

Bioassays of

Star Enterprise

Tampa, Hillsborough County, Florida

NPDES #FL0001384

Sampled 2/28/95

May 1995

Biology Section

Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan #870346G

Bioassays of

Star Enterprise

Tampa, Hillsborough County, Florida

NPDES #FL0001384

Biology Section
Bureau of Laboratories
May 1995

Introduction

Star Enterprise, Tampa, Hillsborough County, Florida, NPDES #FL0001384, tests performed on 1 to 3 March, 1995.

This bulk petroleum terminal is located at 519 19th Street, in Tampa. At the time of sample collection, the only discharge was from a 300-GPD design flow groundwater pumping and treatment system, operated by Groundwater Technologies, Inc. for the FDEP Tanks Program. Effluent from the treatment system was discharging to the surface waters of Ybor Channel and Hillsborough Bay through NPDES outfall 002 (facility summary prepared by Lisa Carter, FDEP Tampa).

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 four 48-hour static acute screening toxicity bioassays on a sample of effluent from this facility. Two tests were performed with the freshwater test species, the waterflea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. Two tests were also performed with the saltwater test species, the mysid shrimp, *Mysidopsis bahia*, and the inland silverside minnow, *Menidia beryllina*. Both freshwater and saltwater test species were used because it was unknown if the conductivity was a result of true salinity or from non-seawater constituents.

To accommodate the salinity requirement of 1–32 ppt for *Menidia beryllina*, the control water for the *Menidia beryllina* test was adjusted to 2 ppt using an artificial sea salt mixture (Forty Fathoms®) to match the apparent salinity of the effluent as collected. The salinity of the effluent sample was not adjusted for the *Menidia beryllina* tests. To accommodate the salinity requirement of 5–30 ppt for *Mysidopsis bahia*, artificial sea salts were used to adjust the salinity of the control water and an aliquot of the effluent sample to the 5 ppt minimum.

Test results indicated that the sample was not toxic to the test species. There was one death in both the *Ceriodaphnia dubia* and *Mysidopsis bahia* 100% sample test and in the *Menidia beryllina* control (Table 1). This mortality is within the normal background variability of survival for these species and is not directly attributed to the toxicity of the test waters.

Total residual chlorine was not detected in the sample. Total and unionized ammonia concentrations were 0.205 mg/L and 0.019 mg/L, respectively. Additional chemical analyses were performed on the sample and several metals were identified (Table 2). None of the metals appear to be present in concentrations known to be acutely toxic to the test species. Volatile organic

compounds and base, neutral, and acid extractable organic compounds were not detected in the sample.

Conclusion

The sample of effluent collected from this facility on February 28, 1995, did not show toxicity to the test species. The minimal mortality observed is within the normal background variability of survival for these test species and is not directly attributed to the toxicity of the test waters.

Table 1 Continued. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Star Enterprise bulk petroleum terminal, Tampa, Hillsborough County, Florida, NPDES# FL0001364, performed on 1 to 3 March, 1995.

Salt Species Test

Facility:	Star Enterprise	NPDES #	FL0001364	Facility Type:	Other
Location:	519 19th Street, Tampa	Contact/District:	L. Carter/Southwest		Bulk Petroleum Storage
County:	Hillsborough	Test type:	static acute screen	Receiving Water:	Ybor Channel,
Sample Collection Date:	2/28/95 Time: 1000	# tests:	2		Hillsborough Bay
Test Beginning Date:	3/1/95 Time: 1350	Chlorination Type:	Non-chlorinated		
Test Ending Date:	3/3/95 Time: 1400				Page 2 of 2

Total Residual CL2	mg/L	Method
Field:	-	-
Lab:	<0.03	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water:	< 0.017	0.00
100% Sample:	0.205	0.019

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water:	136	387
100% Sample:	280	652

