

Bioassays of

Brittany Estates Mobile Home Park Wastewater Treatment Plant

Gainesville, Alachua County, Florida

NPDES #FL0040215

Sampled 2/5/96

March 1996

Biology Section

Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan #870346G

Bioassays of

Brittany Estates Mobile Home Park Wastewater Treatment Plant

Gainesville, Alachua County, Florida

NPDES #FL0040215

Biology Section
Bureau of Laboratories
March 1996

Introduction

Brittany Estates MHP WWTP, Gainesville, Alachua County, Florida, NPDES # FL0040215, tests performed on 6 to 8 February, 1996.

This facility is located at 5010 Northeast Waldo Rd., in Gainesville. The facility is a domestic WWTP system with a design capacity of 0.06 MGD annual average daily flow when operating in the contact stabilization mode. The facility is capable of operating in the extended aeration mode when the average daily flow is less than 0.03 MGD. The facility includes an effluent pumping station, six 5,000-gallon aeration basins, two secondary clarifiers, a chlorine contact chamber for disinfection, a polishing pond, and a dechlorination system. Sludge is stored and thickened prior to disposal by a private company. The facility also has polishing-pond bypass facilities which include a chlorination/dechlorination system and a post-aeration system. The bypass facilities are used only during scheduled polishing-pond maintenance and were in use at the time of sampling. Effluent is discharged to the class III waters of Little Hatchet Creek (facility summary provided by Kathleen Gerard, 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 low-pH (pH 5.3), chlorinated effluent from this facility. Four additional 48-hour screening bioassays were performed on aliquots of the sample. One aliquot was dechlorinated in the laboratory with 0.25 mL of 0.025N sodium thiosulfate per liter of sample. Another aliquot was pH-adjusted (pH 7.0) per test protocols. The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*.

The chlorinated test results showed the sample to be acutely toxic to the *Ceriodaphnia dubia* test species, producing 50% mortality in 48 hours (Table 1). The chlorinated test produced insignificant mortality (5%) in the *Cyprinella leedsi* test. No mortality occurred in either of the dechlorinated sample tests (Table 1 continued) or the pH-adjusted tests (Table 1 concluded). It is suspected that the addition of sodium hydroxide, to increase the pH of the aliquot used for the pH-adjusted test, reduced the chlorine toxicity of the sample by forming sodium chloride, thereby reducing the bioavailable chlorine. The chlorine concentration was not measured in the pH-adjusted sample.

Total residual chlorine of the sample was 0.9 mg/L in the field, and 0.19 mg/L in the laboratory. Total residual chlorine levels as low as 0.028 mg/L have been found to be acutely toxic to some freshwater fish and invertebrates (EPA *Quality Criteria for Water* 1986, EPA 44015-86-001, 1986). Total ammonia was not detected in the sample. Further chemical analyses were performed on the sample and several metals and herbicides were identified (Table 2).

Conclusion

The sample of effluent collected from this facility on February 5, 1996, showed toxicity to the water flea, *Ceriodaphnia dubia*, in the chlorinated sample, but did not show toxicity in the aliquots of sample which were either dechlorinated or pH-adjusted in the laboratory. We attribute the toxicity to the total residual chlorine content of the sample.

Table 1. Data recorded during the 48-hour acute toxicity screening bioassays of a sample of effluent from the Brittany Estates MHP WWTP, Gainesville, Alachua County, Florida, NPDES#FL0040215, performed on 6 to 8 February, 1996.

Chlorinated Test

Facility:	**Brittany Estates MHP WWTP**		**NPDES #**	**FL0040215**	Facility Type: **Domestic WWTP**
Location:	5010 Northeast Waldo Rd., Gainesville		Contact/District:	T. McKelvey/Northeast	
County:	Alachua		Test type:	static acute screen	
Sample Collection Date:	**2/5/96**	Time: 1200	# tests:	6	Receiving Water: Little Hatchet Creek
Test Beginning Date:	2/6/96	Time: 1400	Chlorination Type:	**Chlorinated**	
Test Ending Date:	2/8/96	Time: 1400			**Page 1 of 3**

