Bioassays of

Falkenburg Road Wastewater Treatment Plant

Tampa, Hillsborough County, Florida

NPDES #FL0040614

Sampled 7/10/95

August 1995

Biology Section

Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan #870346G

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Bureau of Laboratories
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Introduction

Falkenburg Road WWTP, Tampa, Hillsborough County, Florida, NPDES #FL0040614, tests performed on 11 to 13 July, 1995.

This advanced wastewater treatment facility is located on Falkenburg Road about one mile north of SR 60. The facility has a design flow of 6 MGD and an average flow of 4 MGD. Chlorine is used for disinfection. Effluent is dechlorinated with sulfur dioxide prior to discharge to the Palm River (facility summary provided 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 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 tests 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 July 10, 1995, did not show toxicity.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Falkenburg Road WWTP, Tampa, Hillsborough County, Florida, NPDES# FL0040614, performed on 11 to 13 July, 1995.

Facility:	**Falkenburg Road WWTP**			NPDES #	FL0040614	Facility Type:	**Wastewater Treatment Plant**
Location:	Falkenburg Road, Tampa			Contact/District:	L. Carter/Southwest		
County:	Hillsborough			Test type:	static acute screen		
Sample Collection Date:	7/10/95	Time:	1150	# tests:	2	Receiving Water:	Palm River
Test Beginning Date:	7/11/95	Time:	1430	Chlorination Type:	The sample was collected after being dechlorinated in the treatment process.		
Test Ending Date:	7/13/95	Time:	1430				**Page 1 of 1**

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):	125	120
20% Dilute Mineral Water (cladocerans):	70	80
100% Sample:	165	245

Salinity	(ppt)
Control Water:	0
100% Sample:	<0.5

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	7.8	-	8.2	22.9	-	24.1	7.7	-	7.9	175	205
Control B	0/20	5	5	5	-	-	8.2	-	-	24.1	-	-	7.9	-	190
Control C	0/20	5	5	5	-	-	8.2	-	-	24.2	-	-	7.9	-	190
Control D	0/20	5	5	5	-	-	8.2	-	-	24.2	-	-	7.9	-	190
100% A	20/0	5	5	5	7.7	-	8.5	22.8	-	24.2	7.6	-	7.9	990	990
100% B	20/0	5	5	5	-	-	8.5	-	-	24.2	-	-	7.9	-	1060
100% C	20/0	5	5	5	-	-	8.5	-	-	24.3	-	-	7.9	-	1090
100% D	20/0	5	5	5	-	-	8.5	-	-	24.3	-	-	7.9	-	1090

[A] Temperature of test incubator was continously recorded on a strip chart recorder. Incubator temperature range for the test period was 23.4-24.4°C.

Organism: ***Cyprinella leedsi*** Age: 11 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	7.8	8.3	8.3	23.8	23.5	23.7	7.3	7.9	7.9	246	250
Control B	0/500	5	5	5	7.8	8.3	8.3	23.7	-	23.7	7.5	7.9	7.9	245	250
Control C	0/500	5	5	5	7.7	8.3	8.3	23.6	-	23.7	7.5	7.9	8.0	245	250
Control D	0/500	5	5	5	7.7	8.3	8.3	23.5	-	23.7	7.5	8.0	8.0	245	250
100% A	500/0	5	5	5	7.5	8.2	8.2	23.3	23.3	23.6	7.6	8.0	8.0	1025	1045
100% B	500/0	5	5	5	7.5	8.2	8.3	23.0	-	23.6	7.6	8.0	8.0	1025	1050
100% C	500/0	5	5	5	7.5	8.2	8.3	22.9	-	23.5	7.5	8.0	8.0	1020	1050
100% D	500/0	5	5	5	7.5	8.2	8.3	22.9	-	23.5	7.6	8.0	8.0	1020	1055

[B] Temperature of test room was continously recorded on a strip chart recorder. Room temperature range for the test period was 23.5-24.1°C.