Salinity*	Fish (ppt)	Mysids (ppt)
Control Water:	2	5
100% Sample:	2	5

*Salinity converted from conductivity and temperature measurements

Organism: ***Menidia beryllina*** Life stage: 10 days

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature ^			Dissolved Oxygen			Conductivity Uncorrected mmhos/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	8.1	8.2	25.2	22.9	21.9	8.1	8.2	8.2	3.6	3.4
Control B	0/500	5	5	5	7.9	8.1	8.2	-	-	21.7	8.0	8.1	8.2	3.6	3.3
Control C	0/500	5	5	5	7.9	8.1	8.2	-	-	21.8	8.2	8.1	8.2	3.6	3.4
Control D	0/500	5	4	4	7.9	8.1	8.2	-	-	22.1	8.2	8.1	8.2	3.6	3.5
100% A	500/0	5	5	5	8.2	8.4	8.4	25.0	22.9	21.9	7.7	8.0	8.2	3.7	3.6
100% B	500/0	5	5	5	8.2	8.4	8.4	-	-	21.8	7.7	7.9	8.0	3.7	3.5
100% C	500/0	5	5	5	8.2	8.4	8.5	-	-	21.9	7.8	7.9	8.0	3.7	3.5
100% D	500/0	5	5	5	8.2	8.4	8.5	-	-	21.9	7.8	7.9	8.0	3.7	3.5

^ Temperature of test room was continously recorded on a strip chart recorder.
Room temperature range for the test period was 21-23°C.

Organism: ***Mysidopsis bahia*** Age: 4 days

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature ^			Dissolved Oxygen			Conductivity Uncorrected mmhos/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	8.1	8.2	8.2	24.1	23.0	22.0	8.1	8.1	8.0	9.1	8.6
Control B	0/500	5	5	5	8.1	8.2	8.2	-	-	21.9	8.2	8.1	8.0	9.2	8.6
Control C	0/500	5	5	5	8.1	8.2	8.2	-	-	21.9	8.2	8.1	7.9	9.1	8.7
Control D	0/500	5	5	5	8.1	8.2	8.2	-	-	22.2	8.2	8.1	8.0	9.1	8.8
100% A	500/0	5	5	5	8.2	8.4	8.4	24.9	23.2	22.2	8.0	8.1	8.1	9.0	8.5
100% B	500/0	5	5	4	8.2	8.4	8.4	-	-	22.1	8.0	8.1	8.1	9.1	8.5
100% C	500/0	5	5	5	8.2	8.4	8.4	-	-	22.1	8.0	8.0	7.9	9.1	8.5
100% D	500/0	5	5	5	8.2	8.4	8.4	-	-	22.3	8.0	8.0	8.0	9.0	8.6

^ Temperature of test room was continously recorded on a strip chart recorder.
Room temperature range for the test period was 21-23°C.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Star Enterprise bulk petroleum terminal, Tampa, Hillsborough County, Florida, NPDES# FL0001364, performed on 1 to 3 March, 1995.

Freshwater Species Test

Facility:	**Star Enterprise**	NPDES #	FL0001364	Facility Type:	**Other**
Location:	519 19th Street, Tampa	Contact/District:	L. Carter/Southwest		Bulk Petroleum Storage
County:	Hillsborough	Test type:	static acute screen	Receiving Water:	Ybor Channel,
Sample Collection Date:	2/28/95 Time: 1000	# tests:	2		Hillsborough Bay
Test Beginning Date:	3/1/95 Time: 1350	Chlorination Type:	**Non-chlorinated**		
Test Ending Date:	3/3/95 Time: 1400				**Page 1 of 2**

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

Concentrations	Sample/Diluent Volume(mL)	SURVIVAL # Alive 0 hr	24 hr	48 hr	pH 0 hour	24 hour	48 hour	Temperature [A] 0 hour	24 hour	48 hour	Dissolved Oxygen 0 hour	24 hour	48 hour	Conductivity Uncorrected mmhos/cm 0 hour	48 hour
Control A	0/20	5	5	5	8.1	-	8.2	23.9	-	22.9	8.2	-	8.5	0.175	0.190
Control B	0/20	5	5	5	-	-	8.3	-	-	23.0	-	-	8.6	-	0.190
Control C	0/20	5	5	5	-	-	8.3	-	-	23.0	-	-	8.5	-	0.188
Control D	0/20	5	5	5	-	-	8.3	-	-	23.2	-	-	8.5	-	0.218
100% A	20/0	5	5	5	8.2	-	8.7	24.1	-	22.9	8.2	-	8.5	3.34	3.35
100% B	20/0	5	5	5	-	-	8.7	-	-	22.9	-	-	8.6	-	3.55
100% C	20/0	5	5	4	-	-	8.7	-	-	22.9	-	-	8.6	-	3.52
100% D	20/0	5	5	5	-	-	8.7	-	-	23.1	-	-	8.7	-	3.58

[A] Temperature of test incubator was continously recorded on a strip chart recorder.
Incubator temperature range for the test period was 24.2-24.7°C.

