

**CITY OF ROGERS**  
OUTFALL 001

Chronic Biomonitoring Report  
Permit Number NPDES AR0043397  
AFIN 04-00155

*Ceriodaphnia dubia*  
*Pimephales promelas*

October 13, 2020

Reviewed by:



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**TOXICITY TEST REPORT - CHRONIC**

Client .....	City of Rogers	Laboratory I.D. ....	31978
Permit No. ....	NPDES AR0043397	Begin Date .....	October 13, 2020
Sample.....	Outfall 001		

Results: **Pass** *Ceriodaphnia dubia* survival and reproduction and *Pimephales promelas* survival and growth at the critical concentration (82% effluent).

**SAMPLE COLLECTION**

Composite effluent samples from City of Rogers were delivered by Federal Express courier to Huthers & Associates on October 13, October 15, and October 17, 2020. Effluent samples were collected and composited from Outfall 001 using an automatic sampler by facility personnel. Two toxicity tests were requested: a seven-day *Ceriodaphnia dubia* survival and reproduction test (EPA Method 1002.0), and a seven-day *Pimephales promelas* larval survival and growth test (EPA Method 1000.0). Test organisms, procedures and quality assurance requirements were in accordance with the EPA manual, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition" (EPA-821-R-02-013).

The effluent samples were analyzed for total residual chlorine (Standard Methods, 23<sup>rd</sup> Edition, 4500-Cl D) and contained <0.01 mg/L, <0.01 mg/L, and <0.01 mg/L, respectively. Effluent and laboratory dilution water hardness, alkalinity, conductivity, pH, and dissolved oxygen data were collected and recorded.

**TEST SETUP**  
*Ceriodaphnia dubia*



The seven-day *Ceriodaphnia dubia* survival and reproduction test was initiated at 1345 hours, October 13, 2020. Five concentrations were prepared (26%, 35%, 46%, 62% and 82% effluent) utilizing distilled, deionized laboratory water reconstituted to match the hardness, alkalinity and pH of the receiving stream (Osage Creek). The test was conducted in 25 mL distilled water rinsed plastic beakers containing 15 mL of solution (one organism per beaker, ten beakers per concentration). *C. dubia* neonates were less than 24-hours-old and within eight hours of the same age at test initiation. Neonates were placed in beakers following a randomized block test design. Fresh solutions were prepared and renewed daily. Daily feeding consisted of 0.5 mL *Selenastrum capricornutum* and cerophyll per test chamber. The test proceeded for seven days during which survival, reproduction and water quality data were collected daily.

A control of ten replicate beakers containing one neonate each in distilled, deionized, reconstituted water (same as diluent) was conducted concurrently with the test. There was 100% survival in the control. The test ended at 1345 hours, October 20, 2020. Survival and reproduction data were statistically analyzed ( $p = 0.05$ ) according to EPA procedures to determine the Lowest Observable Effect Concentration (LOEC) and the No Observable Effect Concentration (NOEC).

**SURVIVAL**  
***Ceriodaphnia dubia***

There was 100% survival to *C. dubia* in all of the effluent concentrations tested. Therefore, statistical analyses were not required to determine a no effect concentration.

**LOEC: Not Applicable**  
**NOEC: 82% Effluent**

**REPRODUCTION**  
***Ceriodaphnia dubia***

*C. dubia* reproduction data were normally distributed at the 0.01 alpha level (13.277) using Chi-Square test for normality. Reproduction data were homogeneous using Bartlett's test at the 0.01 alpha level (15.09) without data transformations. Therefore, a parametric test was performed on the homogeneous data. Dunnett's test on *C. dubia* reproduction data demonstrated that there were no statistically significant differences between the control and any of the effluent concentrations.

**LOEC: Not Applicable**                      **PMSD: 10.4%**  
**NOEC: 82% Effluent**

**TEST SETUP**  
***Pimephales promelas***



The seven-day *Pimephales promelas* larval survival and growth test was initiated at 1520 hours, October 13, 2020. Five concentrations were prepared (26%, 35%, 46%, 62% and 82% effluent) utilizing distilled, deionized laboratory water reconstituted to match the hardness, alkalinity and pH of the receiving stream (Osage Creek). The test was conducted in 300 mL distilled water rinsed plastic beakers containing 250 mL of solution (eight organisms per beaker, five beakers per concentration). *P. promelas* larvae were less than 24-hours-old at test initiation and originated from a minimum of three in-house spawnings. Fresh solutions were prepared and renewed daily. Larvae in each test chamber were fed <24-hour-old *Artemia* (brine shrimp) three times per day. The test proceeded for seven days during which survival and water quality data were collected daily.

A control of five replicate beakers containing eight larvae each in distilled, deionized, reconstituted water (same as diluent) was conducted concurrently with the test. There was 100% survival in the control. The test ended at 1520 hours, October 20, 2020. At test termination, all larvae were sacrificed, dried for 24-hours, and weighed. Survival and growth (weight) data were statistically analyzed ( $p = 0.05$ ) according to EPA procedures to determine the Lowest Observable Effect Concentration (LOEC) and the No Observable Effect Concentration (NOEC).

**SURVIVAL**  
*Pimephales promelas*

There was 100% survival to *P. promelas* in all of the effluent concentrations tested. Therefore, statistical analyses were not required to determine a no effect concentration.

**LOEC: Not Applicable**  
**NOEC: 82% Effluent**

**GROWTH**  
*Pimephales promelas*

*P. promelas* growth data were normally distributed at the 0.01 alpha level (0.900) using Shapiro Wilk's test for normality. Growth data were homogeneous using Bartlett's test at the 0.01 alpha level (15.09) without data transformations. Therefore, a parametric test was performed on the homogeneous data. Dunnett's test on *P. promelas* growth data demonstrated that there were no statistically significant differences between the control and any of the effluent concentrations.

**LOEC: Not Applicable**                      **PMSD: 7.9%**  
**NOEC: 82% Effluent**

**SUMMARY**

There were no statistically significant differences between the control and the critical low flow concentration (82% effluent) for *C. dubia* survival and reproduction and *P. promelas* survival and growth. Based on biomonitoring requirements for Outfall 001 contained in Permit Number NPDES AR0043397 for City of Rogers, Outfall 001 **passed** for this testing period.

Huthner and Associates  
7-Day/3 Brood *Ceriodaphnia dubia* Survival and Reproduction Chronic Toxicity Test

CLIENT City of Rogers  
 NPDES # AR0043397  
 LAB ID # 31978  
 TEST TYPE 7 Day Chronic  
 TEST ORGANISM *Ceriodaphnia dubia*  
 ORGANISM AGE < 24-Hours  
 ORGANISM SOURCE In House  
 RECEIVING WATER Osage Creek  
 DILUTION WATER Laboratory

SAMPLE TYPE 24 Hour Composite  
 DATE COLLECTED 10/12/20 10/14/20 10/16/20  
 DATE RECEIVED 10/13/20 10/15/20 10/17/20  
 BEGIN DATE/TIME 10/13/20 1345  
 END DATE/TIME 10/20/20 1345  
 TEST TEMPERATURE (°C) 25 ± 1  
 PHOTO PERIOD 16-hr. Light 8-hr. Dark  
 LIGHT INTENSITY 50-100 ft. candl.  
 TECHNICIAN D. Kaiser

**SURVIVAL & REPRODUCTION SUMMARY**

Control											
Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10	
10/14/20	A	A	A	A	A	A	A	A	A	A	
	0	0	0	0	0	0	0	0	0	0	
10/15/20	A	A	A	A	A	A	A	A	A	A	
	0	0	0	0	0	0	0	0	0	0	
10/16/20	A	A	A	A	A	A	A	A	A	A	
	0	0	0	0	0	0	0	0	0	0	
10/17/20	4	4	2	3	3	2	4	5	2	2	
	4	4	2	3	3	2	4	5	2	2	
10/18/20	A	A	A	A	A	A	A	A	A	A	
	4	4	2	3	3	2	4	5	2	2	
10/19/20	9	10	7	9	6	7	8	11	10	11	
	13	14	9	12	9	9	12	16	12	13	
10/20/20	14	13	13	12	13	12	12	13	14	12	
	27	27	22	24	22	21	24	29	26	25	
x# Young 24.7                      C.V. 10.46% x%Survival 100%                  C.V. 0.00%											