Table 2. Results of chemical analyses on the effluent from the Falkenburg Road Wastewater Treatment Plant sampled on July 10, 1995.

Metals

Calcium	57.3	mg/L
Copper	3	µg/L[I]
Iron	59	µg/L[A]
Magnesium	14.7	mg/L[A]
Zinc	39	µg/L[J]

Pesticides and Herbicides

none detected

Base, Neutral, and Acid Extractable Organics

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.

[J] Estimated value.

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Falkenburg Rd WWTP
County: Hillsborough
Contact / District: T. Edwards / SW
NPDES Permit #: FL00 40614
LIMS Sample #: 110281 (sample log 7/11/95) **LIMS Job #:** 95-JUL-11-06

Sample Collection: Date 7/10/95 Time 1150
Test Beginning: Date 7/11/95 Time 1430
Test Ending: Date 7/13/95 Time 1430
Organism Batch #: 34 **Diluent Batch #:** 28
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

	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	24.1 @ 24.1	8.2 @ 25.0 °C	99.9 @ 100; 1395 @ 1400 @ 24.7 °C
24 hr	___ @ 7.0; ___ @ ___	___ @ ___	___ @ ___ °C	___ @ ___; ___ @ ___ @ ___ °C
48 hr	7.0 @ 7.0; 9.0 @ 9.0	24.4 @ 24.2	8.3 @ 24.8 °C	102.7 @ 102.1; 1388 @ 1400 @ 24.2 °C; 56.2 @ 58.7 µmhos

*JBS 7/11/95 wrote in wrong space

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	5	5	5	7.8	~~8~~	8.2	22.9		24.1	7.7		7.9	175		205
Control	B	5	5	5	~~7.7~~*		8.2			24.1			7.9			190
Control	C	5	5	5			8.2			24.2			7.9			190
Control	D	5	5	5			8.2			24.2			7.9			190
100%	A	5	5	5	7.7		8.5	22.8		24.2	7.6		7.9	990		990
100%	B	5	5	5			8.5			24.2			7.9			1060
100%	C	5	5	5			8.5			24.3			7.9			1090
100%	D	5	5	5			8.5			24.3			7.9			1090
Recorded by:		TR	TM	TM	JBS		JLS	JBS		JLS	JBS		LM	JBS		LM
Measured/Loaded by:		JLS	TM	MF	JN		LM	JN		LM	JN		JLS	JN		JLS

Investigators' Signatures
[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	TR
Alkalinity (mg/L as $CaCO_3$):	—	70	165	Hach	TR
Hardness (mg/L as $CaCO_3$):	—	80	245	Hach	TR
Total ammonia (mg/L as N):	—	<0.017	<0.017	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -57.9 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0.5 ppt

form updated 10/05/94

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Falkenburg Rd WWTP
County: Hillsborough
Contact / District: T. Edwards / SW
NPDES Permit #: FL00 40614
LIMS Sample #: 110281 **LIMS Job #:** 95-JUL-11-06

Sample Collection: Date 7/10/95 Time 1150
Test Beginning: Date 7/11/95 Time 1430
Test Ending: Date 7/13/95 Time 1430
Organism Batch #: 27 **Diluent Batch #:** well
Organism Age: 11 days old
Test Organism: Cyprinella leedsi

Test Type: Screening (circled) | Definitive
Static (circled) | 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	24.1 @ 24.1	8.2 @ 25.0 °C	99.9 @ 100; 1395 @ 1400 @ 24.7 °C
24 hr	7.0 @ 7.0; 9.0 @ 9.0	24.0 @ 24.1	8.2 @ 25.0 °C	105.5 @ 102.1; 1390 @ 1400 @ 23.9 °C; 55.2 @ 58.7
48 hr	7.0 @ 7.0; 9.0 @ 9.0	24.4 @ 24.2	8.3 @ 24.8 °C	102.7 @ 102.1; 1388 @ 1400 @ 24.2 °C; 51.2 @ 58.7 mhs