Organism: ***Cyprinella leedsi*** Age: 11 days

Concentrations	Sample/Diluent Volume(mL)	SURVIVAL # Alive 0 hr	24 hr	48 hr	pH 0 hour	24 hour	48 hour	Temperature [B] 0 hour	24 hour	48 hour	Dissolved Oxygen 0 hour	24 hour	48 hour	Conductivity Uncorrected mmhos/cm 0 hour	48 hour
Control A	0/500	5	5	5	7.7	8.2	8.4	24.9	22.5	22.2	8.2	8.8	8.6	0.255	0.240
Control B	0/500	5	5	5	7.7	8.2	8.3	-	-	21.9	8.2	8.8	8.6	0.250	0.237
Control C	0/500	5	5	5	7.7	8.2	8.3	-	-	22.0	8.2	8.8	8.2	0.250	0.240
Control D	0/500	5	5	5	7.7	8.2	8.4	-	-	22.1	8.2	8.8	8.3	0.245	0.243
100% A	500/0	5	5	5	8.2	8.4	8.5	24.7	22.7	21.9	8.2	8.4	8.4	3.70	3.40
100% B	500/0	5	5	5	8.2	8.4	8.5	-	-	21.7	8.2	8.4	8.4	3.70	3.40
100% C	500/0	5	5	5	8.2	8.4	8.5	-	-	21.8	8.2	8.4	8.4	3.70	3.40
100% D	500/0	5	5	5	8.2	8.4	8.5	-	-	22.0	8.2	8.4	8.3	3.70	3.50

[B] Temperature of test room was continously recorded on a strip chart recorder.
Room temperature range for the test period was 21-23°C.

Total Residual CL2	mg/L	Method
Field:	-	-
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:	0.205	0.019

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	120	125
20% Dilute Mineral Water (cladocerans):	70	80
100% Sample:	280	652

Salinity*	(ppt)
Control Water:	0
100% Sample:	2

*Salinity converted from conductivity and temperature measurements

Table 2. Results of chemical analyses on the effluent from Star Enterprise sampled on February 28, 1995.

Metals

Calcium	153	mg/L [A]
Copper	7	µg/L [I]
Iron	153	µg/L [A]
Magnesium	51.6	mg/L [A]
Zinc	8	µg/L [I]

Base-Neutral & Acid Extractables

None Detected

Volatile Organic Compounds

None Detected

[A] Value reported is the mean of two or more determinations.
[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: Star Enterprise
County: Hillsborough
Contact / District: L. Carter / SW
NPDES Permit #: FL0001364
LIMS Sample #: 100193 LIMS Job #: 95-MAR-01-06
1 lims 3/6/95

Sample Collection: Date 2/28/95 Time 1000
Test Beginning: Date 3/1/95 Time 1350
Test Ending: Date 3/3/95 Time 1400
Organism Batch #: -8 Diluent Batch #: well
Organism Age: 11 days
Test Organism: Cyprinella leedsi

Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Test Number: 1 of 4

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	22.9 @ 23.0	8.4 @ 23.5 °C	104 @ 104.1 948 @ 1000 @ 23.9 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	22.7 @ 22.7	8.4 @ 23.4 °C	103 @ 104.1 948 @ 1000 @ 23.9 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.3 @ 22.2	8.3 @ 23.4 °C	10,380 a 10019 101.5 @ 104.1 953 @ 1000 @ 23.2 °C 9950 10019

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) 0 hr	UNCORRECTED Cond. (mmhos/cm) 24 h	UNCORRECTED Cond. (mmhos/cm) 48 h
Control A	309	5	5	5	7.7	8.2	8.4	24.9	22.5	22.2	8.2	8.8	8.6	255	240	240
Control B	217	5	5	5	7.7	8.2	8.3			21.9	8.2	8.8	8.6	250	240	237
Control C	41	5	5	5	7.7	8.2	8.3			22.0	8.2	8.8	8.2	250	240	240
Control D	218	5	5	5	7.7	8.2	8.4			22.1	8.2	8.9	8.3	245	245	243
100% A	366	5	5	5	8.2	8.4	8.5	24.7	22.7	21.9	8.2	8.4	8.4	3.7	3.5	3.4
100% B	21	5	5	5	8.2	8.4	8.5			21.7	8.2	8.4	8.4	3.7	3.6	3.4
100% C	209	5	5	5	8.2	8.4	8.5			21.8	8.2	8.4	8.4	3.7	3.5	3.4
100% D	28	5	5	5	8.2	8.4	8.5			22.0	8.2	8.4	8.3	3.7	3.6	3.5
Recorded by:		JN	LW	LW	JRS	LW	JN	JRS	LW	JN	JRS	LW	JN	JRS	LW	JN
Measured/Loaded by:		JN	LW	LW	MF	MF	LW	MF	MF	LW	MF	MF	LW	MF	MF	LW

all cont. loss 1

Investigators' Signatures

Marshall Faircloth
Jennifer Sarafian
Joseph Smith
Tina Mikulski
Lori Wyatt
Reviewer
Robin C. Rader

Form Updated 10/05/94

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):	~~20~~	—	<0.03	DR-100	JLS
Alkalinity (mg/L as $CaCO_3$):	120	—	280	Hach	JN
Hardness (mg/L as $CaCO_3$):	125	—	652	Hach	JN
Total ammonia (mg/L as N):	20,017	—	0.205	Orion	MF

Ammonia Meter #98136 Ammonia Meter Slope: -58.2 Ammonia Blank: 20,017 Control Salinity: 0 ppt Sample Salinity: 2.0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: STAR ENTERPRISE
County: Hillsborough
Contact / District: L. Cantor / SW
NPDES Permit #: FL0001364
LIMS Sample #: 100193 LIMS Job #: 95-MAY-01-06
LIMS 3/6/95

Sample Collection: Date 2/28/95 Time 1000
Test Beginning: Date 3/1/95 Time 1350
Test Ending: Date 3/3/95 Time 1400
Organism Batch #: 12 Diluent Batch #: 9
Organism Age: < 24 hours
Test Organism: Ceriodaphnia dubia

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

Test Number: 2 of 4

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	22.9 @ 23.0	8.4 @ 23.5 °C	104 @ 104.1 948 @ 1000 @ 23.9 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	22.7 @ 22.7	8.4 @ 23.4 °C	103 @ 104.1 918 @ 1000 @ 23.9 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.3 @ 22.3	8.3 @ 23.4 °C	101.5 @ 104.1 953 @ 1000 @ 23.2 °C

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) 0 hr	UNCORRECTED Cond. (µmhos/cm) 24 h	UNCORRECTED Cond. (µmhos/cm) 48 h
Control A	A	5	5	5	8.1		8.2	23.8	~~22.9~~ * JN	22.9	8.2	~~8.5~~ * JN	8.5	.175	190 →	
Control B	B	5	5	5			8.3			23.0			8.6		190 →	
Control	C	5	5	5			8.3			23.0			8.5		188 →	
Control	D	5	5	5			8.3			23.2			8.5		218 →	
100%	A	5	5	5	8.2		** ~~8.3~~	24.1		22.9	8.2		8.5	3.34	3.35 →	
100%	B	5	5	5			8.7			22.9			8.6		3.56 →	
100%	C	5	5	4			8.7			22.9			8.6		3.52 →	
100%	D	5	5	5			8.7			23.1			8.7		3.58 →	
															JN → 3/3/95 wrote in wrong place	
								JN 3/03/95	* wrote in wrong place							
														Controls are less than 1 mmho/cm		
Recorded by:		MEJN MF	JM	JM	JRS		JN	JRS		JN	JRS			JRS		JN
Measured/Loaded by:		MF	JM	JM	MF		LW	MF		LW	MF			MF		LW

** 8.7 wrote wrong JN 3/03/95

Investigators' Signatures

Reviewer

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	JLS
Alkalinity (mg/L as $CaCO_3$):	—	70	280	Hach	JN
Hardness (mg/L as $CaCO_3$):	—	80	652	Hach	JN
Total ammonia (mg/L as N):	—	<0.017	0.205	Orion	MF