26%Effluent											
Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10	
10/14/20	A	A	A	A	A	A	A	A	A	A	
	0	0	0	0	0	0	0	0	0	0	
10/15/20	A	A	A	A	A	A	A	A	A	A	
	0	0	0	0	0	0	0	0	0	0	
10/16/20	A	A	A	A	A	A	A	A	A	A	
	0	0	0	0	0	0	0	0	0	0	
10/17/20	2	5	5	3	3	3	4	3	5	2	
	2	5	5	3	3	3	4	3	5	2	
10/18/20	A	A	A	A	A	A	A	A	A	A	
	2	5	5	3	3	3	4	3	5	2	
10/19/20	9	10	7	8	10	6	8	11	6	9	
	11	15	12	11	13	9	12	14	11	11	
10/20/20	12	13	13	13	13	12	14	12	12	13	
	23	28	25	24	26	21	26	26	23	24	
x# Young 24.6                      C.V. 8.18% x%Survival 100%                  C.V. 0.00%											

35%Effluent											
Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10	
10/14/20	A	A	A	A	A	A	A	A	A	A	
	0	0	0	0	0	0	0	0	0	0	
10/15/20	A	A	A	A	A	A	A	A	A	A	
	0	0	0	0	0	0	0	0	0	0	
10/16/20	A	A	A	A	A	A	A	A	A	A	
	0	0	0	0	0	0	0	0	0	0	
10/17/20	4	2	4	4	3	5	4	5	4	4	
	4	2	4	4	3	5	4	5	4	4	
10/18/20	A	A	A	A	A	A	A	A	A	A	
	4	2	4	4	3	5	4	5	4	4	
10/19/20	7	7	9	8	10	11	7	6	8	10	
	11	9	13	12	13	16	11	11	12	14	
10/20/20	12	12	13	14	13	13	12	12	12	14	
	23	21	26	26	26	29	23	23	24	28	
x# Young 24.9                      C.V. 10.10% x%Survival 100%                  C.V. 0.00%											

46%Effluent											
Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10	
10/14/20	A	A	A	A	A	A	A	A	A	A	
	0	0	0	0	0	0	0	0	0	0	
10/15/20	A	A	A	A	A	A	A	A	A	A	
	0	0	0	0	0	0	0	0	0	0	
10/16/20	A	A	A	A	A	A	A	A	A	A	
	0	0	0	0	0	0	0	0	0	0	
10/17/20	4	5	2	2	3	5	4	5	3	2	
	4	5	2	2	3	5	4	5	3	2	
10/18/20	A	A	A	A	A	A	A	A	A	A	
	4	5	2	2	3	5	4	5	3	2	
10/19/20	9	11	7	8	10	9	6	6	8	8	
	13	16	9	10	13	14	10	11	11	10	
10/20/20	13	12	13	13	12	14	12	12	13	12	
	26	28	22	23	25	28	22	23	24	22	
x# Young 24.3                      C.V. 9.71% x%Survival 100%                  C.V. 0.00%											

where: A = Alive  
 5 = Alive, 5 young  
 D = Dead  
 D5 = 5 Young, Female died

ex 1: 

A
4

 alive today  
 total young to date

ex 2: 

5
12

 alive, 5 young today  
 total young to date

Huthner and Associates  
7-Day/3 Brood *Ceriodaphnia dubia* Survival and Reproduction Chronic Toxicity Test

Rogers

Lab ID# 31978

Test Date: October 13, 2020

62% Effluent										
Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
10/14/20	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
10/15/20	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
10/16/20	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
10/17/20	5	5	4	2	2	2	3	3	2	5
	5	5	4	2	2	2	3	3	2	5
10/18/20	A	A	A	A	A	A	A	A	A	A
	5	5	4	2	2	2	3	3	2	5
10/19/20	9	10	7	6	6	10	9	11	7	8
	14	15	11	8	8	12	12	14	9	13
10/20/20	13	14	12	12	12	13	13	12	13	13
	27	29	23	20	20	25	25	26	22	26
x # Young 24.3                      C.V. 12.28% x%Survival 100%                      C.V. 0.00%										

82% Effluent										
Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
10/14/20	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
10/15/20	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
10/16/20	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
10/17/20	5	3	5	3	4	3	2	4	3	4
	5	3	5	3	4	3	2	4	3	4
10/18/20	A	A	A	A	A	A	A	A	A	A
	5	3	5	3	4	3	2	4	3	4
10/19/20	9	8	10	8	7	7	6	9	9	11
	14	11	15	11	11	10	8	13	12	15
10/20/20	12	14	13	13	13	12	12	13	14	12
	26	25	28	24	24	22	20	26	26	27
x # Young 24.8                      C.V. 9.65% x%Survival 100%                      C.V. 0.00%										

where: A = Alive  
 5 = Alive, 5 young  
 D = Dead  
 D5 = 5 Young, Female died

ex 1: 

A
4

 alive today  
 total young to date

ex 2: 

5
12

 alive, 5 young today  
 total young to date

Huthner and Associates  
7-Day/3 Brood *Ceriodaphnia dubia* Survival and Reproduction Chronic Toxicity Test

Rogers

Lab ID# 31978

Test Date: October 13, 2020

**WET CHEMISTRY MEASUREMENTS**

Date	Time	Temp	Samp. No.	pH of Solution						Analyst
				CON	26%	35%	46%	62%	82%	
10/13/20	Start	25.0	1	7.91	7.81	7.75	7.71	7.65	7.59	RH
10/14/20	24 Hr.	24.4	1	8.04	7.96	8.04	7.91	7.88	7.86	LM
10/14/20	Renew	24.1	1	7.87	7.87	7.84	7.81	7.80	7.79	LM
10/15/20	48 Hr.	24.9	1	7.55	7.52	7.51	7.51	7.52	7.54	RH
10/15/20	Renew	25.0	2	7.40	7.42	7.44	7.43	7.43	7.42	RH
10/16/20	72 Hr.	24.1	2	7.80	7.76	7.76	7.76	7.77	7.80	LM
10/16/20	Renew	24.0	2	7.86	7.74	7.67	7.67	7.65	7.64	LM
10/17/20	96 Hr.	24.0	2	7.61	7.68	7.70	7.73	7.75	7.77	LM
10/17/20	Renew	25.0	3	7.54	7.54	7.54	7.60	7.64	7.65	LM
10/18/20	120 Hr.	25.1	3	7.98	7.85	7.82	7.74	7.74	7.73	LM
10/18/20	Renew	24.7	3	7.51	7.43	7.38	7.41	7.38	7.37	LM
10/19/20	144 Hr.	24.4	3	7.81	7.79	7.79	7.77	7.76	7.77	LM
10/19/20	Renew	24.1	3	7.86	7.82	7.80	7.79	7.77	7.78	LM
10/20/20	168 Hr.	24.3	3	8.24	8.28	8.26	8.25	8.26	8.25	RH

Date	Time	Temp	Samp. No.	DO (mg/L) of Solution						Analyst
				CON	26%	35%	46%	62%	82%	
10/13/20	Start	25.0	1	8.45	8.02	8.50	8.55	8.48	8.64	RH
10/14/20	24 Hr.	24.4	1	8.30	8.57	8.64	7.93	8.62	8.03	LM
10/14/20	Renew	24.1	1	7.89	8.48	8.59	7.68	8.44	8.48	LM
10/15/20	48 Hr.	24.9	1	8.29	8.47	8.34	8.27	8.27	8.35	RH
10/15/20	Renew	25.0	2	7.61	7.81	7.89	7.78	8.06	8.09	RH
10/16/20	72 Hr.	24.1	2	8.48	7.87	8.14	8.41	7.99	8.60	LM
10/16/20	Renew	24.0	2	8.31	8.23	8.27	7.96	7.98	8.15	LM
10/17/20	96 Hr.	24.0	2	7.81	8.62	7.85	7.78	7.74	8.60	LM
10/17/20	Renew	25.0	3	7.69	8.19	7.98	7.25	8.48	8.48	LM
10/18/20	120 Hr.	25.1	3	7.79	8.51	8.55	7.25	7.75	7.35	LM
10/18/20	Renew	24.7	3	7.58	7.84	7.63	7.79	7.94	7.69	LM
10/19/20	144 Hr.	24.4	3	8.13	8.18	8.04	8.16	8.08	7.92	LM
10/19/20	Renew	24.1	3	8.17	7.88	8.35	7.85	7.78	8.63	LM
10/20/20	168 Hr.	24.3	3	7.68	8.63	7.91	8.03	8.21	8.09	RH



Huther and Associates  
7-Day/3 Brood *Ceriodaphnia dubia* Survival and Reproduction Chronic Toxicity Test

Rogers

Lab ID# 31978

Test Date: October 13, 2020

**INITIAL CHEMISTRY MEASUREMENTS @ 100% EFFLUENT**

Date	Samp. No.	pH <sup>1</sup>	DO <sup>1</sup>	Hardness mg/L CaCO <sub>3</sub> <sup>1</sup>	Alkalinity mg/L CaCO <sub>3</sub> <sup>1</sup>	Conduct. μS/cm <sup>1</sup>	Resid.Cl <sub>2</sub> mg/L <sup>1</sup>	Dechlor(mL) Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> mg/L <sup>1</sup>	Analyst
10/13/20	1	7.97	8.65	148	148	831	<0.01	N/A	RH
10/15/20	2	7.62	8.33	168	130	767	<0.01	N/A	RH
10/17/20	3	7.65	8.48	128	106	896	<0.01	N/A	LM
10/13/20	CON	7.91	8.45	104	64	370	-	-	MH

<sup>1</sup> Measurements taken in 100% solution.

*CERIODAPHNIA DUBIA* STATISTICAL ANALYSES  
 Reproduction

Summary Statistics on Transformed Data Table 1 of 2

Grp	Identification	N	Min	Max	Mean
1	Control	10	21.000	29.000	24.700
2	26% Effluent	10	21.000	28.000	24.600
3	35% Effluent	10	21.000	29.000	24.900
4	46% Effluent	10	22.000	28.000	24.300
5	62% Effluent	10	20.000	29.000	24.300
6	82% Effluent	10	20.000	28.000	24.800

Summary Statistics on Transformed Data Table 2 of 2

Grp	Identification	Variance	Sd	Sem	C.V.%
1	Control	6.678	2.584	0.817	10.46
2	26% Effluent	4.044	2.011	0.636	8.18
3	35% Effluent	6.322	2.514	0.795	10.10
4	46% Effluent	5.567	2.359	0.746	9.71
5	62% Effluent	8.900	2.983	0.943	12.28
6	82% Effluent	5.733	2.394	0.757	9.65

Chi-Square Test For Normality: Actual And Expected Frequencies

Interval	< -1.5	-1.5 to -0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
Expected	4.020	14.520	22.920	14.520	4.020
Observed	3	17	18	16	6

Calculated Chi-Square goodness of fit test statistic = 2.8646  
 Table Chi-Square value (alpha = 0.01) = 13.277

Data **Pass** normality test. Continue analysis.

Bartlett's Test For Homogeneity of Variance

Calculated B1 statistic = 1.42

Table Chi-square value = 15.09 (alpha = 0.01, DF = 5)  
 Table Chi-square value = 11.07 (alpha = 0.05, DF = 5)

Data **Pass** B1 homogeneity test at 0.01 level. Continue analysis.

ANOVA Table

SOURCE	DF	SS	MS	F
Between	5	3.200	0.640	0.103
Within (Error)	54	335.200	6.207	
Total	59	338.400		

Critical F value = 2.45 (0.05,5,40)  
 Since F < Critical F Fail to Reject Ho: All equal

Dunnnett's Test - Table 1 of 2 Ho:Control<Treatment

Grp	Identification	Mean		T Stat	Sig
		Transformed Mean	Calculated In Original Units		
1	Control	24.700	24.700		
2	26% Effluent	24.600	24.600	0.090	
3	35% Effluent	24.900	24.900	-0.179	
4	46% Effluent	24.300	24.300	0.359	
5	62% Effluent	24.300	24.300	0.359	
6	82% Effluent	24.800	24.800	-0.090	

Dunnnett table value = 2.31 (1 Tailed Value, P=0.05, DF=40,5)  
 No statistically significant difference

Dunnnett's Test - Table 2 of 2 Ho:Control<Treatment

Grp	Identification	Num of Reps	Minimum	Sig	Difference from Control
			Diff (In Orig. Units)	% of Control	
1	Control	10			
2	26% Effluent	10	2.574	10.4	0.100
3	35% Effluent	10	2.574	10.4	-0.200
4	46% Effluent	10	2.574	10.4	0.400
5	62% Effluent	10	2.574	10.4	0.400
6	82% Effluent	10	2.574	10.4	-0.100

Huthner and Associates  
7-Day *Pimephales promelas* Survival and Growth Chronic Toxicity Test

CLIENT	City of Rogers	SAMPLE TYPE	24 Hour Composite
NPDES #	AR0043397	DATE COLLECTED	10/12/20 10/14/20 10/16/20
LAB ID #	31978	DATE RECEIVED	10/13/20 10/15/20 10/17/20
TEST TYPE	7 Day Chronic	BEGIN DATE/TIME	10/13/20 1520
TEST ORGANISM	<i>Pimephales promelas</i>	END DATE/TIME	10/20/20 1520
ORGANISM AGE	< 24-Hours	TEST TEMPERATURE (°C)	25 ± 1
ORGANISM SOURCE	In House	PHOTO PERIOD	16-hr. Light 8-hr. Dark
RECEIVING WATER	Osage Creek	LIGHT INTENSITY	50-100 ft. candl.
DILUTION WATER	Laboratory	TECHNICIAN	J. Castillo

**SURVIVAL SUMMARY**

Conc.	10/14/20					10/15/20					10/16/20					10/17/20					10/18/20				
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
CON	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
26%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
35%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
46%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
62%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
82%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8

Conc.	10/19/20					10/20/20					x % Survival	C.V. %
	A	B	C	D	E	A	B	C	D	E		
CON	8	8	8	8	8	8	8	8	8	8	100.0	0.00
26%	8	8	8	8	8	8	8	8	8	8	100.0	0.00
35%	8	8	8	8	8	8	8	8	8	8	100.0	0.00
46%	8	8	8	8	8	8	8	8	8	8	100.0	0.00
62%	8	8	8	8	8	8	8	8	8	8	100.0	0.00
82%	8	8	8	8	8	8	8	8	8	8	100.0	0.00

**MEAN DRY WEIGHT PER REP**

% Effluent	Rep A	Rep B	Rep C	Rep D	Rep E	x	C.V. %
CON	0.4610	0.4490	0.4280	0.4830	0.4210	0.4484	5.60
26%	0.4670	0.4560	0.4470	0.4730	0.4850	0.4656	3.17
35%	0.4820	0.4230	0.4650	0.4490	0.4760	0.4590	5.17
46%	0.4630	0.4870	0.4210	0.4680	0.4750	0.4628	5.41
62%	0.4880	0.4790	0.4860	0.4230	0.4460	0.4644	6.17
82%	0.4750	0.4520	0.4770	0.4830	0.4290	0.4632	4.85

Huthner and Associates  
7-Day *Pimephales promelas* Survival and Growth Chronic Toxicity Test

Rogers

Lab ID# 31978

Test Date: October 13, 2020

**WET CHEMISTRY MEASUREMENTS**

Date	Time	Temp	Samp. No.	pH of Solution						Analyst
				CON	26%	35%	46%	62%	82%	
10/13/20	Start	25.0	1	7.91	7.81	7.75	7.71	7.65	7.59	RH
10/14/20	24 Hr.	24.4	1	7.78	7.77	7.76	7.74	7.72	7.74	LM
10/14/20	Renew	24.1	1	7.87	7.87	7.84	7.81	7.80	7.79	LM
10/15/20	48 Hr.	25.2	1	7.72	7.69	7.70	7.72	7.66	7.66	RH
10/15/20	Renew	25.0	2	7.40	7.42	7.44	7.43	7.43	7.42	RH
10/16/20	72 Hr.	24.0	2	7.61	7.55	7.57	7.73	7.65	7.70	LM
10/16/20	Renew	24.0	2	7.86	7.74	7.67	7.67	7.65	7.64	LM
10/17/20	96 Hr.	24.0	2	7.65	7.64	7.65	7.70	7.70	7.70	LM
10/17/20	Renew	25.0	3	7.54	7.54	7.54	7.60	7.64	7.65	LM
10/18/20	120 Hr.	25.3	3	7.67	7.67	7.68	7.70	7.64	7.63	LM
10/18/20	Renew	24.7	3	7.51	7.43	7.38	7.41	7.38	7.37	LM
10/19/20	144 Hr.	24.4	3	7.38	7.44	7.54	7.49	7.51	7.39	LM
10/19/20	Renew	24.1	3	7.86	7.82	7.80	7.79	7.77	7.78	LM
10/20/20	168 Hr.	24.3	3	7.67	7.64	7.64	7.76	7.77	7.69	RH

Date	Time	Temp	Samp. No.	DO (mg/L) of Solution						Analyst
				CON	26%	35%	46%	62%	82%	
10/13/20	Start	25.0	1	8.45	8.02	8.50	8.55	8.48	8.64	RH
10/14/20	24 Hr.	24.4	1	8.61	8.21	8.04	8.56	8.44	8.13	LM
10/14/20	Renew	24.1	1	7.89	8.48	8.59	7.68	8.44	8.48	LM
10/15/20	48 Hr.	25.2	1	7.95	7.09	7.40	7.96	7.04	7.67	RH
10/15/20	Renew	25.0	2	7.61	7.81	7.89	7.78	8.06	8.09	RH
10/16/20	72 Hr.	24.0	2	7.72	7.69	7.97	7.46	7.66	8.40	LM
10/16/20	Renew	24.0	2	8.31	8.23	8.27	7.96	7.98	8.15	LM
10/17/20	96 Hr.	24.0	2	7.92	7.75	7.82	7.89	7.80	7.77	LM
10/17/20	Renew	25.0	3	7.69	8.19	7.98	7.25	8.48	8.48	LM
10/18/20	120 Hr.	25.3	3	7.21	8.54	8.12	7.50	7.67	7.76	LM
10/18/20	Renew	24.7	3	7.58	7.84	7.63	7.79	7.94	7.69	LM
10/19/20	144 Hr.	24.4	3	7.77	7.70	7.27	8.58	8.55	7.77	LM
10/19/20	Renew	24.1	3	8.17	7.88	8.35	7.85	7.78	8.63	LM
10/20/20	168 Hr.	24.3	3	7.67	7.92	7.01	7.19	8.45	7.29	RH

Huthier and Associates  
7-Day *Pimephales promelas* Survival and Growth Chronic Toxicity Test

Rogers

Lab ID# 31978

Test Date: October 13, 2020

**INITIAL CHEMISTRY MEASUREMENTS @ 100% EFFLUENT**

Date	Samp. No.	pH <sup>1</sup>	DO <sup>1</sup>	Hardness mg/L CaCO <sub>3</sub> <sup>1</sup>	Alkalinity mg/L CaCO <sub>3</sub> <sup>1</sup>	Conduct. $\mu$ S/cm <sup>1</sup>	Resid. Cl <sub>2</sub> mg/L <sup>1</sup>	Dechlor(mL) Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> mg/L <sup>1</sup>	Analyst
10/13/20	1	7.97	8.65	148	148	831	<0.01	N/A	RH
10/15/20	2	7.62	8.33	168	130	767	<0.01	N/A	RH
10/17/20	3	7.65	8.48	128	106	896	<0.01	N/A	LM
10/13/20	CON	7.91	8.45	104	64	370	-	-	MH

<sup>1</sup> Measurements taken in 100% solution.

*PIMEPHALES PROMELAS* STATISTICAL ANALYSES  
 Growth

Summary Statistics on Transformed Data Table 1 of 2

Grp	Identification	N	Min	Max	Mean
1	Control	5	0.421	0.483	0.448
2	26% Effluent	5	0.447	0.485	0.466
3	35% Effluent	5	0.423	0.482	0.459
4	46% Effluent	5	0.421	0.487	0.463
5	62% Effluent	5	0.423	0.488	0.464
6	82% Effluent	5	0.429	0.483	0.463

Summary Statistics on Transformed Data Table 2 of 2

Grp	Identification	Variance	Sd	Sem	C.V.%
1	Control	0.001	0.025	0.011	5.60
2	26% Effluent	0.000	0.015	0.007	3.17
3	35% Effluent	0.001	0.024	0.011	5.17
4	46% Effluent	0.001	0.025	0.011	5.41
5	62% Effluent	0.001	0.029	0.013	6.17
6	82% Effluent	0.001	0.022	0.010	4.85

Shapiro - Wilk's Test For Normality

D = 0.013

W = 0.929

Critical W (P = 0.05) (n = 30) = 0.927

Critical W (P = 0.01) (n = 30) = 0.900

Data **Pass** normality test at P=0.01 level. Continue analysis.

Bartlett's Test For Homogeneity of Variance

Calculated B1 statistic = 1.59

Table Chi-square value = 15.09 (alpha = 0.01, DF = 5)

Table Chi-square value = 11.07 (alpha = 0.05, DF = 5)

Data **Pass** B1 homogeneity test at 0.01 level. Continue analysis.

ANOVA Table

SOURCE	DF	SS	MS	F
Between	5	0.001	0.000	0.361
Within (Error)	24	0.013	0.001	
Total	29	0.014		

Critical F value = 2.62 (0.05,5,24)

Since F < Critical F Fail to Reject Ho: All equal

Dunnett's Test - Table 1 of 2 Ho:Control<Treatment

Grp	Identification	Mean		T Stat	Sig
		Transformed Mean	Calculated In Original Units		
1	Control	0.448	0.448		
2	26% Effluent	0.466	0.466	-1.148	
3	35% Effluent	0.459	0.459	-0.708	
4	46% Effluent	0.463	0.463	-0.961	
5	62% Effluent	0.464	0.464	-1.068	
6	82% Effluent	0.463	0.463	-0.988	

Dunnett table value = 2.36 (1 Tailed Value, P=0.05, DF=24,5)

**No statistically significant difference**

Dunnett's Test - Table 2 of 2 Ho:Control<Treatment

Grp	Identification	Num of Reps	Minimum	Sig	% of Control	Difference from Control
			Diff (In Orig. Units)			
1	Control	5				
2	26% Effluent	5	0.035	7.9	-0.017	
3	35% Effluent	5	0.035	7.9	-0.011	
4	46% Effluent	5	0.035	7.9	-0.014	
5	62% Effluent	5	0.035	7.9	-0.016	
6	82% Effluent	5	0.035	7.9	-0.015	

**APPENDIX A  
RAW DATA**

7-DAY CERIODAPHNIA DUBIA SURVIVAL & REPRODUCTION

DAILY RAW DATA TABLE

PAGE 1 OF 2

CLIENT Regers  
 OUTFALL 001  
 LAB ID # 31978

START DATE/TIME 10-13-20 DIL 1345  
 END DATE/TIME 10-20-20 DIL 1345

Con

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
10/14	A	A	A	A	A	A	A	A	A	A	DIL	1345
10/15	A	A	A	A	A	A	A	A	A	A	DIL	1515
10/16	A	A	A	A	A	A	A	A	A	A	MH	1300
10/17	4	4	2	3	3	2	4	5	2	2	DIL	1345
10/18	A	A	A	A	A	A	A	A	A	A	DIL	1300
10/19	9	10	7	9	6	7	8	11	10	11	TG	1645
10/20	14	13	13	12	13	12	12	13	14	12	DIL	1345
	27	27	22	24	22	21	24	29	26	25		

$\bar{x}$  # Young w/o Dead = 24.7 CV% = 10.46

$\bar{x}$  # Young w/Dead = CV% =

$\bar{x}$  % Survival = 100 CV% = 0.00

26

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
10/14	A	A	A	A	A	A	A	A	A	A	DIL	1345
10/15	A	A	A	A	A	A	A	A	A	A	DIL	1515
10/16	A	A	A	A	A	A	A	A	A	A	MH	1300
10/17	2	5	5	3	3	3	4	3	5	2	DIL	1345
10/18	A	A	A	A	A	A	A	A	A	A	DIL	1300
10/19	9	10	7	8	10	6	8	11	6	9	TG	1645
10/20	12	13	13	13	13	12	14	12	12	13	DIL	1345
	23	28	25	24	26	21	26	26	23	24		

$\bar{x}$  # Young w/o Dead = 24.6 CV% = 8.18

$\bar{x}$  # Young w/Dead = CV% =

$\bar{x}$  % Survival = 100 CV% = 0.00

35

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
10/14	A	A	A	A	A	A	A	A	A	A	DK	1345
10/15	A	A	A	A	A	A	A	A	A	A	DIL	1515
10/16	A	A	A	A	A	A	A	A	A	A	MH	1300
10/17	4	2	4	4	3	5	4	5	4	4	DIL	1345
10/18	A	A	A	A	A	A	A	A	A	A	DK	1300
10/19	7	7	9	8	10	11	7	6	8	10	TG	1645
10/20	12	12	13	14	13	13	12	12	12	14	DK	1345
	23	21	26	26	26	29	23	23	24	28		

$\bar{x}$  # Young w/o Dead = 24.9 CV% = 10.10

$\bar{x}$  # Young w/Dead = CV% =

$\bar{x}$  % Survival = 100 CV% = 0.00

46

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
10/14	A	A	A	A	A	A	A	A	A	A	DK	1345
10/15	A	A	A	A	A	A	A	A	A	A	DIL	1515
10/16	A	A	A	A	A	A	A	A	A	A	MH	1300
10/17	4	5	2	2	3	5	4	5	3	2	DIL	1345
10/18	A	A	A	A	A	A	A	A	A	A	DIL	1300
10/19	9	11	7	8	10	9	6	6	8	8	TG	1645
10/20	13	12	13	13	12	14	12	12	13	12	DK	1345
	26	28	22	23	25	28	22	23	24	22		

$\bar{x}$  # Young w/o Dead = 24.3 CV% = 9.71

$\bar{x}$  # Young w/Dead = CV% =

$\bar{x}$  % Survival = 100 CV% = 0.00



7-DAY CERIODAPHNIA DUBIA SURVIVAL & REPRODUCTION

DAILY RAW DATA TABLE

CLIENT Regers

START DATE/TIME 10-13-20 DIL 1345

OUTFALL 001

END DATE/TIME 10-20-20 DIL 1345

LAB ID # 31978

62

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
10/14	A	A	A	A	A	A	A	A	A	A	DK	1345
10/15	A	A	A	A	A	A	A	A	A	A	DK	1515
10/16	A	A	A	A	A	A	A	A	A	A	MH	1300
10/17	5	5	4	2	2	2	3	3	2	5	DK	1345
10/18	A	A	A	A	A	A	A	A	A	A	DK	1300
10/19	9	10	7	6	6	10	9	11	7	8	TG	1615
10/20	13	14	12	12	12	13	13	12	13	13	DK	1345
	27	29	23	20	20	25	25	26	22	26		

$\bar{x}$  # Young w/o Dead = 24.3 CV% = 12.2%

$\bar{x}$  # Young w/Dead = CV% =

$\bar{x}$  % Survival = 100 CV% = 0.00

82

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
10/14	A	A	A	A	A	A	A	A	A	A	DK	1345
10/15	A	A	A	A	A	A	A	A	A	A	DK	1515
10/16	A	A	A	A	A	A	A	A	A	A	MH	1300
10/17	5	3	5	3	4	3	2	4	3	4	DK	1345
10/18	A	A	A	A	A	A	A	A	A	A	DK	1300
10/19	9	8	10	8	7	7	6	9	9	11	TG	1615
10/20	12	14	13	13	13	12	12	13	14	12	DK	1345
	26	25	28	24	24	22	20	26	26	27		

$\bar{x}$  # Young w/o Dead = 24.8 CV% = 9.6%

$\bar{x}$  # Young w/Dead = CV% =

$\bar{x}$  % Survival = 100 CV% = 0.00

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time

$\bar{x}$  # Young w/o Dead = CV% =

$\bar{x}$  # Young w/Dead = CV% =

$\bar{x}$  % Survival = CV% =

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time

$\bar{x}$  # Young w/o Dead = CV% =

$\bar{x}$  # Young w/Dead = CV% =

$\bar{x}$  % Survival = CV% =

**7-DAY CHRONIC TOXICITY TEST  
PIMEPHALES PROMELAS (fathead minnow) SURVIVAL**

CLIENT/FACILITY: Rogers      DATE/TIME STARTED: 10.13.20 JC      1520  
 OUTFALL #: 001      PROJECT #: 31978      DATE/TIME ENDED: 10.20.20 JC      1520  
 ORGANISM ID#: PP0.20.286

Conc.	10.14.20 JC 1520					10.15.20 JC 935					10.16.20 TG 1450					10.17.20 JC 1200					10.18.20 JC 945									
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E					
Con	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
26	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
35	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
46	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
62	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
82	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Initials Date/Time																														

Conc.	10.19.20 TG 1105					10.20.20 JC 1520					Mean Survival	C.V. %
	A	B	C	D	E	A	B	C	D	E		
Con	8	8	8	8	8	8	8	8	8	8	100.0	0.00
26	8	8	8	8	8	8	8	8	8	8	100.0	0.00
35	8	8	8	8	8	8	8	8	8	8	100.0	0.00
46	8	8	8	8	8	8	8	8	8	8	100.0	0.00
62	8	8	8	8	8	8	8	8	8	8	100.0	0.00
82	8	8	8	8	8	8	8	8	8	8	100.0	0.00
Initials Date/Time	10.19.20 TG 1105					10.20.20 JC 1520						



Client / Facility Rogers  
 Lab ID Number 31978  
 Outfall Number 001  
 Test Date 10-13-20

INITIAL CHEMISTRY MEASUREMENTS @ 100% EFFLUENT

Date	Samp. No.	pH	DO	Hardness mg/L CaCO <sub>3</sub> †	Alkalinity mg/L CaCO <sub>3</sub> †	Conduct. umhos/cm †	Resid. Cl <sub>2</sub> mg/L †	Dechlor(mL) Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> mg/L †	Analyst
10-13-20	1	7.97	8.65	148	148	831	<0.01	N/A	RH
10-15-20	2	7.62	8.33	168	130	767	<0.01	N/A	RH
10-17-20	3	7.65	8.48	128	106	896	<0.01	N/A	LM
10-13-20	Con	7.91	8.45	104	64	370	—	—	MH

INITIAL CHEMISTRY MEASUREMENTS @ RECEIVING WATER

Date	Samp. No.	pH	DO	Hardness mg/L CaCO <sub>3</sub> †	Alkalinity mg/L CaCO <sub>3</sub> †	Conduct. umhos/cm †	Resid. Cl <sub>2</sub> mg/L †	Dechlor(mL) Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> mg/L †	Analyst

Notes:

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**APPENDIX B  
REFERENCE TOXICANTS**

**CHRONIC REFERENCE TOXICANT TEST RESULTS**

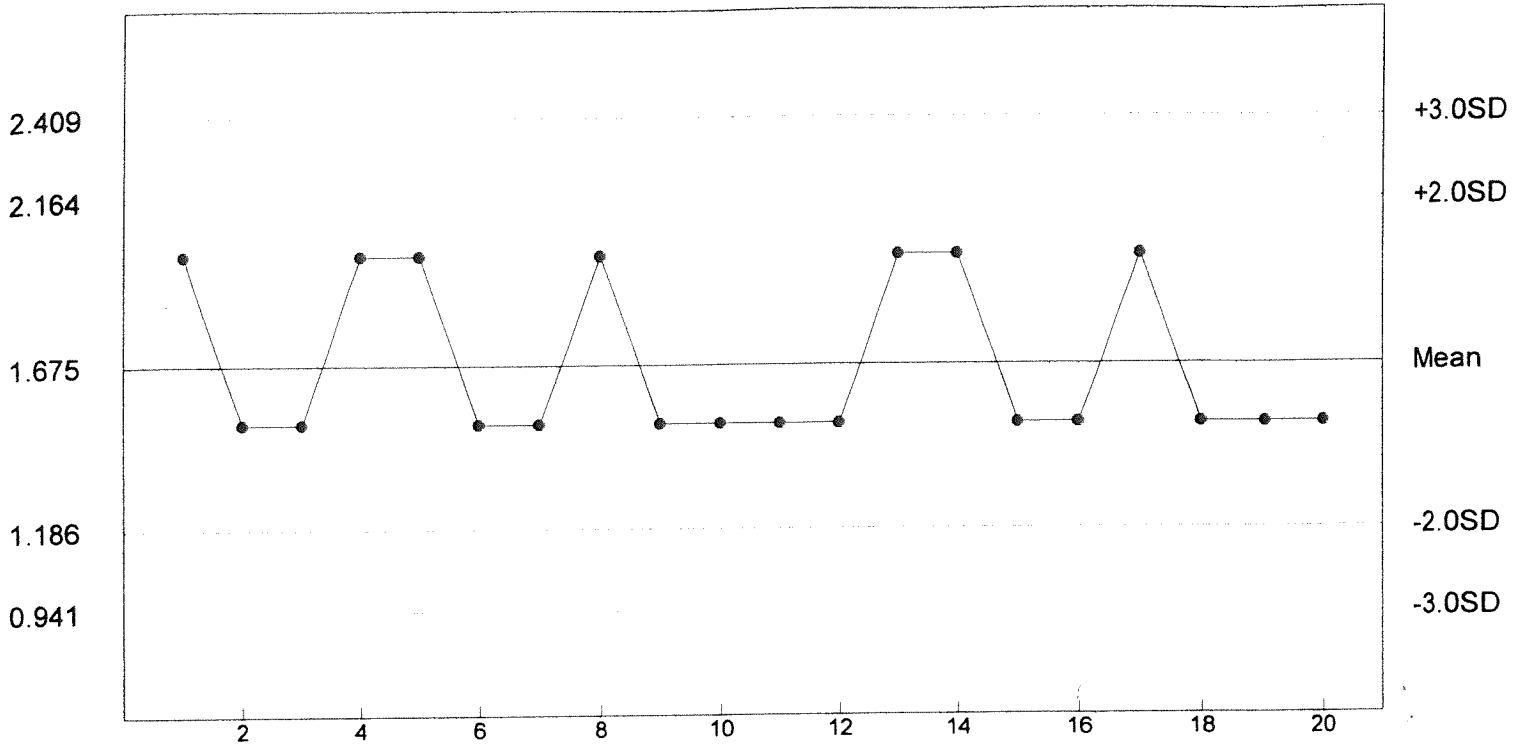
SPECIES: *Ceriodaphnia dubia*  
 CHEMICAL: Sodium Chloride  
 DURATION: 7-Days  
 TEST NUMBER: 10  
 TEST DATE: 10/01/20 - 10/08/20  
 1630 Hrs - 1630 Hrs  
 STATISTICAL METHOD: Dunnetts/Steels

CONCENTRATION (g/L)	NUMBER EXPOSED	NUMBER DEAD
0.5	10	0
1.0	10	0
1.5	10	1
2.0	10	6
2.5	10	10
3.0	10	10
4.0	10	10

LOEC FOR SURVIVAL	NOEC FOR SURVIVAL	LOEC FOR REPRODUCTION	NOEC FOR REPRODUCTION
<b>2.0 g/L</b>	<b>1.5 g/L</b>	<b>1.0 g/L</b>	<b>0.5 g/L</b>

Reference Tox Sodium Chloride g/L

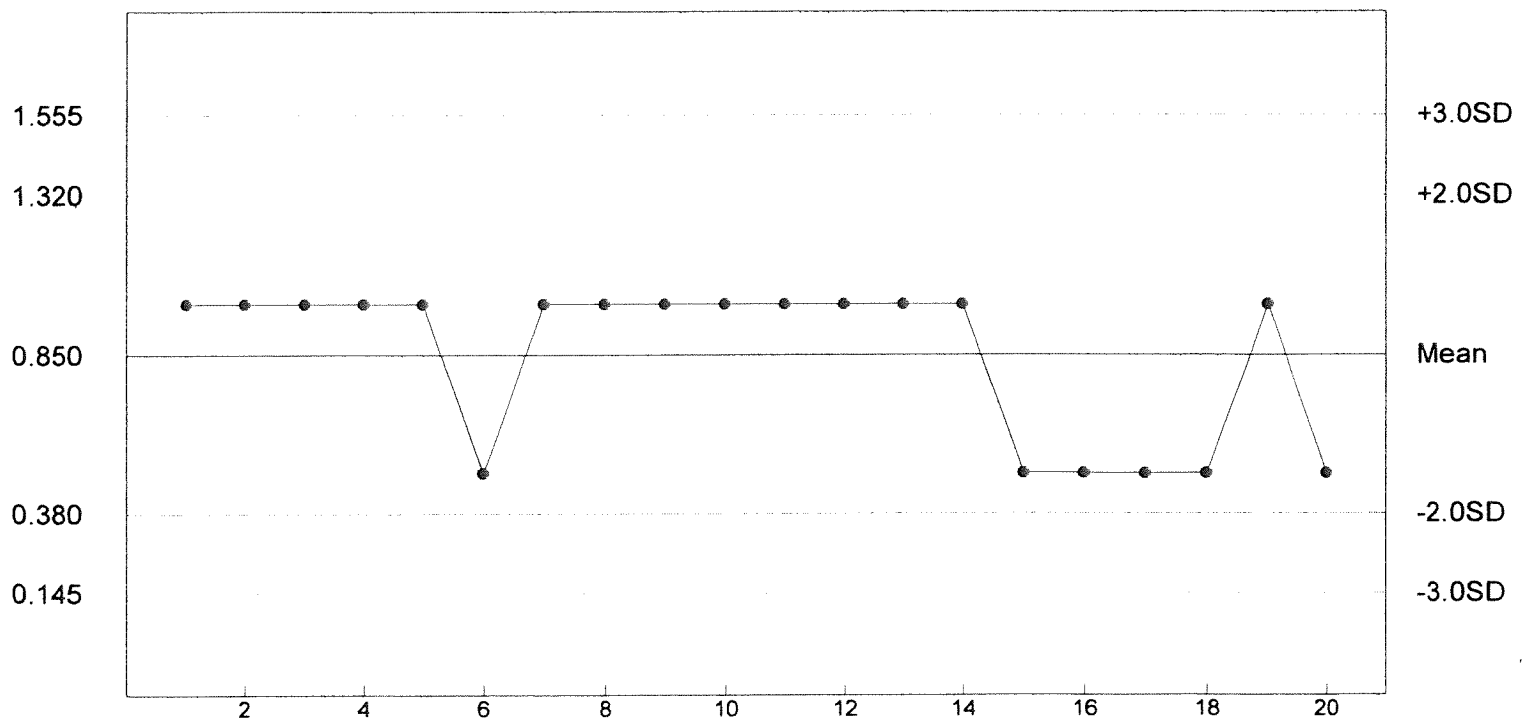
C. dubia Survival - NOEC



n= 20 Mean= 1.675 SD= 0.245 CV= 14.61% Min= 1.500 Max= 2.000

Reference Tox Sodium Chloride g/L

C. dubia Reproduction - NOEC



n= 20 Mean= 0.850 SD= 0.235 CV= 27.66% Min= 0.500 Max= 1.000

**CHRONIC REFERENCE TOXICANT TEST RESULTS**

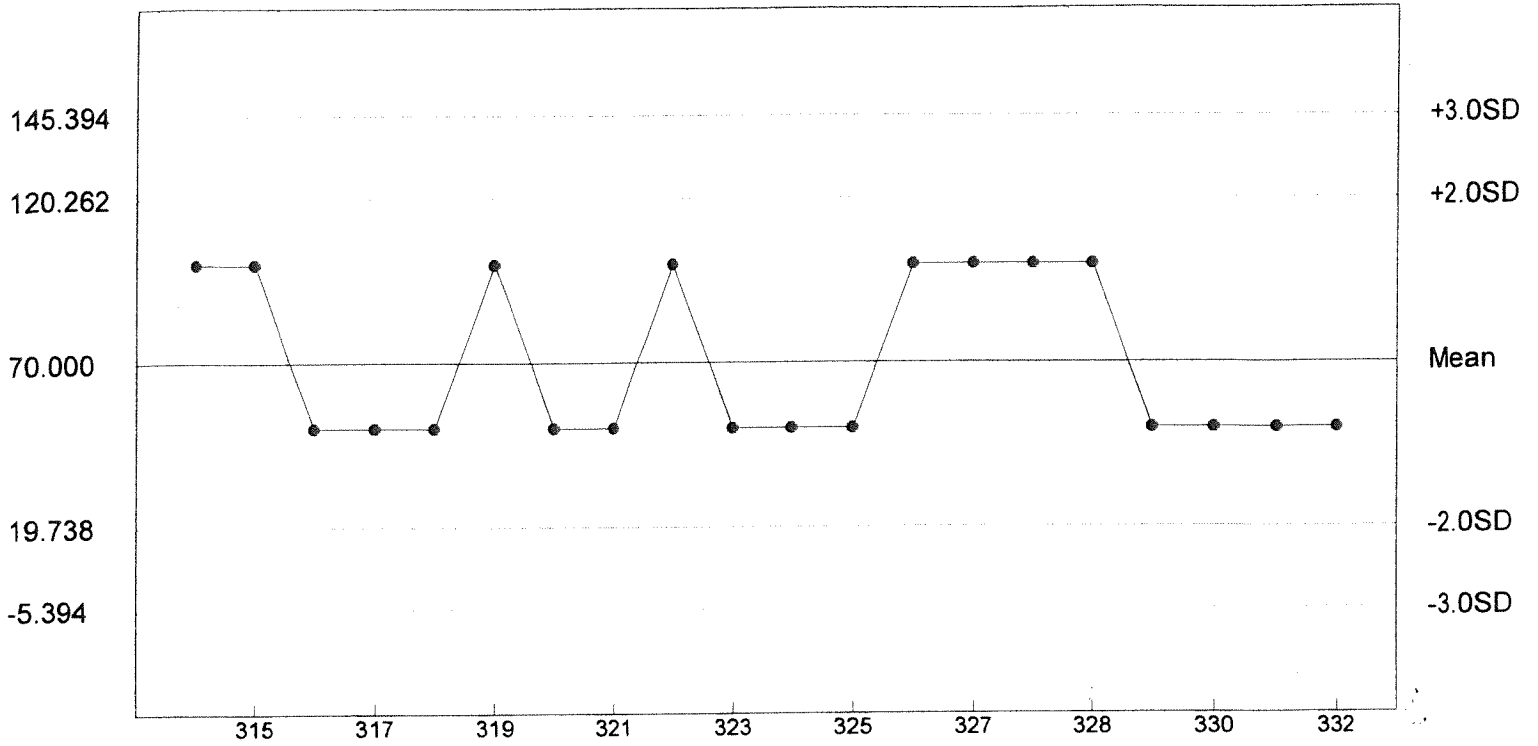
SPECIES: *Pimephales promelas*  
 CHEMICAL: Copper Nitrate  
 DURATION: 7-Days  
 TEST NUMBER: 10  
 TEST DATE: 10/01/20 - 10/08/20  
 1430 Hrs -1430 Hrs  
 STATISTICAL METHOD: Dunnetts/Steels

CONCENTRATION (ug/L)	NUMBER EXPOSED	NUMBER DEAD
12.5	40	0
25	40	0
50	40	0
100	40	14
200	40	21
400	40	40
800	40	40

LOEC FOR SURVIVAL	NOEC FOR SURVIVAL	LOEC FOR GROWTH	NOEC FOR GROWTH
<b>100 ug/L</b>	<b>50 ug/L</b>	<b>100 ug/L</b>	<b>50 ug/L</b>

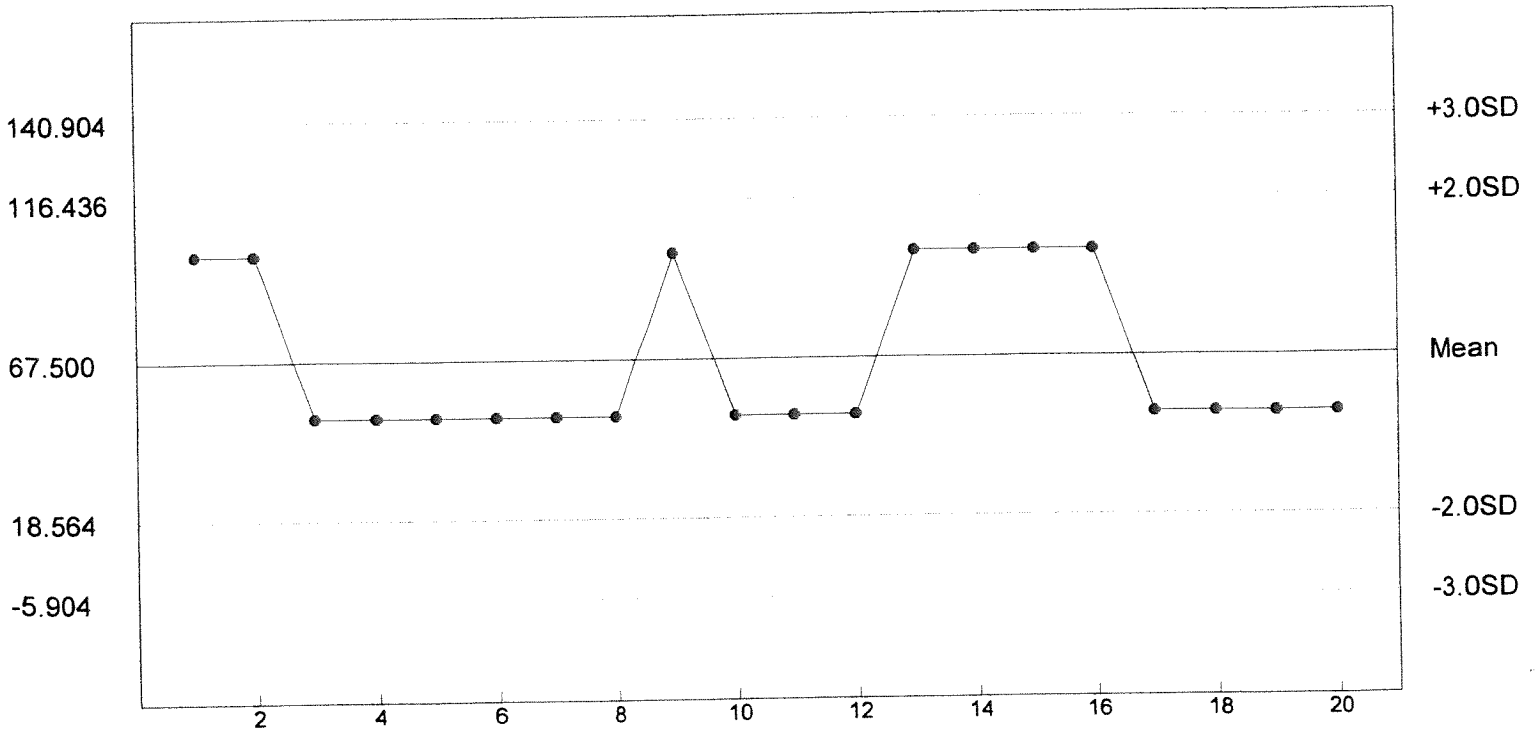


Reference Tox Copper Nitrate ug/L  
*P. promelas* Chronic Survival - NOEC



n= 20 Mean= 70.000 SD= 25.131 CV= 35.90% Min= 50.000 Max= 100.000

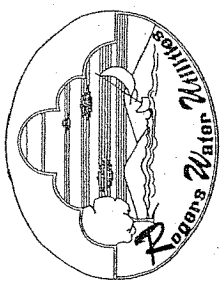
Reference Tox Copper Nitrate ug/L  
*P. promelas* Growth - NOEC