Organism: ***Ceriodaphnia dubia***		Life stage: < 24 hours old													Conductivity Uncorrected µmhos/cm	
	Sample/Diluent	**SURVIVAL # Alive**			pH			Temperature[A]			Dissolved Oxygen					
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	8.0	-	8.1	23.9	-	23.9	8.1	-	7.8		175	200
Control B	0/20	5	5	5	-	-	8.1	-	-	24.0	-	-	7.8		-	210
Control C	0/20	5	5	5	-	-	8.1	-	-	24.1	-	-	7.8		-	215
Control D	0/20	5	5	5	-	-	8.1	-	-	23.9	-	-	7.8		-	220
100% A	20/0	5	3	1	5.8	-	6.4	23.9	-	24.0	8.1	-	7.9		385	425
100% B	20/0	5	3	3	-	-	6.1	-	-	24.5	-	-	8.0		-	430
100% C	20/0	5	3	3	-	-	5.9	-	-	24.6	-	-	7.7		-	430
100% D	20/0	5	3	3	-	-	5.8	-	-	24.1	-	-	7.7		-	445

[A] Temperature of test incubator was continously recorded on a strip chart recorder. Incubator temperature range for the test period was 23.9-24.4°C.

Organism: ***Cyprinella leedsi***		Age: 12 days													Conductivity Uncorrected µmhos/cm	
	Sample/Diluent	**SURVIVAL # Alive**			pH			Temperature[B]			Dissolved Oxygen					
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	7.6	8.0	8.3	23.8	23.1	23.6	8.0	7.8	7.7		250	245
Control B	0/500	5	5	5	7.6	8.0	8.2	24.0	23.1	23.6	8.0	7.8	7.9		250	245
Control C	0/500	5	5	5	7.7	8.0	8.2	24.0	23.1	23.6	8.1	7.9	7.9		250	245
Control D	0/500	5	5	5	7.7	8.0	8.2	24.0	23.1	23.7	8.0	8.0	7.9		250	250
100% A	500/0	5	5	5	5.3	5.6	5.8	23.7	23.3	23.7	8.4	7.8	7.8		395	405
100% B	500/0	5	5	5	5.3	5.5	5.5	23.5	23.3	23.8	8.6	7.7	7.7		395	400
100% C	500/0	5	5	5	5.2	5.4	5.5	23.5	23.3	23.8	8.6	7.8	7.6		395	400
100% D	500/0	5	5	4	5.2	5.4	5.5	23.5	23.4	23.8	8.6	7.8	7.5		395	405

[B] Temperature of test room was continously recorded on a strip chart recorder. Room temperature range for the test period was 23-24.5°C.

Total Residual CL2	mg/L	Method
Field:	0.90	-
Lab:	0.19	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):	70	80
100% Sample:	5	130

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

-Continued-

Table 1. Continued. Data recorded during the 48-hour acute toxicity screening bioassays of a sample of effluent from the Brittany Estates MHP WWTP, Gainesville, Alachua County, Florida, NPDES#FL0040215, performed on 6 to 8 February, 1996.

Dechlorinated Test

Facility:	**Brittany Estates MHP WWTP**		**NPDES #**	**FL0040215**	Facility Type: **Domestic WWTP**
Location:	5010 Northeast Waldo Rd., Gainesville		Contact/District:	T. McKelvey/Northeast	
County:	Alachua		Test type:	static acute screen	
Sample Collection Date:	**2/5/96**	Time: 1200	# tests:	6	Receiving Water: Little Hatchet Creek
Test Beginning Date:	2/6/96	Time: 1400	Chlorination Type:	**Chlorinated***	
Test Ending Date:	2/8/96	Time: 1400			**Page 2 of 3**

*Sample was dechlorinated in the laboratory with 0.25 mL/L of 0.025 N sodium thiosulfate.