Ammonia Meter #98136 Meter Slope: -58.2 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 2 ppt

form updated 10/05/94

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Star Enterprise
County: Hillsborough
Contact / District: L. Carter / SW
NPDES Permit #: FL0001364
LIMS Sample #: 100193 LIMS Job #: 95-MAR-01-06
Tims 3/6/95

Sample Collection: Date 2/28/95 Time 1000
Test Beginning: Date 3/1/95 Time 1350
Test Ending: Date 3/3/95 Time 1400
Organism Batch #: 1A* Diluent Batch #: 9
Organism Age: 10 days
Test Organism: Mysidopsis bahia

Test Type: (Screening) Definitive
(Static) Static Renewal | Flow-through

Test Number: 3 of 4

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	22.9 @ 23.0	8.4 @ 23.5 °C	104 @ 104.1 948 @ 1000 @ 23.9 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	22.7 @ 22.7	8.4 @ 23.7 °C	103 @ 104.1 918 @ 1000 @ 23.9 °C 10380 10019
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.3 @ 22.3	8.3 @ 23.4 °C	101.5 @ 1041 953 @ 1000 @ 23.2 °C 9950 10019

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) 0 hr	UNCORRECTED Cond. (mmhos/cm) 24 h	UNCORRECTED Cond. (mmhos/cm) 48 h
Control A	148	5	5	5	7.9	8.1	8.2	25.2	22.3	21.9	8.1	8.2	8.2	3.6	3.6	3.4
Control B	70505	5	5	5	7.9	8.1	8.2			21.7	8.0	8.1	8.2	3.6	3.5	3.3
Control C	44376	5	5	5	7.9	8.1	8.2			21.8	8.2	9.1	8.2	3.6	3.6	3.4
Control D	350	5	4	4	7.9	8.1	8.2			22.1	8.2	9.1	8.2	3.6	3.6	3.5
100% A	20	5	5	5	8.2	8.4	8.4	25.0	22.9	22.9	7.7	8.0	8.2	3.7	3.8	3.6
100% B	443	5	5	5	8.2	8.4	8.4			21.8	7.7	7.9	8.0	3.7	3.6	3.5
100% C	2	5	5	5	8.2	8.4	8.5			21.9	7.8	7.9	8.0	3.7	3.7	3.5
100% D	44	5	5	5	8.2	8.4	8.5		*	22.9	7.8	7.9	8.0	3.7	3.7	3.5
Recorded by:		JN	LW	LW	JLS	LW	JN	JLS	LW	JN	JLS	LW	JN	JLS	LW	JN
Measured/Loaded by:		JN	LW	LW	MF	MF	LW	MF	MF	LW	MF	MF	LW	MF	MF	LW

* 21.9 JN 3/03/95 wrote wrong number

Investigators' Signatures

Marshall Faircloth
Jennifer Sparagana
Lori Wenner
Jennifer Booth
Reviewer

Irma M. Kuehly
Robin C. Kreder

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):	<0.017	—	<0.03	DR-100	JLS
Alkalinity (mg/L as $CaCO_3$):	136	—	280	Hach	JN
Hardness (mg/L as $CaCO_3$):	387	—	652	Hach	JN
Total ammonia (mg/L as N):	<0.017	—	0.205	Orion	MF

Ammonia Meter #98136 Ammonia Meter Slope: -58.2 Ammonia Blank: <0.017 Control Salinity: 20 ppt Sample Salinity: 2.0 ppt

form updated 10/05/94

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Star Enterprise
County: Hillsborough
Contact / District: L. Carter / SW
NPDES Permit #: FL0001364
LIMS Sample #: 100193 LIMS Job #: 95-MAR-01-06
lims 3/6/95

Sample Collection: Date 2/28/95 Time 1000
Test Beginning: Date 3/1/95 Time 1350
Test Ending: Date 3/3/95 Time ~1400
Organism Batch #: 56 Diluent Batch #: 9
Organism Age: 1st 2 days 4 days
Test Organism: Mysidopsis bahia

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

Test Number: 4 of 4

Remarks: Sample salinity adjusted to minimum required by test organism by the addition of Artificial Sea Salts.

