

Bioassays of

Panama City Beach Wastewater Treatment Plant

Panama City Beach, Bay County, Florida

NPDES #FL0021512

Sampled 10/2/95

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December 1995

Biology Section

Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan #870346G

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Panama City Beach Wastewater Treatment Plant

Panama City Beach, Bay County, Florida

NPDES #FL0021512

Biology Section
Bureau of Laboratories
December 1995

Introduction

Panama City Beach WWTP, Panama City Beach, Bay County, Florida, NPDES #FL0021512, tests performed on 3 to 5 October, 1995.

This wastewater treatment plant is located at 206 North Gulf Boulevard, Panama City Beach. The facility has a design flow of 7.0 MGD and an annual average flow of 3.627 MGD. The facility provides advanced wastewater treatment consisting of influent mechanical bar screening, aerated grit removal, actvated sludge removal, aeration, secondary clarification, sand filtration, chlorination, reaeration, and dechlorination prior to the effluent discharge to an unnamed creek to West Bay (facility summary provided by Steven Kelly, FDEP, Panama City).

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 (Table 1).

Total residual chlorine and total ammonia were not detected in the sample. 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 2, 1995, did not show toxicity.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Panama City Beach WWTP, Panama City Beach, Bay County, Florida, NPDES# FL0021512, performed on 3 to 5 October,1995.

Facility:	**Panama City Beach WWTP**		**NPDES #**	**FL0021512**	Facility Type:	**Wastewater**
Location:	206 North Gulf Boulevard, Panama City Beach		Contact/District:	Josie Penton/Northwest		**Treatment Plant**
County:	Bay		Test type:	static acute screen		
Sample Collection Date:	**10/2/95**	Time: 1440	# tests:	2	Receiving Water:	Unnamed creek to
Test Beginning Date:	10/3/95	Time: 1145	Chlorination Type:	Dechlorinated		West Bay
Test Ending Date:	10/5/95	Time: 1145		collected after plant dechlorination		**Page 1 of 1**

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

	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	-	8.3	24.0	-	24.1	7.8	-	7.8	175	190
Control B	0/20	5	5	5	-	-	8.3	-	-	24.0	-	-	7.9	-	190
Control C	0/20	5	5	5	-	-	8.3	-	-	23.8	-	-	7.9	-	185
Control D	0/20	5	5	5	-	-	8.3	-	-	23.8	-	-	7.9	-	190
100% A	20/0	5	5	5	7.1	-	8.1	24.0	-	23.9	7.9	-	7.9	1270	1385
100% B	20/0	5	5	5	-	-	8.1	-	-	23.8	-	-	8.0	-	1335
100% C	20/0	5	5	5	-	-	8.1	-	-	23.8	-	-	8.0	-	1390
100% D	20/0	5	5	5	-	-	8.1	-	-	23.5	-	-	8.1	-	1440

[A] Temperature of test incubator was continously recorded on a strip chart recorder.
Incubator temperature range for the test period was 23.9-25.0°C.

Organism: ***Cyprinella leedsi*** Age: 12 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	7.7	8.3	8.4	24.6	23.5	23.7	8.0	7.8	7.9	250	250
Control B	0/500	5	5	5	7.8	8.3	8.4	24.7	23.5	23.7	8.0	7.8	7.9	250	255
Control C	0/500	5	5	5	7.8	8.3	8.4	24.7	23.5	23.7	7.9	7.9	7.9	250	250
Control D	0/500	5	5	5	7.8	8.3	8.4	24.6	23.6	23.5	7.9	7.9	7.9	250	250
100% A	500/0	5	5	5	6.9	7.5	7.8	25.1	23.7	23.7	8.2	8.0	7.9	1345	1325
100% B	500/0	5	5	5	6.9	7.5	7.8	25.1	23.8	23.8	8.3	7.9	7.8	1350	1325
100% C	500/0	5	5	5	6.9	7.5	7.8	25.1	23.7	23.8	8.3	7.9	7.8	1350	1325
100% D	500/0	5	5	5	6.9	7.5	7.8	25.0	23.8	23.7	8.3	7.9	7.8	1350	1325

[B] Temperature of test room was continously recorded on a strip chart recorder.
Room temperature range for the test period was 23.9-25.5°C.

