Time:	1100	Chlorination Type:	**dechlorinated**		
Test Ending Date:	4/4/91	Time:	1100	Dechlor Method:	Facility dechlorination unit	**Page 1 of 1**	

Total Residual Cl2	mg/l	Method
Field:	0.0	Hach
Lab:	0.0	Hach
Lab:	-	-

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water :	0.00	0.00
100% Sample:	0.00	0.00

Salinity (ppt)	
Control Water:	18.5
100% Sample:	14.8

Organism: ***Mysidopsis bahia*** Age: 1-3 days

LC50: - Binomial: - Moving Average: - Probit: -

	SURVIVAL			Dissolved Oxygen			pH			Temperature			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	8.6	7.6	6.9	8.4	8.1	8.1	21.3	21.0	20.8	-	-
Control	5	5	5	8.6	7.7	6.9	8.4	8.2	8.1	-	-	-	27900	28700
25%	5	5	5	7.9	7.3	6.8	8.1	7.9	7.9	21.0	20.5	20.7	-	-
25%	5	5	5	7.9	7.6	6.8	8.1	8.0	8.0	-	-	-	26400	27300
50%	5	5	5	7.0	7.1	6.3	7.7	7.8	7.8	20.8	20.5	20.7	-	-
50%	5	5	5	7.0	7.3	6.4	7.7	7.8	7.9	-	-	-	25000	26000
75%	5	4	4	6.3	7.2	6.3	7.3	7.7	7.8	20.4	20.5	20.8	-	-
75%	5	5	5	6.3	7.3	6.8	7.3	7.8	7.9	-	-	-	23600	24600
100%	5	5	5	5.7	7.0	6.6	7.0	7.7	7.9	20.3	21.0	21.0	-	-
100%	5	5	5	5.7	7.1	6.6	7.0	7.7	7.9	-	-	-	22100	23500

DER Biology Section — Acute Bioassay Bench Sheet

1 of 6

Sample Source: City of Key West Wastewater Treatment Plant
Address/City: City of Key West
County: Monroe
Contact/District: Gus Rios / S
NPDES Permit #: FL0025771 Outfall #: 001

Sample Collection: Date 4/1/91 Time 10:30
Test Beginning: Date 4/2/91 Time 11:00
Test Ending: Date 4/4/91 Time 11:00
Test Organism: M. bahia
Life Stage/Age: 2 days

Test Number: 1 of 1
Test Type: Screening | Definitive
Static | Static Renewal | Flow-through

Remarks:
CONTROL WATER (ASW) = 18.5‰
100% SAMPLE = 14.8‰

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7.9 @ 22°	8.8 @ 22°	1493 @ 23.5°	21° @ 23.3
24 hr	7.9 @ 21.5°	8.9 @ 21.5°	1501 @ 24.1°	21° @ 23.7
48 hr	7.9 @ 22°	8.7 @ 22.5°	1475 @ 24°	21.8° @ 23.9°

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control	77	5	5	5	8.6	7.6	6.9	8.4	8.1	8.1	21.3	21.0	20.6			
Control	67	5	5	5	8.6	7.7	6.9	8.4	8.2	8.1				27,900	27,400	28,200
25%	13	5	5	5	7.9	7.3	6.8	8.1	7.9	7.9	21.0	20.5	20.7			
25%	53	5	5	5	7.9	7.10	6.8	8.1	8.0	8.0				26,400	27,600	27,300
50%	8	5	5	5	7.C	7.1	6.3	7.7	7.8	7.8	20.8	20.5	20.7			
50%	25	5	5	5	7.0	7.3	6.4	7.7	7.8	7.9				25,000	25,600	26,100
75%	47	5	4	4	6.3	7.2	6.3	7.3	7.7	7.8	20.4	20.5	20.8			
75%	155	5	5	5	6.3	7.3	6.8	7.3	7.8	7.9				23,000	24,000	24,600
100%	7	5	5	5	5.7	7.0	6.6	7.0	7.7	7.9	20.3	21.0	21.0			
100%	80	5	5	5	5.7	7.1	6.6	7.0	7.7	7.9				22,100	23,100	23,500
Measured/Loaded by		MF	MF	MF	MF	KP	MF	MF	KP	MF	MF	KP	MF	MF	KP	MF
Recorded by		MF	MF	MF	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ

Investigators' Signatures

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:			0.0	titr.	MF
Alkalinity:					
Hardness:					
Total Ammonia:		0.5	0.0	Nessler	MF

Ammonia meter slope: