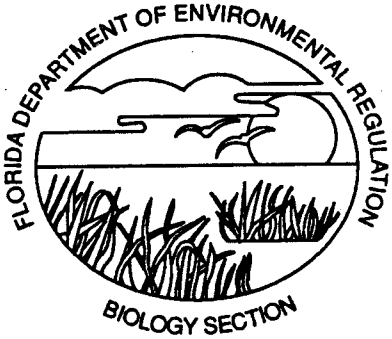


Bioassays of

Buckman Street Sewage Treatment Plant

Jacksonville, Duval County, Florida

NPDES #FL0026000

Sampled 2/18/90

July 6, 1990

Biology Section
Division of Administrative and Technical Services

Bioassays of

Buckman Street Sewage Treatment Plant

Jacksonville, Duval County, Florida

NPDES #FL0026000

Biology Section
Bureau of Laboratories
July 6, 1990

Introduction

Buckman Street Sewage Treatment Plant, Jacksonville, Duval County, Florida, NPDES #FL0026000, on 19 to 21 February, 1990.

This facility is located at 2221 Buckman Street. The 54 MGD capacity activated-sludge treatment plant serves a population of approximately 200,000, and provides secondary treatment for wastes from a variety of major and minor industrial sources. Treatment consists of primary sedimentation, sludge aeration, secondary clarification and chlorination. Discharge is to the St. Johns River, 500 feet from shore.

The toxicity tests discussed in this report were performed in accordance with methods described by Peltier and Weber, 1985, *Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms*, 3rd Edition, and by the FDER Biology Section, 1985, *Quality Assurance Manual for Performing Acute Toxicity Tests*, 2nd Edition.

Results and Discussion

The sample of chlorinated discharge from this facility was toxic to the bioassay test organisms, the waterflea, *Ceriodaphnia dubia*, and the fish, *Notropis leedsi*, producing LC_{50}'s of <100%. The chlorinated sample also adversely affected the Microtox® test organism, *Photobacterium phosphoreum*, producing an EC_{50} of 51%.

A portion of the sample was dechlorinated in the Biology Section laboratory and bioassays were performed. These tests showed toxicity to *C. dubia*, producing an LC_{50} of 130%. The sample also adversely affected the Microtox® test organism, *P. phosphoreum*, producing an EC_{50} of 293%. The dechlorinated sample was not toxic to *N. leedsi*.

The total residual chlorine concentration in the sample was 0.4 mg/l (Hach). The total and unionized ammonia concentrations were 15.7 mg/l and 0.13 mg/l, respectively. Further chemical analyses were performed on the sample. 1,4,dichlorbenzene (1 µg/l) and several unidentified organic compounds with an estimated total concentration of 450 µg/l were detected by the organics analyses. Metals detected in the sample were cadmium (0.1 µg/l), lead (2.0 µg/l), silver (0.3 µg/l), and zinc (17 µg/l). Because of a laboratory error, pesticide analyses were not performed.

We attribute the toxicity in the sample to the total residual chlorine concentration (0.4 mg/l) and to unknown toxic components of the sample.

Conclusion

The sample of discharge from this facility was toxic on 18 February, 1990.

Table 1. Concentration Series and Volumes Used for These Static Bioassays.

Ceriodaphnia dubia (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	15.0 ml	0.0 ml	15 ml
10.0%	13.5 ml	1.5 ml	15 ml
30.0%	10.5 ml	4.5 ml	15 ml
50.0%	7.5 ml	7.5 ml	15 ml
70.0%	4.5 ml	10.5 ml	15 ml
85.0%	2.25 ml	12.75 ml	15 ml
100.0%	0.0 ml	15.0 ml	15 ml

Notropis leedsi (bannerfin shiner)

Concentration	Dilution Water	Sample	Total Volume
Control	500 ml	0 ml	500 ml
10.0%	450 ml	50 ml	500 ml
30.0%	350 ml	150 ml	500 ml
50.0%	250 ml	250 ml	500 ml
70.0%	150 ml	350 ml	500 ml
85.0%	75 ml	425 ml	500 ml
100.0%	0 ml	500 ml	500 ml

Table 2. Data recorded during the static screening bioassay of a sample of discharge from outfall #001 of the Buckman Street STP, Jacksonville, Duval County, Florida, NPDES #FL0026000, on 19 to 20 February, 1990.