n= 20 Mean= 67.500 SD= 24.468 CV= 36.25% Min= 50.000 Max= 100.000

**APPENDIX C**  
**CHAIN OF CUSTODY SHEETS**

Rogers 31978 T2



ROGERS POLLUTION CONTROL FACILITY  
CHAIN OF CUSTODY

ANALYSES

SAMPLE DESCRIPTION	SAMPLE ID	COLLECTION		CONTAINER L	TYPE C/G	METH A/M	TEMP °C	T S D	C B O	N H 3	N O 2 & N O 3	T N P	P O 4	P H E N O L S	M E T A L S	T T O
		DATE	TIME													
Effluent		On: 10-11-20	0830	P	C	A	3.1									
Influent		Off: 10-12-20	0830	13												X
		On: 10-11-20	0836	P	C	A	2.9									
		Off: 10-12-20	0836	7												
		On: .....														
		Off: .....														
		On: .....														
		Off: .....														
Relinquished by:	Received by:	Date:	Time:	Relinquished by:	Received by:	Date:	Time:	Relinquished by:	Received by:	Date:	Time:	Relinquished by:	Received by:	Date:	Time:	
Matt Jollar		10-12-20														
Relinquished by:	Received by:	Date:	Time:	Relinquished by:	Received by:	Date:	Time:	Relinquished by:	Received by:	Date:	Time:	Relinquished by:	Received by:	Date:	Time:	

SAMPLER(S):

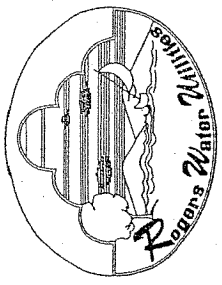
On: *[Signature]* Off: Matt Jollar

2.0°IRI

10-13-20 1015

- \* Metals: Ag, As, Be, Cd, Cr, Cu, Mo, Ni, Pb, Sb, Se, Ti, Zn (preserved with HNO<sub>3</sub>)
- \* WET: Whole Effluent Toxicity (Biomonitoring).
- \* TTO Scan: Table II - Organic Toxic Pollutants as defined by 40 CFR 122 appendix D. (Volatiles, Acid Compounds, Base / Neutral, Pesticides)
- \* NH<sub>3</sub>-N, TN, TP and O&G preserved with H<sub>2</sub>SO<sub>4</sub>
- \* CN preserved with NaOH
- \* PHENOL preserved with CuSO<sub>4</sub> + Phos Acid

Rogers 31978

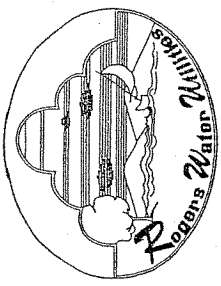


ROGERS POLLUTION CONTROL FACILITY  
CHAIN OF CUSTODY

ANALYSES

SAMPLE DESCRIPTION	SAMPLE ID	COLLECTION		CONTAINER		TYPE	METH A/M	TEMP °C	C B N O 2 & N O 3	T S O D S	P O & G	P H E N O L S	M E T A L S	W E T	T O
		DATE	TIME	L	G/P										
Effluent		On: 10-13-20	0830	15	P	C	A	2.9							
Influent		On: 10-13-20	0836	7	P	C	A	2.9							
		Off: 10-14-20	0830												
		On:													
		Off:													
		On:													
		Off:													
Relinquished by:	Received by:	Date:	Time:	Relinquished by:	Received by:	Date:	Time:	Relinquished by:	Received by:	Date:	Time:	Relinquished by:	Received by:	Date:	Time:
Matthew Dollar	Matthew Dollar	10-14-20													
Relinquished by:	Received by:	Date:	Time:	Relinquished by:	Received by:	Date:	Time:	Relinquished by:	Received by:	Date:	Time:	Relinquished by:	Received by:	Date:	Time:

COMMENTS: 3.0°C  
FedEx  
On: Matthew Dollar Off: Matthew Dollar  
SAMPLER(S):  
\* Metals: Ag, As, Be, Cd, Cr, Cu, Mo, Ni, Pb, Sb, Se, Ti, Zn (preserved with HNO<sub>3</sub>)  
\* WET: Whole Effluent Toxicity (Biomonitoring).  
\* TIO Scan: Table II - Organic Toxic Pollutants as defined by 40 CFR 122 appendix D. (Volatiles, Acid Compounds, Base / Neutral, Pesticides)  
\* NH<sub>3</sub>-N, TN, TP and O&G preserved with H<sub>2</sub>SO<sub>4</sub> \* CN preserved with NaOH \* PHENOL preserved with CuSO<sub>4</sub> + Phos Acid



**ROGERS POLLUTION CONTROL FACILITY  
CHAIN OF CUSTODY**

SAMPLE DESCRIPTION	SAMPLE ID	COLLECTION		CONTAINER		TYPE	METH A/M	TEMP °C
		DATE	TIME	L	G/P			
Effluent		On: 10-15-20	0830	15	P	C	A	3.6
		Off: 10-16-20	0830					
Influent		On: 10-15-20	0836	6	P	C	A	2.9
		Off: 10-16-20	0836					
		On: .....	.....					
		Off: .....	.....					
		On: .....	.....					
		Off: .....	.....					

ANALYSES		TSS	COD	BOD	NH3	NO2 & NO3	TP	TNP	PO4	P & G	NO2 & NO3	METALS	PHENOLS	METALS	WET	TTO
Relinquished by:	Received by:															
Relinquished by:	Received by:															

COMMENTS:  
1.80 IRL  
FeEx

SAMPLER(S):  
On: Off:

\* Metals: Ag, As, Be, Cd, Cr, Cu, Mo, Ni, Pb, Sb, Se, Tl, Zn (preserved with HNO<sub>3</sub>)  
 \* WET: Whole Effluent Toxicity (Biomonitoring).  
 \* TTO Scan: Table II - Organic Toxic Pollutants as defined by 40 CFR 122 appendix D. (Volatiles, Acid Compounds, Base / Neutral, Pesticides)  
 \* NH3-N, TN, TP and O&G preserved with H<sub>2</sub>SO<sub>4</sub> \* CN preserved with NaOH \* PHENOL preserved with CuSO<sub>4</sub> + Phos Acid

**CITY OF ROGERS  
 NPDES PERMIT NO. AR0043397  
 AFIN NUMBER: 04-00155  
 BIOMONITORING REPORTING  
 TEST DATE: 10/13/20**

**I. *Ceriodaphnia dubia***

**Response**

(A) If the NOEC for survival is less than the critical dilution, enter a "1"; otherwise, enter a "0". Parameter No. TLP3B.	0
(B) Report the NOEC value for survival, Parameter No. TOP3B.	82%
(C) Report the NOEC value for reproduction, Parameter No. TPP3B.	82%
(D) If the NOEC for reproduction is less than the critical dilution, enter a "1"; otherwise, enter a "0". Parameter No. TGP3B.	0
(E) Report the higher (critical dilution or control) Coefficient of Variation, Parameter No. TQP3B.	10.46%

**II. *Pimephales promelas* (fathead minnow)**

**Response**

(A) If the No Observed Effect Concentration (NOEC) for survival is less than the critical dilution, enter a "1"; otherwise, enter a "0". Parameter No. TLP6C.	0
(B) Report the NOEC value for survival, Parameter No. TOP6C.	82%
(C) Report the NOEC value for growth, Parameter No. TPP6C.	82%
(D) If the No Observed Effect Concentration (NOEC) for growth is less than the critical dilution, enter a "1"; otherwise, enter a "0". Parameter No. TGP6C.	0
(E) Report the highest (critical dilution or control) Coefficient of Variation, Parameter No. TQP6C.	5.60%
22414 - 10	82%
22414 - PO	82%