

April 22, 2016

Test Results of
Second Quarter
Chronic 7-Day Renewal
Biomonitoring Testing
for
Dumas

Control No. 201177-1

Prepared for:

Mr. Matt Bienvenu
McClelland Consulting Engineers, Inc.
Post Office Box 34087
Little Rock, AR 72203-4087

Prepared by:

AMERICAN INTERPLEX CORPORATION
8600 Kanis Road
Little Rock, AR 72204-2322



McClelland Consulting Engineers, Inc.
ATTN: Mr. Matt Bienvenu
Post Office Box 34087
Little Rock, AR 72203-4087

Re: Chronic 7-Day Renewal utilizing *Pimephales promelas* (Fathead minnow) and *Ceriodaphnia dubia*
- Dumas
NPDES Permit No. AR0033987 AFIN 21-00045

Dear Mr. Matt Bienvenu:

This report is the analytical results and supporting information for the samples submitted to American Interplex Corporation (AIC). The following results are applicable only to the sample identified by the control number referenced above. Accurate assessment of the data requires access to the entire document. Each section of the report has been reviewed and approved by the Chief Operating Officer or qualified designee.

Testing procedures and Quality Assurance were in accordance with "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" EPA-821-R-02-013, Fourth Edition, October 2002. Test results are summarized below:

Method 1000.0 Chronic *Pimephales promelas* (Fathead minnow) Survival and Growth Test: The No Observable Effects Concentration (NOEC) for survival occurred at 52 % effluent, which is above the critical dilution of 39 %. The NOEC for growth occurred at 52 % effluent, which is above the critical dilution of 39 %. **The sample, therefore, PASSED both lethal and sub-lethal effects for the Fathead minnow test.**

Method 1002.0 Chronic *Ceriodaphnia dubia* Survival and Reproduction Test: The No Observable Effects Concentration (NOEC) for survival occurred at 52 % effluent, which is above the critical dilution of 39 %. The NOEC for reproduction occurred at 52 % effluent, which is above the critical dilution of 39 %. **The sample, therefore, PASSED both lethal and sub-lethal effects for the *Ceriodaphnia dubia* test.**

AMERICAN INTERPLEX CORPORATION

John Overbey
Chief Operating Officer

PDF cc: McClelland Consulting Engineers, Inc.
ATTN: Mr. Matt Bienvenu
mbienvenu@mcclelland-engrs.com

McClelland Consulting Engineers, Inc.
ATTN: Mr. Dan Beranek
dberanek@mcclelland-engrs.com

McClelland Consulting Engineers, Inc.
ATTN: Mr. David Gregory
dgregory@mcclelland-engrs.com

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I. Control Acceptance Criteria

Pimephales promelas (Fathead minnow) Method 1000.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Growth > or = 0.25 mg per Surviving minnow	0.329	PASS
Control Growth CV < or = 40%	6.54	PASS
Growth Minimum Significant Difference 12 to 30%	16.6	PASS
Critical Dilution CV < or = 40%	7.78	PASS

Ceriodaphnia dubia Method 1002.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Reproduction > or = 15 per Surviving Female	25.9	PASS
Control CV < or = 40% per Surviving Female	8.23	PASS
Reproduction Minimum Significant Difference 13 to 47%	13.7	PASS
Critical Dilution CV < or = 40%	11.0	PASS

II. Outlined Report

A. Introduction

1. Permit Number: AR0033987 AFIN 21-00045
2. Test Requirements: Test Methods 1000.0 and 1002.0
3. Receiving Stream:

B. Source of Effluent/Dilution Water

1. Effluent Samples:
 - a. Sampling Point:
 - b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	8.8	7.3	7.6
pH (standard units)	6.9	7.6	7.5
Alkalinity (mg/l as CaCO ₃)	59	NA	NA
Hardness (mg/l as CaCO ₃)	22	NA	NA
Conductivity (umhos/cm)	270	300	260
Residual Chlorine (mg/l)	<0.05	NA	NA
Ammonia as N (mg/l)	2.3	NA	NA

2. Dilution Water Samples: Synthetic Moderately Hard Water #4319

- a. Dates Prepared: March 30 through April 13, 2016
- b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	8.3	7.8	7.8
pH (standard units)	7.5	7.7	7.9
Alkalinity (mg/l as CaCO ₃)	58	NA	NA
Hardness (mg/l as CaCO ₃)	83	NA	NA
Conductivity (umhos/cm)	350	330	330
Residual Chlorine (mg/l)	<0.05	NA	NA

C. Test Methods

1. Test methods used:

Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013; test Methods 1000.0 and 1002.0, Fathead Minnow Survival and Growth and *Ceriodaphnia dubia* Survival and Reproduction.