Total Residual CL2	mg/L	Method
Field:	not measured	
Lab:	<0.03	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	< 0.017	0.00
20% Dilute Mineral Water (cladocerans):	< 0.017	0.00
100% Sample:	<0.017	0.00

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	120	125
20% Dilute Mineral Water (cladocerans):	75	80
100% Sample:	55	180

Salinity	(ppt)
Control Water:	0
100% Sample:	0

Table 2. Results of chemical analyses on the effluent from the Panama City Beach Wastewater Treatment Plant sampled on October 2, 1995.

Metals

Calcium	25.3	mg/L
Copper	5	µg/L[I]
Iron	28	µg/L
Magnesium	19.2	mg/L
Zinc	20	µg/L[I]

Pesticides and Herbicides

none detected

Base, Neutral, & Acid Extractable Organics

none detected

[I] 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: Panama City Beach
County: BAY
Contact / District: Josie Penton / Northwest (Panama City)
NPDES Permit #: FL0021512
LIMS Sample #: 118299 (Sample log 10/6/95) **LIMS Job #:** 95-OCT-02-08

Sample Collection: Date 10-2-95 Time 1440
Test Beginning: Date 10-3-95 Time 1145
Test Ending: Date 10-5-95 Time 1145
Organism Batch #: 47 **Diluent Batch #:** 42
Organism Age: (24 hrs
Test Organism: Ceriodaphnia dubia

Test Type: Screening / Definitive
Static / Static Renewal / Flow-through

Test Number: 1 of 2

Remarks:

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0	24.0 @ 23.7	8.4 @ 23.8 °C	1.00 @ 10.0 ? 983 @ 1013 @ 24.6 °C
	9.0 @ 9.0			
24 hr	____ @ 7.0	____ @ ____	____ @ ____ °C	____ @ ____ ____ @ ____ @ ____ °C
	____ @ ____			
48 hr	7.0 @ 7.0	25.0 @ 25.1	8.3 @ 24.6 °C	166.9 @ 182.3 998 @ 1013 @ 24.6 °C
	9.0 @ 9.0			

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) Cond. (µmhos/cm) 0 hr	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 24 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 48 h
Control A	A	5	5	5	8.2		8.3	24.0		24.1	7.8		7.8	175		190
Control B	B	5	5	5			8.3			24.0			7.9			190
Control C	C	5	5	5			8.3			23.8			7.9			185
Control D	D	5	5	5			8.3			23.8			7.9			190
100% A	A	5	5	5	7.1		8.1	24.0		23.9	7.9		7.9	1270		1385
100% B	B	5	5	5			8.1			23.8			8.0			1335
100% C	C	5	5	5			8.1			23.8			8.0			1390
100% D	D	5	5	5			8.1			23.5			8.1			1440
Measured/Loaded by:		ME	ME	ME	TR		ME	TR		ME	TR		ME	TR		ME
Recorded by:		TM	ME	ME	DL		ME	DL		ME	DL		ME	DL		ME

Investigators' Signatures

Tina M. Mueller
Tina C. Ladin
Marshall Faircloth
reviewer

form updated 5/05/95

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):				—	—
Lab Total Residual Cl2 (mg/L):	—	<0.03	<0.03	DR-100	TR
Alkalinity (mg/L as $CaCO_3$):	—	75	55	Hach	TM
Hardness (mg/L as $CaCO_3$):	—	50	150	Hach	TM
Total ammonia (mg/L as N):	—	<0.017	<0.017	Orion	ME

Ammonia Meter #98136 Ammonia Meter Slope: -55.0 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Panama City Beach
County: BAY
Contact / District: Josie Penton / Northwest (Panama City)
NPDES Permit #: FL0021512
LIMS Sample #: 118899 **LIMS Job #:** 95-OCT-03-08

Sample Collection: Date 10-2-95 Time 1440
Test Beginning: Date 10-3 95 Time 1200
Test Ending: Date 10-5-95 Time 1200
Organism Batch #: 47 **Diluent Batch #:** well
Organism Age: 12 days old
Test Organism: Cyprinella leedsi

Test Type: ~~Screening~~ / Definitive
Static / ~~Static Renewal~~ / ~~Flow-through~~

Test Number: 2 of 2

Remarks:

