Bioassays of

Sigsbee Park Navy Housing Wastewater Treatment Plant

Key West, Monroe County, Florida

NPDES #FL0020991

Sampled 8/10/92

September 1992

Biology Section
Division of Technical Services

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Introduction

Sigsbee Park Navy Housing WWTP, Key West, Monroe County, Florida, NPDES #FL0020991, tests performed on 11 to 13 August, 1992.

This facility is located on Boca Chica Naval Station on Key West. The wastewater treatment facility has an average flow of 0.6 mgd plus some saltwater intrusion, resulting in an effluent with a salinity of about 7 ppt. Repairs to the collection system have reduced the intrusion by an undetermined amount. The previous level was 0.6 additional million gallons per day in May, 1991, which resulted in a sample salinity of 19 ppt. Treatment of wastewater consists of contact stabilization, chlorination, and dechlorination prior to discharge to the Gulf of Mexico. The South District - Marathon office and the facility have discussed the option of tying into the Key West STP in 1992 for wastewater treatment (personal communication - Gus Rios).

The toxicity tests discussed in this report were performed in accordance with methods described by Weber, 1991, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 4th Edition, EPA/600/4-90/027.

Results and Discussion

The FDER Biology Section performed a 48-hour static acute screening toxicity bioassay on a sample of effluent from this facility. The salinity of the sample was 6.8 ppt, therefore, the bioassay test species used for these tests was the mysid shrimp, *Mysidopsis bahia*. The control water for the tests was adjusted to a similar salinity using an artificial sea salt mixture (Forty Fathoms®); the salinity of the sample was not altered. The test results did not indicate toxicity.

Total residual chlorine concentrations were 0.10 and 0.04 mg/L, as measured in the field and laboratory, respectively. Total and unionized ammonia concentrations were 7.40 mg/L and < 0.01 mg/L, respectively.

Conclusion

The sample of effluent from this facility collected on 10 August, 1992, did not show toxicity.

Table 1. Concentration Series and Volumes Used for the 48-hr Static Acute Screening Bioassay of the Sigsbee Park Navy Housing WWTP effluent on 11 to 13 August, 1992.

Mysidopsis bahia (mysid shrimp)

Concentration	Dilution Water	Sample	Total Volume
Control	500 mL	0 mL	500 mL
50 %	250 mL	250 mL	500 mL
100 %	0 mL	500 mL	500 mL

Table 2. Data recorded during the 48-hour acute screening bioassay of a sample of effluent from the Sigsbee Park WWTP, Boca Chica Naval Air Station, Key West, Monroe County, Florida, NPDES# FL0020991, on 11 to 13 August, 1992.

Facility:	**Sigsbee Park Navy Housing WWTP**		**NPDES #**	**FL0020991**	Facility Type: **WWTP**
Location:	Boca Chica Naval Station, Key West		Contact/District:	Gus Rios / Marathon	
County:	Monroe		Test type:	static acute screen	
Sample Collection Date:	**8/10/92**	Time: 1100	# tests:	1	Receiving Water: Gulf of Mexico
Test Beginning Date:	8/11/92	Time: 1300	Chlorination Type:	**Dechlorinated at plant**	
Test Ending Date:	8/13/92	Time: 1330			**Page 1 of 1**

Total Residual Cl2	mg/l	Method
Field:	0.1	DR-100
Lab:	0.04	DR-100

Ammonia	Total (mg/l)	Unionized (mg/l)
Control water (mysids):	0.00	0.00
100% Sample:	7.40	< 0.01

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

	SURVIVAL			pH			Temperature			Dissolved Oxygen			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	8.2	8.1	8.0	24.0	23.8	23.0	7.4	6.7	7.1	-	-
Control	5	5	5	8.2	8.1	8.1	-	-	-	7.4	6.8	7.1	13,480	13,700
50%	5	5	5	7.3	7.8	7.9	23.7	23.7	23.0	6.8	6.5	7.1	-	-
50%	5	5	5	7.3	7.8	7.9	-	-	-	6.8	6.5	7.0	13,520	12,780
100%	5	5	5	7.0	7.7	7.9	23.1	23.7	23.0	5.8	6.0	6.8	-	-
100%	5	5	5	7.0	7.7	7.9	-	-	-	5.8	6.0	6.8	11,590	11,920

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control water (mysids):	80	-
100% Sample:	138	-

Salinity (ppt)	
Control Water:	8.0
100% Sample:	6.8

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: SIGSBEE PARK NAVY HOUSING
Address/City: KEY WEST
County: MONROE
Contact/District: GUS RIOS / MARATHON
NPDES Permit #: FL00 20991 Outfall #: _____

Sample Collection: Date 8-10-92 Time 1100
Test Beginning: Date 8-11-92 Time 1300
Test Ending: Date 8/13/92 Time 1330
Test Organism: MYSIDOPSIS BAHIA
Life Stage/Age: 3 day

Test Number: 1 of 1 Test Type: (Screening) (Definitive) 14
(Static) | Static Renewal | Flow-through

SOLIDS IN EFFLUENT
92-AUG-11-20 39072

Remarks:

Instrument Calibrations:

	pH	DO	Temp	Cond
0 hr	7.0, 7.10 / 10	8.4 @ 25°C	24.0 @ 24.0	985 / 986 @ 24.2
24 hr	7.0, 7.10 / 10	8.4 @ 25°C	26.0 @ 26.0	999 / 995 @ 24.1
48 hr	7.0, 7.10 / 10	8.4 @ 25°C	24.9 @ 24.9	1015 / 1005 @ 24.5

		Number Live			pH			Temp. (°C)			DO (mg/L)			Cond. (µmhos/cm)		
Conc.	Chamber #	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
control	7	5	5	5	8.2	8.1	8.0	24.0	23.8	23.0	7.4	6.7	7.1			
control	13	5	5	5	8.2	8.1	8.1				7.4	6.8	7.1	13480	13560	13700
50%	53	5	5	5	7.3	7.8	7.9	23.7	23.7	23.0	6.8	6.5	7.1			
50%	10	5	5	5	7.3	7.8	7.9				6.8	6.5	7.0	13520	12740	12780
100%	142	5	5	5	7.0	7.7	7.9	23.1	23.7	23.0	5.8	6.0	6.8			
100%	87	5	5	5	7.0	7.7	7.9				5.8	6.0	6.8	11590	11900	11920
		MF														
Measured/Loaded by:		~~KP~~	KP	MF	MF	MF	KP	MF	MF	KP	MF	MF	KP	MF	MF	KP
Recorded by:		MF	KP	MF	KP	KP	MF	KP	KP	MF	KP	KP	MF	KP	KP	MF

recorded Sunshine #5 here KP 5/11

Water-quality Parameters

	Well Water	Cond. Water (SALT)	Sample	Method	Measured by
Field Tot. Resid. Cl2:			0.1	DR100	GR
Lab Tot. Resid. Cl2:			0.04	DR100	KP
Alkalinity:	120 KP	7080	138	HACH	KP
Hardness:	127 KP	80 KP	~~257~~ 25	not measured	
Total Ammonia:		0	7.4	Orion	MF

recorded wrong # KP 5/11/92

Ammonia Meter Slope: -56.6
Ammonia Blank: 0.0
Salinity Sample: 6.8 ppt

Investigators' Signatures
Kim Pearce
Marshall Faircloth

Reviewer

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 FL 00 2 0 9 9 1 11	12 9 2 0 8 1 0 17	18 B	19 S	20 4

Remarks

NOT TOXIC TO MYSIDS AT APPT

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

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Remarks

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