Facility: **Buckman St. Sewage Treatment Plant** NPDES # **FL0026000** Facility Type: **Sewage Treatment**
Location: 2221 Buckman St., Jacksonville Contact/District: J. Carver / NE
County: Duval Test type: Static Screen
Sample Collection Date: **2/18/90** Time: 1450 # tests: 2 Receiving Water: St. Johns River
Test Beginning Date: 2/19/90 Time: 1000 Chlorination Type: **chlorinated**
Test Ending Date: 2/20/90 Time: 1000 **Page 1 of 1**

Total Residual Cl2	mg/l	Method
Field:	1.2	Hach
Lab:	0.4	Hach
Lab:	0.4	Iodometric

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	0.00	0.00
Cond. Control Water (daphnids):	0.00	0.00
100% Sample:	15.70	0.13

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	126	120
Cond. Control Water (daphnids):	67	72
100% Sample:	225	234

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

Organism: ***Ceriodaphnia dubia*** Life stage: neonate
LC50: <100%

	SURVIVAL			Dissolved Oxygen			pH			Temperature			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	24 hour
Control	5	5	-	8.5	9.0	-	8.3	8.1	-	20.9	20.9	-	-	-
Control	5	5	-	8.5	9.0	-	8.3	8.2	-	-	-	-	-	-
Control	5	5	-	8.5	9.0	-	8.3	8.2	-	-	-	-	-	-
Control	5	5	-	8.6	9.0	-	8.3	8.2	-	-	-	-	160	160
100%	5	0	-	8.2	9.2	-	7.7	8.5	-	21.1	20.8	-	-	-
100%	5	0	-	8.2	9.1	-	7.7	8.5	-	-	-	-	-	-
100%	5	0	-	8.2	9.2	-	7.7	8.5	-	-	-	-	-	-
100%	5	0	-	8.2	9.2	-	7.7	8.4	-	-	-	-	1020	965

Organism: ***Notropis leedsi*** Age: 23 days
LC50: <100%

	SURVIVAL			Dissolved Oxygen			pH			Temperature			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	24 hour
Control	5	5	-	8.7	8.7	-	7.9	8.1	-	20.5	19.8	-	-	-
Control	5	5	-	8.7	8.9	-	7.9	8.1	-	-	-	-	225	230
100%	5	0	-	9.5	9.1	-	7.6	8.1	-	22.0	19.8	-	-	-
100%	5	0	-	9.5	9.1	-	7.6	8.1	-	-	-	-	1080	1030

Table 3. Data recorded during the static definitive bioassay of a sample of discharge from outfall #001 of the Buckman Street STP, Jacksonville, Duval County, Florida, NPDES #FL0026000, on 19 to 21 February, 1990.

Facility: **Buckman St. Sewage Treatment Plant** NPDES # **FL0026000** Facility Type: **Sewage Treatment**
Location: 2221 Buckman St., Jacksonville Contact/District: J. Carver / NE
County: Duval Test type: static definitive
Sample Collection Date: **2/18/90** Time: 1450 # tests: 2 Receiving Water: St. Johns River
Test Beginning Date: 2/19/90 Time: 1000 Chlorination Type: **dechlorinated**
Test Ending Date: 2/21/90 Time: 1000 Dechlor Method: lab, sodium thiosulfate **Page 1 of 2**

Total Residual Cl2	mg/l	Method
Field:	1.2	Hach
Lab:	0.4	Hach
Lab:	0.4	Iodometric

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	0.00	0.00
Cond. Control Water (daphnids):	0.00	0.00
100% Sample:	15.70	0.13

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	126	120
Cond. Control Water (daphnids):	67	72
100% Sample:	225	234

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

Organism: ***Ceriodaphnia dubia*** Life stage: neonate
LC50: 130% Binomial: - Moving Average: - Probit: 130.0%