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 µmhos/cm 0 hour	48 hour
Control A	0/20	5	5	5	8.0	-	8.1	23.4	-	24.4	7.7	-	7.7	175	190
Control B	0/20	5	5	5	-	-	8.1	-	-	24.2	-	-	7.7	-	195
Control C	0/20	5	5	5	-	-	8.1	-	-	24.2	-	-	7.7	-	195
Control D	0/20	5	5	5	-	-	8.1	-	-	24.0	-	-	7.7	-	195
100% A	20/0	5	5	5	5.8	-	6.0	23.8	-	24.1	7.8	-	7.8	385	410
100% B	20/0	5	5	5	-	-	5.3	-	-	24.2	-	-	7.7	-	425
100% C	20/0	5	5	5	-	-	5.3	-	-	24.2	-	-	7.7	-	435
100% D	20/0	5	5	5	-	-	5.4	-	-	24.1	-	-	7.7	-	445

[A] Temperature of test incubator was continously recorded on a strip chart recorder. Incubator temperature range for the test period was 23.9-24.4°C.

Organism: ***Cyprinella leedsi*** Age: 12 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 µmhos/cm 0 hour	48 hour
Control A	0/500	5	5	5	7.6	8.0	8.1	24.6	23.1	23.8	7.8	7.8	7.8	250	250
Control B	0/500	5	5	5	7.6	8.0	8.1	24.6	23.1	23.7	7.8	7.8	7.8	250	250
Control C	0/500	5	5	5	7.6	8.0	8.1	24.6	23.1	23.6	7.9	7.9	7.9	250	245
Control D	0/500	5	5	5	7.6	8.0	8.1	24.6	23.3	23.6	7.8	8.0	7.9	250	250
100% A	500/0	5	5	5	5.4	5.6	5.9	24.1	23.2	23.6	8.0	7.8	7.8	400	405
100% B	500/0	5	5	5	5.3	5.6	5.5	24.0	23.1	23.6	8.0	7.7	7.7	400	405
100% C	500/0	5	5	5	5.3	5.6	5.5	24.0	23.0	23.6	8.1	7.7	7.6	400	405
100% D	500/0	5	5	5	5.3	5.6	5.6	24.0	23.0	23.6	8.2	7.7	7.5	400	410

[B] Temperature of test room was continously recorded on a strip chart recorder. Room temperature range for the test period was 23-24.5°C.

Total Residual CL2	mg/L	Method
Field:	not measured	
Lab:	0.04	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):	70	80
100% Sample:	5	120

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

-Continued-

Table 1. Concluded. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Brittany Estates MHP WWTP, Gainesville, Alachua County, Florida, NPDES#FL0040215, performed on 6 to 8 February, 1996.

pH-adjusted Test

Facility: **Brittany Estates MHP WWTP**
Location: 5010 Northeast Waldo Rd., Gainesville
County: Alachua
Sample Collection Date: **2/5/96** Time: 1200
Test Beginning Date: 2/6/96 Time: 1400
Test Ending Date: 2/8/96 Time: 1400

NPDES # **FL0040215** Facility Type: **Domestic WWTP**
Contact/District: T. McKelvey/Northeast
Test type: static acute screen
tests: 6 Receiving Water: Little Hatchet Creek
Chlorination Type: **Chlorinated**
pH adjusted*

*pH adjusted to pH 7.0 per test protocols.

Total Residual CL2	mg/L	Method
Field:	not measured	
Lab:	not measured	

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	0.000

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	120	125
20% Dilute Mineral Water (cladocerans):	70	80
100% Sample:	5	120

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

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	24 hour
Control A	0/20	5	5	5	8.0	-	8.0	23.4	-	24.0	7.8	-	7.8	180	195
Control B	0/20	5	5	5	-	-	8.1	-	-	24.0	-	-	7.8	-	200
Control C	0/20	5	5	5	-	-	8.1	-	-	24.0	-	-	7.8	-	200
Control D	0/20	5	5	5	-	-	8.1	-	-	23.9	-	-	7.8	-	210
100% A	20/0	5	5	5	7.0	-	7.0	23.7	-	24.0	7.9	-	7.9	395	475
100% B	20/0	5	5	5	-	-	7.0	-	-	24.1	-	-	7.8	-	460
100% C	20/0	5	5	5	-	-	7.0	-	-	24.1	-	-	7.8	-	500
100% D	20/0	5	5	5	-	-	7.0	-	-	24.0	-	-	7.8	-	480

[A] Temperature of test incubator was continously recorded on a strip chart recorder.
Incubator temperature range for the test period was 23.9-24.4°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	24 hour
Control A	0/500	5	5	5	7.6	8.0	8.3	23.9	23.0	23.6	8.0	7.9	7.7	250	250
Control B	0/500	5	5	5	7.6	8.0	8.2	24.0	23.1	23.6	8.0	7.8	7.7	250	245
Control C	0/500	5	5	5	7.6	8.0	8.2	24.0	23.0	23.6	8.0	7.9	7.9	250	245
Control D	0/500	5	5	5	7.6	8.0	8.2	24.1	22.9	23.6	8.1	8.0	7.9	250	250
100% A	500/0	5	5	5	6.9	6.7	6.8	23.4	23.1	23.7	8.2	7.9	7.9	400	410
100% B	500/0	5	5	5	6.9	6.7	6.6	23.3	23.1	23.7	8.3	7.8	7.8	400	410
100% C	500/0	5	5	5	6.9	6.6	6.5	23.3	23.0	23.6	8.4	7.7	7.5	400	410
100% D	500/0	5	5	5	6.9	6.6	6.6	23.4	23.0	23.6	8.3	7.7	7.5	400	415

[B] Temperature of test room was continously recorded on a strip chart recorder.
Room temperature range for the test period was 23-24.5°C.

Table 2. Results of chemical analyses on the effluent from the Brittany Estates MHP WWTP sampled on February 5, 1996.

Metals

Aluminum	627	µg/L
Cadmium	0.12	µg/L[I]
Calcium	23.5	mg/L
Copper	6	µg/L[I]
Iron	406	µg/L
Magnesium	12.2	mg/L
Zinc	53	µg/L

Pesticides and Herbicides

Atrazine	0.050	µg/L[T]
Hexazinone	0.20	µg/L[T]

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.

T Value reported is less than the criterion of detection.

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Brittany Estates MHP
County: ALACHUA
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL0040215
LIMS Sample #: 129003 LIMS Job #: 96-Feb-06-01
Sample log 2-16-96

Sample Collection: Date 2-5-96 Time 1200
Test Beginning: Date 2-6-96 Time 1400
Test Ending: Date 2-8-96 Time 1400
Organism Batch #: 7 Diluent Batch #: 6
Organism Age: < 24hrs
Test Organism: Ceriodaphnia dubia

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

Test Number: 1 of 6

Remarks:
DeCl
sample dechlorinated by the addition of 0.25mL of 0.025N sodium thiosulfate per liter of sample.

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	19.4@19.4	8.1@26.0°C	106.7@106.2 1029@1025@25.3°C
24 hr	7.0@7.0 9.0@9.0	21.7@21.7	8.2@25.3°C	107.4@106.2 1019@1025@24.7°C
48 hr	7.0@7.0 9.0@9.0	22.2@22.2	8.2@25.1°C	104.9@106.2 1003@1025@24.0°C

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
Control	A	5	5	5	8.0		8.1	23.1		~~24.4~~	7.7		7.7	175		190
Control	B	5	5	5			8.1	~~23.8~~		24.2	~~7.5~~		7.7			195
Control	C	5	5	5			8.1			24.2			7.7			195
Control	D	5	5	5			8.1			24.0			7.7			195
100%	A	5	5	5	5.8		6.0	23.8		24.1	7.5		7.8	335		410
100%	B	5	5	5			5.3			24.2			7.7			425
100%	C	5	5	5			5.3			24.2			7.7			435
100%	D	5	5	5			5.4			24.1			7.7			445
Measured/Loaded by:		MF	MF	TR	JLS		JLS	JLS		JLS	JLS		JLS	JLS		JLS
Recorded by:		JRS	MF	TR	TM		TR	TM		TR	TM		TR	TM		TR

Investigators' Signatures

Jennifer Sparapani
Elvira Mikulski
Dan Wilt
Jerry Morris
Michael Faircloth
Tobin Rader

reviewer

form updated 5/05/95

Salt Water
Well Water

Water Quality Parameters

	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):		~~A~~ 0.9	—	Ruth Brown
Lab Total Residual Cl2 (mg/L):	—	<0.03	~~0.9~~ 0.04 Dr-100	JRS * Data entry error 2/16/96 JLS
Alkalinity (mg/L as $CaCO_3$) :	—	70	5 HACH	JR
Hardness (mg/L as $CaCO_3$) :	—	80	120 HACH	TR
Total ammonia (mg/L as N) :	—	<0.017	<0.017 Orion	JN

A Entry Error 2/16/96 MF

Ammonia Meter #98136 Meter Slope: -57.6
Ammonia Blank: <0.017
Control Salinity: 0 ppt
Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Brittany Estates MHP
County: ALACHUA
Contact / District: Tim McKelvey
NPDES Permit #: FL00 40215
LIMS Sample #: 129003 (sampled by 2-16-96) LIMS Job #: 96-Feb-06-01

Sample Collection: Date 2-5-96 Time 1200
Test Beginning: Date 2-6-96 Time 15:45
Test Ending: Date 2-8-96 Time 15:45
Organism Batch #: 5 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 6

Remarks:
DeCl
sample dechlorinated by the addition of 0.25 mL of 0.25N Sodium thiosulfate per liter of sample.

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0	19.4 @ 19.4	8.1 @ 26.0°C	1010.7 @ 1016.2
	9.0 @ 9.0			1029 @ 1025 @ 25.3°C
24 hr	7.0 @ 7.0	21.7 @ 21.7	8.2 @ 25.3 °C	107.4 @ 106.2
	9.0 @ 9.0			1019 @ 1025 @ 24.7 °C
48 hr	7.0 @ 7.0	22.2 @ 22.2	8.2 @ 25.1 °C	104.9 @ 106.2
	9.0 @ 9.0			1003 @ 1025 @ 24.0 °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) Cond. (µmhos/cm) 0 hr	24 h	48 h
Control A	25	5	5	5	7.6	8.0	8.1	24.6	23.1	23.8	7.8	7.8	7.8	250	245	250
Control B	500	5	5	5	7.6	8.0	8.1	24.6	23.1	23.7	7.8	7.8	7.8	250	245	250
Control C	20	5	5	5	7.6	8.0	8.1	24.6	23.1	23.6	7.9	7.9	7.9	250	245	245
Control D	3486	5	5	5	7.6	8.0	8.1	24.6	23.3	23.6	7.8	8.0	7.9	250	245	250
100% A	76	5	5	5	5.4	5.6	5.9	24.1	23.2	23.6	8.0	7.8	7.8	400	395	405
100% B	23	5	5	5	5.3	5.6	5.5	24.0	23.1	23.6	8.0	7.7	7.7	400	395	405
100% C	53	5	5	5	5.3	5.6	5.5	24.0	23.0	23.6	8.1	7.7	7.6	400	395	405
100% D	75	5	5	5	5.3	5.5	5.6	24.0	23.0	23.6	8.2	7.7	7.5	400	400	410
Measured/Loaded by:		DW	TM	TM	JLS	TM	JLS	JLS	TM	JLS	JLS	TM	JLS	JLS	TM	JLS
Recorded by:		JRS	TM	TM	TM	DW	TR	TM	DW	TR	TM	DW	TR	TM	DW	TR

Investigators' Signatures

Jennifer Spurgeon
Tina M. McKelvey
Joseph Morris
Mandi Forsyth
Tobin G. Rocke
reviewer

form updated 5/05/95

Salt Water (Well Water) 20% Min Water

Water Quality Parameters

	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			A entry error 2/6/96 MF		Ruth Bowman
Lab Total Residual Cl2 (mg/L):	<0.03	—	<0.04	Dr-100	JRS *
Alkalinity (mg/L as $CaCO_3$):	120	—	5	HACH	TR
Hardness (mg/L as $CaCO_3$):	125	—	120	HACH	TR
Total ammonia (mg/L as N):	<0.017	<0.017	<0.017	Orion	JN

* Data entry error 2/6/96 JLS

Ammonia Meter #98136 Meter Slope: -57.6 Ammonia Blank: <0.07 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Brittany Estates MHP
County: ALACHUA
Contact / District: Tim McKelvey / NORTHEAST
NPDES Permit #: FL0040215
LIMS Sample #: 12900 3 LIMS Job #: 96-Feb-06-01

Sample Collection: Date 2-5-96 Time 1200
Test Beginning: Date 2-6-96 Time 1400
Test Ending: Date 2-8-96 Time 1400
Organism Batch #: 7 Diluent Batch #: 10
Organism Age: <24hrs
Test Organism: Ceriodaphnia dubia

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

Test Number: 3 of 4

Remarks:
P.H. Adjusted to 7.0

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	19.4 @ 19.4	8.1 @ 26.0 °C	106.7 @ 106.2 1029 @ 1025 @ 25.3 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	21.7 @ 21.7	5.2 @ 25.3 °C	107.4 @ 106.2 1019 @ 1025 @ 24.7 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.2 @ 22.2	8.2 @ 25.1 °C	104.9 @ 106.2 1003 @ 1025 @ 24.0 °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) 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	5	5	5	8.0		8.0	23.4		24.0	7.8		7.8	180		195
Control	B	5	5	5			8.1			24.0			7.8			200
Control	C	5	5	5			8.1			24.0			7.8			200
Control	D	5	5	5			8.1			23.9			7.8			210
100%	A	5	5	5	7.0		7.0	23.7		24.0	7.9		7.9	395		475
100%	B	5	5	5			7.0			24.1			7.8			460
100%	C	5	5	5			7.0			24.1			7.8			500
100%	D	5	5	5			7.0			24.0			7.8			480
Measured/Loaded by:		MF	MF	TR	JLS		JLS	JLS		JLS	JLS		JLS	JLS		JLS
Recorded by:		JRS	MF	TR	Tm		TR	Tm		TR	Tm		TR	Tm		TR

Investigators' Signatures

Jennifer Sparagana
Mina M. Mikulsky
[illegible]
[illegible]
Crystal Grindstaff
Tobin G. Rodes
[illegible]

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):			*2 —	—	—
Lab Total Residual Cl2 (mg/L):	—	<0.03	0.9 Entry	Error not measured Dr-100	JRS 2/4/96
Alkalinity (mg/L as $CaCO_3$):	—	70	5	HACH	TR
Hardness (mg/L as $CaCO_3$):	—	80	120	HACH	TR
Total ammonia (mg/L as N):	—	<0.017	<0.017	Orion	JN

* entry error MF 2/6/96

Ammonia Meter #98136 Meter Slope: −57.6 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Brittany Estates MHP
County: ALACHUA
Contact / District: Tim McKelvey / NorthEast
NPDES Permit #: FL0040215
LIMS Sample #: 129003 LIMS Job #: 96-Feb-06-01

Sample Collection: Date 2-5-96 Time 1200
Test Beginning: Date 2-6-96 Time 15:45
Test Ending: Date 2.8.96 Time 15:45
Organism Batch #: 5 Diluent Batch #: Well
Organism Age: 12 days old
Test Organism: Cyprinella leedsi

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

Test Number: 4 of 10

Remarks: P.H Adjusted to 7.0

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	19.4 @ 19.4	8.1 @ 26.0°C	106.7 @ 106.2 1029 @ 1025 @ 25.3°C
24 hr	7.0 @ 7.0 9.0 @ 9.0	21.7 @ 21.7	8.2 @ 25.3 °C	107.4 @ 106.2 1019 @ 1025 @ 24.7 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.2 @ 22.2	8.2 @ 25.1 °C	104.9 @ 106.2 1003 @ 1025 @ 24.0°C

		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	302	5	5	5	7.6	8.0	8.3	23.9	23.0	23.6	8.0	7.9	7.7	250	245	250
Control B	610	5	5	5	7.6	8.0	8.2	24.0	23.1	23.6	8.0	7.8	7.7	250	245	245
Control C	F17	5	5	5	7.6	8.0	8.2	24.0	23.0	23.6	8.0	7.9	7.9	250	240	245
Control D	10	5	5	5	7.6	8.0	8.2	24.1	22.9	23.6	8.1	8.0	7.9	250	245	250
100% A	21	5	5	5	6.9	6.7	6.8	23.4	23.1	23.7	8.2	7.9	7.9	400	400	410
100% B	605	5	5	5	6.9	6.7	6.6	23.3	23.1	23.7	8.3	7.8	7.8	400	400	410
100% C	348	5	5	5	6.9	6.6	6.5	23.3	23.0	23.6	8.4	7.7	7.5	400	400	410
100% D	55	5	5	5	6.9	6.6	6.6	23.4	23.0	23.6	8.3	7.7	7.5	400	400	415
Measured/Loaded by:		DW	TM	TM	JLS	TM	JLS	JLS	TM	JLS	JLS	TM	JLS	JLS	TM	JLS
Recorded by:		JKS	TM	TM	TM	CW	TR	TM	CW	TR	TM	CW	TR	TM	CW	TR