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	22.9 @ 23.0	8.4 @ 23.5 °C	104 @ 104.1 948 @ 1000 @ 23.9 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	22.7 @ 23.7	8.1 @ 23.4 °C	103 @ 104.1 915 @ 1000 @ 23.9 °C 950 10219
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.3 @ 22.2	8.3 @ 23.4 °C	101.5 @ 104.1 953 @ 1000 @ 23.2 °C 9950 10219

		Number Live			pH			Temperature (°C)			D.O. (mg/L)			UNCORRECTED Cond. (mmhos/cm) / Cond. (µmhos/cm)		
Conc.	Chamber #	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	63	5	5	5	8.1	8.2	8.2	24.1	23.0	22.0	8.1	8.1	8.0	9.1	8.9	8.6
Control B	14	5	5	5	8.1	8.2	8.2			21.9	8.2	8.1	8.0	9.2	8.9	8.6
Control C	301	5	5	5	8.1	8.2	8.2			21.9	8.2	8.1	7.9	9.1	8.9	8.7
Control D	503	5	5	5	8.1	8.2	8.2			22.2	8.2	8.1	8.0	9.1	9.1	8.8
100% A	502	5	5	5	8.2	8.4	8.4	24.9	23.2	22.2	8.0	8.1	8.1	9.0	8.8	8.5
100% B	142	5	5	4	8.2	8.4	8.4			22.1	8.0	8.1	8.1	9.1	8.8	8.5
100% C	333	5	5	5	8.2	8.4	8.4			22.1	8.0	8.0	7.9	9.1	8.7	8.5
100% D	317	5	5	5	8.2	8.4	8.4			22.3	8.0	8.0	8.0	9.0	8.8	8.6
Recorded by:		JN	LW	LW	JRS	LW	JN	JRS	LW	JN	JRS	LW	JN	JRS	LW	JN
Measured/Loaded by:		JN	LW	LW	MF	MF	LW	MF	MF	LW	MF	MF	LW	MF	MF	LW

Investigators' Signatures

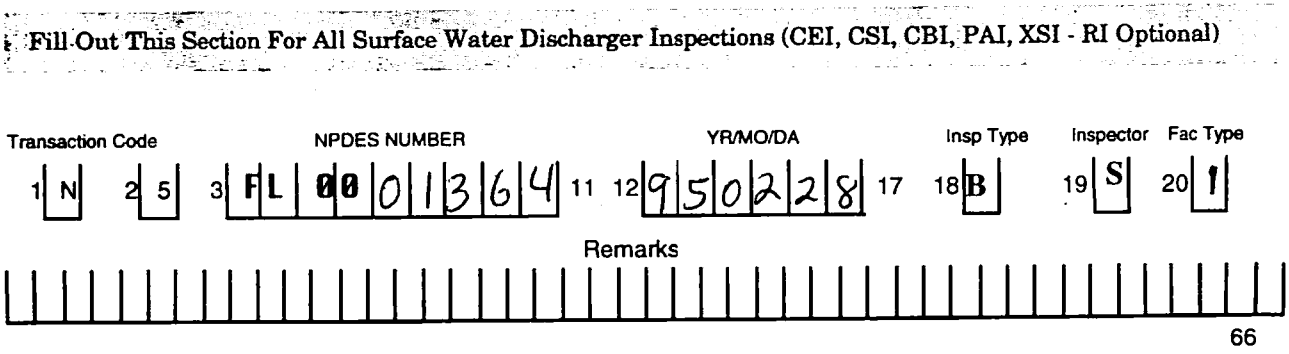
Marshall Faircloth / Linda Mitchell
Tobin C. Reber
Jennifer Spagnolo
Loi Wilson
Joseph Smith
Reviewer

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	JRS
Alkalinity (mg/L as $CaCO_3$):	150	—	292	Hach	JN
Hardness (mg/L as $CaCO_3$):	—	—	—	—	—
Total ammonia (mg/L as N):	<0.017	—	0.205	colo	MF

Ammonia Meter #98136 Ammonia Meter Slope: -58.2 Ammonia Blank: <0.017 Control Salinity: 5 ppt Sample Salinity: 5 ppt

form updated 10/05/94

The Bioassay of the Star Enterprise effluent sampled on February 28, 1995, NPDES # FL0001364.



The Priority Pollutants Analysis for the Bioassay of the Star Enterprise effluent sampled on February 28, 1995, NPDES # FL0001364.