	SURVIVAL			Dissolved Oxygen			pH			Temperature			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	8.9	-	8.8	8.3	-	8.2	20.8	-	20.0	-	-
Control	5	5	5	8.9	-	8.8	8.3	-	8.2	-	-	-	-	-
Control	5	5	5	9.0	-	8.8	8.3	-	8.2	-	-	-	-	-
Control	5	5	5	9.0	-	8.8	8.3	-	8.2	-	-	-	155	165
10%	5	5	5	8.9	-	8.7	8.2	-	8.3	20.8	-	20.0	-	-
10%	5	5	5	8.9	-	8.7	8.2	-	8.3	-	-	-	-	-
10%	5	5	5	8.9	-	8.8	8.2	-	8.3	-	-	-	-	-
10%	5	5	5	8.9	-	8.8	8.2	-	8.3	-	-	-	245	250
30%	5	5	5	8.8	-	8.6	8.1	-	8.4	20.8	-	20.0	-	-
30%	5	5	5	8.8	-	8.7	8.1	-	8.4	-	-	-	-	-
30%	5	5	5	8.9	-	8.7	8.1	-	8.4	-	-	-	-	-
30%	5	5	5	8.9	-	8.8	8.1	-	8.4	-	-	-	415	410
50%	5	5	5	8.8	-	8.6	8.1	-	8.5	20.9	-	20.1	-	-
50%	5	5	5	8.9	-	8.6	8.1	-	8.5	-	-	-	-	-
50%	5	5	5	8.9	-	8.7	8.1	-	8.5	-	-	-	-	-
50%	5	5	5	8.9	-	8.6	8.1	-	8.5	-	-	-	595	580
70%	5	5	5	8.9	-	8.7	8.1	-	8.5	21.0	-	20.2	-	-
70%	5	5	5	8.9	-	8.7	8.1	-	8.5	-	-	-	-	-
70%	5	5	5	8.9	-	8.8	8.1	-	8.5	-	-	-	-	-
70%	5	5	5	8.9	-	8.8	8.1	-	8.5	-	-	-	760	740
85%	5	5	5	8.9	-	8.7	8.1	-	8.6	21.0	-	20.5	-	-
85%	5	5	5	8.9	-	8.7	8.1	-	8.6	-	-	-	-	-
85%	5	5	4	8.9	-	8.7	8.1	-	8.5	-	-	-	-	-
85%	5	5	3	8.9	-	8.7	8.1	-	8.5	-	-	-	880	860
100%	5	5	5	8.8	-	8.8	8.1	-	8.6	21.0	-	20.2	-	-
100%	5	5	1	8.8	-	8.8	8.1	-	8.5	-	-	-	-	-
100%	5	5	5	8.8	-	8.8	8.1	-	8.6	-	-	-	-	-
100%	5	5	4	8.8	-	8.8	8.1	-	8.6	-	-	-	1015	960

-continued-

Table 3. Continued.

Facility: **Buckman St. Sewage Treatment Plant** NPDES # **FL0026000** Facility Type: **Sewage Treatment**
Location: 2221 Buckman St., Jacksonville Contact/District: J. Carver / NE
County: Duval Test type: static definitive
Sample Collection Date: **2/18/90** Time: 1450 # tests: 2 Receiving Water: St. Johns River
Test Beginning Date: 2/19/90 Time: 1000 Chlorination Type: **dechlorinated**
Test Ending Date: 2/21/90 Time: 1000 Dechlor Method: lab, sodium thiosulfate **Page 2 of 2**

Organism: ***Notropis leedsi*** Age: 23 days
LC50: - Binomial: - Moving Average: - Probit: -

Concentrations	SURVIVAL # at 0 hr	Live at 24 hr	Live at 48 hr	Dissolved Oxygen 0 hour	24 hour	48 hour	pH 0 hour	24 hour	48 hour	Temperature 0 hour	24 hour	48 hour	Conductivity 0 hour	48 hour
Control	5	5	5	8.6	8.6	7.9	7.9	8.1	8.2	20.3	19.8	19.0	-	-
Control	5	5	5	8.6	8.6	7.9	7.9	8.1	8.1	-	-	-	225	225
10%	5	5	5	8.6	8.7	8.1	7.9	8.1	8.2	20.3	19.6	18.8	-	-
10%	5	5	5	8.7	8.7	7.9	7.9	8.1	8.1	-	-	-	305	320
30%	5	5	5	8.9	8.6	8.4	7.8	8.1	8.2	20.9	19.5	18.8	-	-
30%	5	5	5	8.9	8.4	8.3	7.8	8.1	8.1	-	-	-	480	460
50%	5	5	5	8.9	8.4	8.4	7.7	8.1	8.2	21.3	19.4	18.8	-	-
50%	5	5	5	8.9	8.5	8.4	7.7	8.1	8.2	-	-	-	655	665
70%	5	5	5	9.0	8.4	8.2	7.7	8.1	8.2	21.7	19.3	18.7	-	-
70%	5	5	5	9.1	8.5	8.3	7.7	8.0	8.2	-	-	-	830	785
85%	5	5	5	9.2	8.3	8.2	7.7	8.1	8.2	22.0	19.3	18.8	-	-
85%	5	5	5	9.3	8.2	8.1	7.7	8.1	8.2	-	-	-	960	900
100%	5	5	5	9.3	8.3	8.1	7.6	8.1	8.2	22.1	19.7	19.0	-	-
100%	5	5	5	9.3	8.3	8.0	7.6	8.1	8.2	-	-	-	1080	1020

Total Residual Cl2	mg/l	Method
Field:	1.2	Hach
Lab:	0.4	Hach
Lab:	0.4	Iodometric

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	0.00	0.00
Cond. Control Water (daphnids):	0.00	0.00
100% Sample:	15.70	0.13

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	126	120
Cond. Control Water (daphnids):	67	72
100% Sample:	225	234

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

Table 4. Microtox test results, Buckman St. STP, Duval County, NPDES #FL0026000, on 19 February, 1990.

Microtox Test

% Sample	Final Reclaimed Water			
	Chlorinated		Dechlorinated	
	5-min	15-min	5-min	15-min
0	41	25	23	15
0	30	19	26	16
0	29	18	29	18
12.38	27	16	28	15
12.38	33	20	29	17
12.38	31	18	33	20
24.75	28	15	27	17
24.75	26	17	23	14
24.75	26	15	32	20
49.5	16	11	21	13
49.5	20	13	28	17
49.5	19	12	28	17
99	08	05	28	16
99	09	05	19	11
99	08	05	27	16

EC_{50} Chlorinated (15 minute, 15 °C) = 51% sample
EC_{50} Dechlorinated (15 minute, 15 °C) = 293% sample

EC_{50} (15 minute, 15 °C) is calculated using the Data Reduction Computer Program developed by Microbics Corporation for the Sharp Model EL-5100 calculator. (*Microbics Systems Operating Manual,* 1982, Microbics Corporation, Carlsbad, California).

Table 5. LC_{50} Data for the bioassay of the Buckman St. STP, NPDES# FL0026000, on 19 to 21 February, 1990.

Organism	Method of Data Analysis	48 Hour LC_{50} (95% Confidence Intervals)
Chlorinated discharge		
Ceriodaphnia dubia	none	<100% [a]
Notropis leedsi	none	<100% [a]
Dechlorinated discharge		
Ceriodaphnia dubia	Probit	130% (0%, + infinity%)
	Binomial	[b]
	Moving Average	[b]

a The LC_{50} is < 100% since all the organisms died in the lowest test concentration (100%).

b Due to an insufficient number of dead organisms, or to the irregular distribution of mortality, an LC_{50} value cannot be calculated using this method of statistical analysis.

Table 6. Results of chemical analyses on the sample of discharge from the Buckman Street STP, NPDES# FL0026000, Duval County, Florida.

Organics

Acid Extractables	None detected
Base Neutral Extractables	1,2-dichlorobenzene 1 µg/l [k]
	unidentified organic compounds
	estimated total concentration 450 µg/l

Metals

Cadmium	0.1 µg/l
Lead	2.0 µg/l
Silver	0.3 µg/l
Zinc	17.0 µg/l

[k] Actual value is known to be less than but at least half of given value.

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: BUCKMAN ST STP
Address/City: 2221 BUCKMAN ST; JACKSONVILLE
County: DUVAL
Contact/District: KATHLEEN GERARD / NE
NPDES Permit #: FL0026000 **Outfall #:** 001

Sample Collection: Date 2/18/90 Time 1450
Test Beginning: Date 2/19/90 Time 1000
Test Ending: Date 2/21/90 Time 1000
Test Organism: C. dubia
Life Stage/Age: neonate

Test Number: 1 of 4 **Test Type:** Screening (Definitive)
Static | Static Renewal | Flow-through

Remarks: Dechlor *diluent bench mobile Yeatis **2 alive " " 3 alive
Perrier/MilliQ Diluent for C. dubia tests.

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7.7, 7.9	8.9 @ 21.5°C	1313 @ 21.6 / 1315	21.0 @ 21.1
24 hr	7.7, 7.9	8.7 @ 23°C	1366 @ 23.5 / 1366	22 @ 22.3
48 hr	7.7, 7.9	8.8 @ 22°C	1354 @ 23°C / 1353.6	21.8 @ 22°C

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
CONTROL		5	5	5	8.9		8.8	8.3		8.2	20.8		20.0			
"		5	5	5	8.9		8.8	8.3		8.2						
"		5	5	5	9.0		8.8	8.3		8.2						
"		5	5	5	9.0		8.8	8.3		8.2	20.8			55		165
10%		5	5	5	8.4		8.7	8.2		8.3	20.8		20.0			
"		5	5	5	8.9		8.7	8.2		8.3						
"		5	5	5	8.9		8.8	8.2		8.3						
		5	5	5	8.4		8.3	8.2		8.3				250		250
30%		5	5	5	8.8		8.6	8.1		8.4	20.8		20.0			
"		5	5	5	8.8		8.7	8.1		8.4						
"		5	5	5	8.9		8.7	8.1		8.4						
"		5	5	5	8.9		8.8	8.1		8.4				415		410
50%		5	5	5	8.8		8.6	8.1		8.5	20.9		20.1			
"		5	5	5	8.9		8.6	8.1		8.5						
"		5	5	5	8.9		8.7	8.1		8.5						
"		5	5	5	8.9		8.6	8.1		8.5				595		580
70%		5	5	5	8.9		8.7	8.1		8.5	21.0		20.2			
"		5	5	5	8.9		8.7	8.1		8.5						
"		5	5	5	8.9		8.8	8.1		8.5						
"		5	5	5	8.9		8.8	8.1		8.5				760		740
85%	48m, 5	5	5	5	8.9		8.7	8.1		8.6	21.0		20.5			
"	5	5	5	5	8.9		8.7	8.1		8.6						
"	4	5	5*	[illegible]	8.9		8.7	8.1		8.5						
"	3	5	5	[illegible]	8.9		8.7	8.1		8.5				880		860
100%	5	5	5	5	8.8		8.8	8.1		8.6	21.0		20.2			
"	1	5	5**	[illegible]	8.8		8.8	8.1		8.5						
"	5	5	5	[illegible]	8.8		8.8	8.1		8.6						
"	4	5	5	[illegible]	8.8		8.8	8.1		8.6				1,015		960
Measured by:		SW	MT	MT	SW		MT	SW		MT	SW		MT	SW		MT
Recorded by:		MT	MT	MT	MGC		MT	MT		MT	MGC		MT	MGC		MT

Investigators' Signatures

Steven H Wolfe
Marshall Faircloth
Mike Campos
[illegible]
Reviewer

~~B [illegible] MT~~
~~A [illegible] MT~~

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:			1.2	Hach	K. GERARD
Lab Tot. Resid. Cl2:			0.4	Hach Todo	SHW
Alkalinity:	126	67	225	Hach	SHW
Hardness:	120	72	234	Hach	SHW
Total Ammonia:	0.0	0.0	15.7	Spectronic	SHW

slope = ~~-58~~ -59.2

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Buckman St. STP
Address/City:
County:
Contact/District:
NPDES Permit #: **Outfall #:**