Investigators' Signatures

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	—	0.0 entry error	Dr/Co	JKS 2/6/96
Alkalinity (mg/L as $CaCO_3$):	120	—	5	HACH	TR
Hardness (mg/L as $CaCO_3$):	125	—	120	HACH	TR
Total ammonia (mg/L as N):	<0.017	<0.017	<0.017	Orion	JN

Ammonia Meter #98136 Meter Slope: 57.6 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Brittany Estates MHP
County: ALACHUA
Contact / District: Tim McKelvey / NorthEast
NPDES Permit #: FL0040215
LIMS Sample #: 129003 LIMS Job #: 96-Feb-06-01

Sample Collection: Date 2-5-96 Time 1200
Test Beginning: Date 2-6-96 Time 1400
Test Ending: Date 2-8-96 Time 1400
Organism Batch #: 7 Diluent Batch #: 6
Organism Age: <24hrs
Test Organism: Ceriodaphnia dubia

Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through
Test Number: 5 of 6
Remarks: unadjusted samples

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	19.4 @ 19.4	8.1 @ 26.0°C	106.7 @ 106.2 / 1029 @ 1025 @ 25.3°C
24 hr	7.0 @ 7.0 / 9.0 @ 9.0	21.7 @ 21.7	8.2 @ 25.3°C	107.4 @ 106.2 / 1019 @ 1025 @ 24.2°C
48 hr	7.0 @ 7.0 / 9.0 @ 9.0	22.2 @ 22.2	8.2 @ 25.1°C	104.9 @ 106.2 / 1003 @ 1025 @ 24.0°C

		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	5	5	5	8.0		8.1	23.9		23.9	8.1		7.8	175		200
Control	B	5	5	5			8.1			24.0			7.8			210
Control	C	5	5	5			8.1			24.1			7.8			215
Control	D	5	5	5			8.1			23.9			7.8			220
100%	A	5	3	1	5.8		6.4	23.9		24.0	8.1		7.9	355		~~225~~ 425 JLS spike wrong #
100%	B	5	3	3			6.1			24.5			8.0			430
100%	C	5	3	3			5.9			24.6			7.7			430
100%	D	5	3	3			5.8			24.1			7.7			445
Measured/Loaded by:		MF	MF	TR	JLS		JLS	JLS		JLS	JLS		JLS	JL		JLS
Recorded by:		JLS	MF	TR	Tm		TR	Tm		TR	Tm		TR	Tm		TR

Investigators' Signatures

Jennifer Sparapani
Nina M. Kubsh
Tim Moore
Charlotte Fairbanks
Robin C. Reeder

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):			0.9	—	Ruth Bowman
Lab Total Residual Cl2 (mg/L):	—	<0.03	0.9	DR-100	JLS
Alkalinity (mg/L as $CaCO_3$):	—	70	5	HACH	TR
Hardness (mg/L as $CaCO_3$):	—	80	130	HACH	TR
Total ammonia (mg/L as N):	—	<0.017	<0.017	Orion	JN

Ammonia Meter #98136 Meter Slope: −57.6 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Brittany Estates MHP
County: ALACHUA
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL0040215
LIMS Sample #: 129003 LIMS Job #: 96-Feb-06-01

Sample Collection: Date 02-5-96 Time 1200
Test Beginning: Date 2-6-96 Time 15:45
Test Ending: Date 2-8-96 Time 15:45
Organism Batch #: 5 Diluent Batch #: Well
Organism Age: 12 days old
Test Organism: Cyprinella leedsi