		Number Live			pH			Temperature (°C)			D.O. (mg/L)			UNCORRECTED Cond. (mmhos/cm) / Cond. (µmhos/cm) (circled)		
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	104	5	5	5	7.8	8.3	8.3	23.8	23.5	23.7	7.3	7.9	7.9	240	245	250
Control B	412	5	5	5	7.8	8.3	8.3	23.7		23.7	7.5	7.9	7.9	245	245	250
Control C	76	5	5	5	7.7	8.3	8.3	23.6		23.7	7.5	7.9	8.0	245	245	250
Control D	85	5	5	5	7.7	8.3	8.3	23.5		23.7	7.5	8.0	8.0	245	245	250
100% A	87	5	5	5	7.5	8.2	8.3	23.3	23.3	23.6	7.6	8.0	8.0	1025	1035	1045
100% B	308	5	5	5	7.5	8.2	8.3	23.0		23.6	7.6	8.0	8.0	1025	1035	1050
100% C	888	5	5	5	7.5	8.2	8.3	22.9		23.5	7.5	8.0	8.0	1020	1035	1050
100% D	475	5	5	5	7.5	8.2	8.3	22.9		23.5	7.6	8.0	8.0	1020	1035	1055
Recorded by:		TR	TM	TM	JLS	JN	LM	JLS	JN	LM	JLS	JN	LM	JLS	JN	LM
Measured/Loaded by:		TR	TM	MF	TN	TM	JLS	JN	TM	JLS	JN	TM	JLS	JN	TM	JLS

Investigators' Signatures

[signatures]

Reviewer

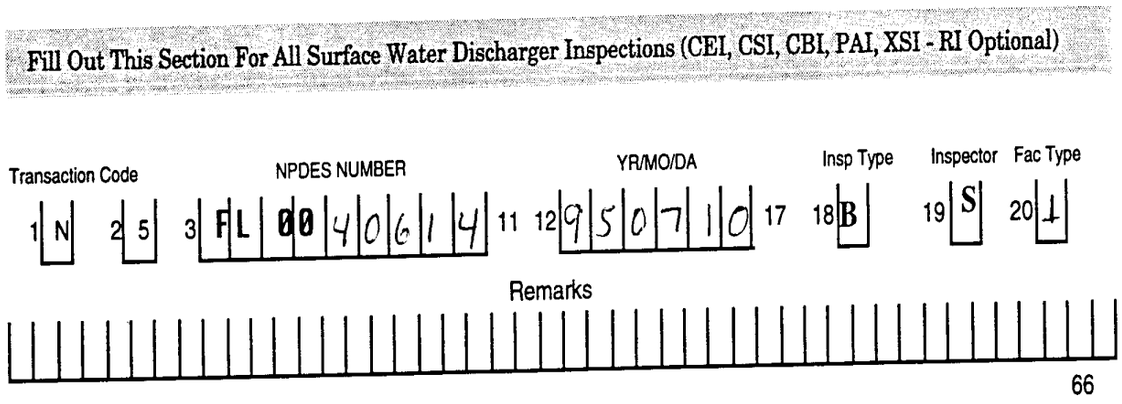
Water Quality Parameters

	Salt Water / Well Water (circled)	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 $CaCO_3$):	125	—	165	Hach	TR
Hardness (mg/L as $CaCO_3$):	120	—	245	Hach	TR
Total ammonia (mg/L as N):	<0.017	—	<0.017	orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -57.9 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0.5 ppt

form updated 10/05/94

The Bioassay of the Falkenburg Road WWTP effluent sampled on July 10, 1995, NPDES #FL0040614.



The Priority Pollutants Analysis for the Bioassay of the Falkenburg Road WWTP effluent sampled on July 10, 1995, NPDES #FL0040614.