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	23.6 @ 23.7	8.4 @ 23.8 °C	106.0 @ 102.3 983 @ 1013 @ 24.6 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.4 @ 23.4	8.3 @ 24.9 °C	102.9 @ 102.3 996 @ 1013 @ 24.1 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	25.0 @ 25.1	8.3 @ 24.6 °C	106.9 @ 102.3 998 @ 1013 @ 24.6 °C

Conc.	Chamber #	Number Live			pH			Temperature (°C)			D.O. (mg/L)			UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm)		
		0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h
Control A	53	5	5	5	7.7	8.3	8.4	24.6	23.5	23.7	8.0	7.8	7.9	250	250	250
Control B	57	5	5	5	7.8	8.3	8.4	24.7	23.5	23.7	8.0	7.8	7.9	250	250	255
Control C	306	5	5	5	7.8	8.3	8.4	24.7	23.5	23.7	7.9	7.9	7.9	250	250	250
Control D	610	5	5	5	7.8	8.3	8.4	24.6	23.6	23.5	7.9	7.9	7.9	250	250	250
100% A	26	5	5	5	6.9	7.5	7.8	25.1	23.7	23.7	8.2	8.0	7.9	1345	1320	1325
100% B	502	5	5	5	6.9	7.5	7.8	25.1	23.8	23.8	8.2	7.9	7.8	1350	1320	1325
100% C	48	5	5	5	6.9	7.5	7.8	25.1	23.7	23.8	8.3	7.9	7.8	1350	1320	1325
100% D	218	5	5	5	6.9	7.5	7.8	25.0	23.8	23.7	8.3	7.9	7.8	1350	1320	1325
Measured/Loaded by:		MF	DW	MF	TR	DW	MF	TR	DW	MF	TR	DW	MF	TR	DW	MF
Recorded by:		TM	DW	MF	DR	VW	JN	DR	VW	JN	DR	VW	JN	DR	VW	JN

Investigators' Signatures: Tina Mikulski

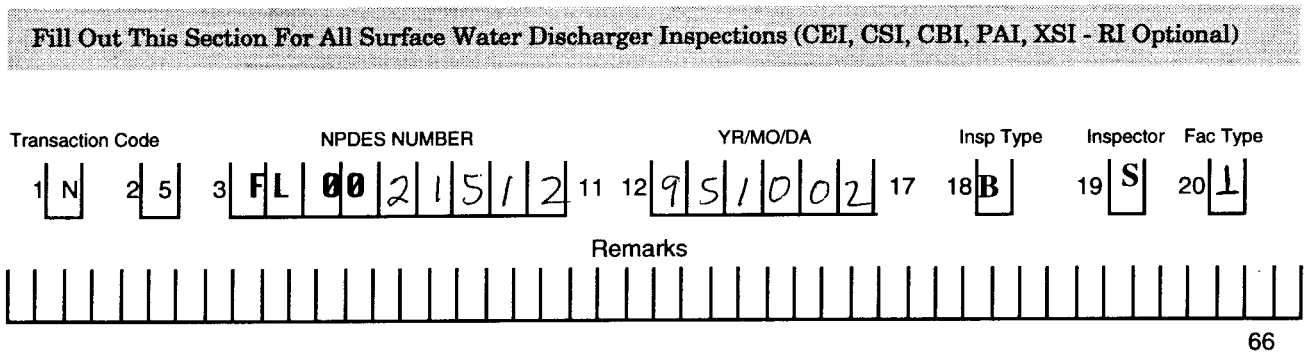
reviewer

form updated 5/05/95

Water Quality Parameters	Salt Water Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			—	—	—
Lab Total Residual Cl2 (mg/L):	<0.03	—	<0.03	DR-100	TR
Alkalinity (mg/L as $CaCO_3$):	120	—	55	Hach	TM
Hardness (mg/L as $CaCO_3$):	125	—	160	Hach	TM
Total ammonia (mg/L as N):	<0.017	—	<0.017	Orion	MF

Ammonia Meter #98136 Ammonia Meter Slope: -55.0 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

The Bioassay of the Panama City Beach WWTP effluent sampled on October 2, 1995, NPDES #FL0021512.



The Priority Pollutants Analysis for the Bioassay of the Panama City Beach WWTP effluent sampled on October 2, 1995, NPDES #FL0021512.