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

Test Number: 6 of 6

Remarks: unadjusted sample

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	19.4@19.4	8.1@26.8°C	1067@1062 1029@1025@25.3°C
24 hr	7.0@7.0 9.0@9.0	21.7@21.7	8.2@25.3°C	1074@1062 1019@1025@24.7°C
48 hr	7.0@7.0 9.0@9.0	22.2@22.2	8.2@25.1°C	1049@1062 1003@1025@24.0°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) Cond. (µmhos/cm) 0 hr	24 h	48 h
Control A	148	5	5	5	7.6	8.0	8.3	23.3	23.1	23.6	8.0	7.9	7.7	250	245	245
Control B	503	5	5	5	7.6	8.0	8.2	24.0	23.1	23.6	8.0	7.8	7.9	250	245	245
Control C	118	5	5	5	7.7	8.0	8.2	24.0	23.1	23.6	8.1	7.9	7.9	250	245	245
Control D	1265	5	5	5	7.7	8.0	8.2	24.0	23.1	23.7	8.0	8.0	7.9	250	245	250
100% A	210	5	5	5	5.3	5.6	5.8	23.7	23.3	23.7	8.4	7.8	7.8	395	395	405
100% B	502	5	5	5	5.3	5.5	5.5	23.5	23.3	23.8	8.6	7.7	7.7	395	395	400
100% C	520	5	5	5	5.2	5.4	5.5	23.5	23.3	23.8	8.6	7.8	7.6	395	395	400
100% D	304	5	4	4	5.2	5.4	5.5	23.5	23.4	23.8	8.6	7.8	7.5	395	400	405
Measured/Loaded by:		DW	TM	TM	JLS	TR	JLS	JLS	TM	JLS	JLS	TM	JLS	JLS	TM	JLS
Recorded by:		JAS	MF	TM	TM	CW	TR	TM	CW	TR	TM	CW	TR	TM	CW	TR

Investigators' Signatures

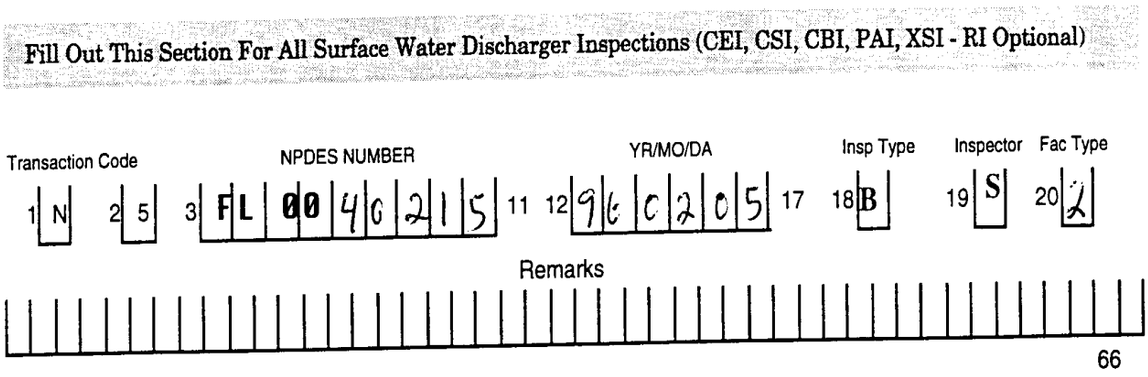
Reviewer

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):			0.4	—	Ruth Bowman
Lab Total Residual Cl2 (mg/L):	<0.03	—	0.19	DR-100	JAS
Alkalinity (mg/L as $CaCO_3$):	120	—	5	HACH	TR
Hardness (mg/L as $CaCO_3$):	125	—	130	HACH	TR
Total ammonia (mg/L as N):	<0.017	<0.017	<0.017	Orion	JN

Ammonia Meter #98136 Meter Slope: -57.6 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

The Bioassay of the Brittany Estates MHP WWTP effluent sampled on February 05, 1996, NPDES #FL0040215.



The Priority Pollutants Analysis for the Bioassay of the Brittany Estates MHP WWTP effluent sampled on February 05, 1996, NPDES #FL0040215.