Sample Collection: Date 2/18/90 Time 1450
Test Beginning: Date 2/19/90 Time 1000
Test Ending: Date 2/21/90 Time 1000
Test Organism: Natrops leedsi
Life Stage/Age: 23 days

Test Number: 2 of 4 **Test Type:** Screening (Definitive)
(Static) | Static Renewal | Flow-through

Remarks: Deckler

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (umhos/cm) 0	24	48
Control	142	5	5	5	8.6	8.6	7.9	7.9	8.1	8.2	20.3	19.8	19.0			
	190	5	5	5	8.6	8.6	7.9	7.9	8.1	8.1				225	225	225
12%	174	5	5	5	8.6	8.7	8.1	7.9	8.1	8.2	20.3	19.6	18.5	225		
"	19	5	5	5	8.7	8.7	7.9	7.9	8.1	8.1				225	305	300
30%	13	5	5	5	8.9	8.5	8.4	7.8	8.1	8.2	20.9	19.5	18.3	395		
"	76	5	5	5	8.9	8.4	8.3	7.8	8.1	8.1				395	480	460
50%	129	5	5	5	8.9	8.4	8.4	7.7	8.1	8.2	21.3	19.4	18.8			
"	39	5	5	5	8.9	8.5	8.4	7.7	8.1	8.2				480	655	625
70%	12	5	5	5	9.0	8.4	8.2	7.7	8.1	8.2	21.7	19.3	18.7	480		
"	3	5	5	5	9.1	8.4	8.3	7.7	8.0	8.2					830	785
85%	287	5	5	5	9.2	8.3	8.2	7.7	8.1	8.2	22.0	19.3	18.8	655		
"	38	5	5	5	9.3	8.2	8.1	7.7	8.1	8.2				655	960	900
100%	234	5	5	5	9.3	8.3	8.1	7.6	8.1	8.2	22.1	19.7	19.0			
"	41	5	5	5	9.3	8.3	8.0	7.6	8.1	8.2					1080	1020
Measured by:		MF	MF	MF	SW	MF	MF	SW	MF	MF	SW	MF	MF		SW	MF
Recorded by:		MF	MF	MF	MCC	SW	MF	MF	SW	MF	MCC	SW	MF		MCC	MF

Investigators' Signatures

Steven H. Wolfe
Marshall Faircloth
Mike Campos

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Buckman St. STP
Address/City:
County:
Contact/District:
NPDES Permit #: **Outfall #:**

Sample Collection: Date 2/18/90 Time 1450
Test Beginning: Date 2/19/90 Time 1000
Test Ending: Date 2/20/90 Time 1000
Test Organism: Ceriodaphnia dubia
Life Stage/Age: neonate

Test Number: 3 of 4 **Test Type:** (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Remarks: Chlor terminated @ 24 hrs

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
CONTROL		5	5		8.4	9.0		8.3	8.1		20.9	20.9				
"		5	5		8.4	9.0		8.3	8.2							
"		5	5		8.4	9.0		8.3	8.2							
"		5	5		8.4	9.0		8.3	8.2					160	160	
100%		5	0		9.1	9.2		7.7	8.5		21.1	20.8				
"		5	0		9.1	9.1		7.7	8.5							
"		5	0		9.1	9.2		7.7	8.5							
"		5	0		9.1	9.2		7.7	8.4					1000	964	
Measured by:		MF	MF		SW	MF		SW	MF		SW	MF		SW	MF	
Recorded by:		MF	MF		MF	SW		MF	SW		MF	SW		MF	SW	

Investigators' Signatures

Steven H Walker
Marshall Faircloth
Alice Camper
Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Buckman St. STP
Address/City:
County:
Contact/District:
NPDES Permit #: **Outfall #:**

Sample Collection: Date 2/18/90 Time 1450
Test Beginning: Date 2/19/90 Time 1000
Test Ending: Date 2/20/90 Time 1000
Test Organism: Notropis leedsi
Life Stage/Age: 23 days

Test Number: 4 of 4 **Test Type:** (Screening) Definitive
(Static) Static Renewal | Flow-through

Remarks: Chlor
terminated @ 24 hrs

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

		Number Live			DO (mg/l)			pH			Temp. (°C)			Cond. (µmhos/cm)		
Conc.	Chamber #	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	183	5	5		8.7	8.7		7.9	8.1		20.5	19.8				
Control	50	5	5		8.7	8.9		7.9	8.1					225	230	
100%	17	5	0		9.5	9.1		7.6	8.1		22.0	19.8				
100%	41	5	0		9.5	9.1		7.6	8.1					1050	1030	
Measured by:		MF	MF		SW	MF		SW	MF		SW	MF		SW	MF	
Recorded by:		MF	MF		MGC	SW		MF	SW		MGC	SW		MGC	SW	

Investigators' Signatures

Steven H Wilfe
Marshall Faircloth
Mike Cooper

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					

MICROTOX™ Data Reduction Sheet

SOURCE: Buckman Street STP

GRAPH CALC EC 50 (15 MIN, 15 °C) = 292.95 %SAMPLE mg/L

SAMPLE DATA:

SAMPLE TYPE (EFFLUENT, LEACHATE, ETC.): dechl.

DATE ASSAYED: 2/19/90 TIME: 11:30 AM

VISUAL COLOR: CORRECTION REQUIRED: YES NO

VISUAL TURBIDITY: SEPARATION REQUIRED: YES NO

INITIAL pH: pH ADJUSTED TO: WITH:

OSMOTICALLY ADJUSTED WITH: MOAS (DRY NaCl) OTHER

PRIMARY DILUTION OF SAMPLE:

OPERATOR: MB Campos REAGENT VIAL LOT NO. M- NLN

REMARKS:

MICROTOX™ TEST

SAMPLE CUVETTE	% SAMPLE	READINGS 5 MIN	READINGS 15 MIN	Γ5	Γ15	NOTES
A1	0	23	15	X	X	
B1		26	16			
C1		29	18			
A2	16.31	28	15		-.06	
B2		29	17			
C2		33	20			
A3	24.75	27	17		-.04	
B3		23	14			
C3		32	20			
A4	49.5	21	13		.04	
B4		28	17			
C4		28	17			
A5	99	28	16		.14	
B5		19	11			
C5		27	16			
EC_{50} (MIN, °C)					292.95	

REVIEWED BY:

DATE: 2/19/90

MICROTOX™ Data Reduction Sheet

SOURCE: Buckman Street STP

GRAPH CALC EC 50 (15 MIN, 15 °C) = 50.91 %SAMPLE mg/L

SAMPLE DATA: Cl/

SAMPLE TYPE (EFFLUENT, LEACHATE, ETC.):

DATE ASSAYED: 2/19/90 TIME: 11:30 AM

CORRECTION REQUIRED: YES NO

VISUAL COLOR:

SEPARATION REQUIRED: YES NO

VISUAL TURBIDITY:

INITIAL pH: pH ADJUSTED TO: WITH:

OSMOTICALLY ADJUSTED WITH: MOAS (DRY NaCl) OTHER

PRIMARY DILUTION OF SAMPLE:

OPERATOR: MB Campos REAGENT VIAL LOT NO. M- NLN

REMARKS:

MICROTOX™ TEST

SAMPLE CUVETTE	% SAMPLE	READINGS 5 MIN	READINGS 15 MIN	Γ5	Γ15	NOTES
A1	0	41	25	X	X	
B1		30	19			
C1		29	18			
A2	12.38	27	16		.15	
B2		33	20			
C2		31	18			
A3	24.75	28	15		.32	
B3		26	17			
C3		26	15			
A4	49.5	16	11		.72	
B4		20	13			
C4		19	12			
A5	99	08	05		3.13	
B5		08	05			
C5		08	05			
EC_{50} (MIN, °C)					50.9	

REVIEWED BY:

DATE: 2/19/90