2. Endpoint: No Observable Effects Concentration (NOEC)

3. Test Conditions:

Pimephales promelas (Fathead minnow) Survival and Growth Method 1000.0

Date & Time Test Initiated: April 12, 2016 at 1610
Date & Time Test Terminated: April 19, 2016 at 1500
Type & Volume of Test Chamber: 500 ml disposable beaker
Volume of Sample: 250 ml
Number of Organisms per replicate: 8
Number of Replicates per dilution: 5

Ceriodaphnia dubia Survival and Growth Method 1002.0

Date & Time Test Initiated: April 12, 2016 at 1520
Date & Time Test Terminated: April 18, 2016 at 1435
Type & Volume of Test Chamber: 30 ml disposable beaker
Volume of Sample: 15 ml
Number of Organisms per replicate: 1
Number of Replicates per dilution: 10

4. Acclimation of test organisms: Obtained from in-house cultures

5. Test Temperature: 25 +/- 1 degree Celsius

D. Test Organisms

1. Scientific Name

- a. Test 1000.0 *Pimephales promelas*
- b. Test 1002.0 *Ceriodaphnia dubia*

III. Data Analysis

The data was analyzed using American Interplex Corporation's Laboratory Information Management Software based on Toxstat.

Pimephales promelas (Fathead minnow) survival data was transformed using the Arc Sine transformation. Normality and homogeneity of variance were checked using Shapiro-Wilk's. The survival data was then analyzed using Steel's Many-One Rank Test to determine the No Observable Effects Concentration (NOEC).

Fathead minnow growth data was analyzed for normality and homogeneity of variance using Shapiro-Wilk's and Bartlett's test. Dunnett's Test was used to determine the No Observable Effects Concentration (NOEC) for growth.

Ceriodaphnia dubia survival data was analyzed with Fisher's Exact Test. Reproduction data was analyzed using Kolmogorov's Test for Normality and analyzed with Steel's Many-One Rank Test to determine the No Observable Effects Concentration (NOEC) for Reproduction. Dunnett's Test was used to calculate the PMSD.

IV. Standard Reference Toxicants

American Interplex Corporation has an ongoing test organism culturing program. The sensitivity of the offspring is determined by performing a standard reference toxicant test with each effluent test. Sodium chloride in synthetic moderately hard water is used as prescribed in EPA-821-R-02-013.

Pimephales promelas (Fathead minnow)

Chronic reference tests are performed monthly.

A chronic reference test was performed on March 8, 2016 at 1450 to March 15, 2016 at 1355

The results were as follows: (Control No. 200209-1.)

Survival LC-50: 4819 mg/l

Growth IC-25: 4201 mg/l

Growth PMSD: 13.9

Ceriodaphnia dubia

Chronic reference tests are performed monthly.

A chronic reference test was performed on March 8, 2016 at 1540 to March 14, 2016 at 1355

The results were as follows: (Control No. 200209-2.)

Survival LC-50: 1732 mg/l

Growth IC-25: 1298 mg/l

Growth PMSD: 24.6

V. Chemical Analysis/Quality Control

Parameter	Method	% Recovery	Relative % Difference
Alkalinity	SM 2320 B	NA	0.00
Hardness	EPA 200.7	97.8	6.29
pH	SM 4500-H+ B	101	0.145
Conductivity	EPA 120.1	94.5	3.53

VI. Organism History

Pimephales promelas (Fathead minnow)

Date: April 12, 2016

Age: <24 hours

Source: In-house culture

Water Chemistry Record:

Alkalinity: 57-64 mg/l

Hardness: 80-100 mg/l

Temperature: 25 deg.C

Ceriodaphnia dubia

Date: April 12, 2016

Age: <24 hours

Source: In-house culture

Water Chemistry Record:

Alkalinity: 57-64 mg/l

Hardness: 80-100 mg/l

Temperature: 25 deg.C

VII. Results Summary *Pimephales promelas*, Fathead minnow Larval Survival and Growth Test -- Method 1000.0

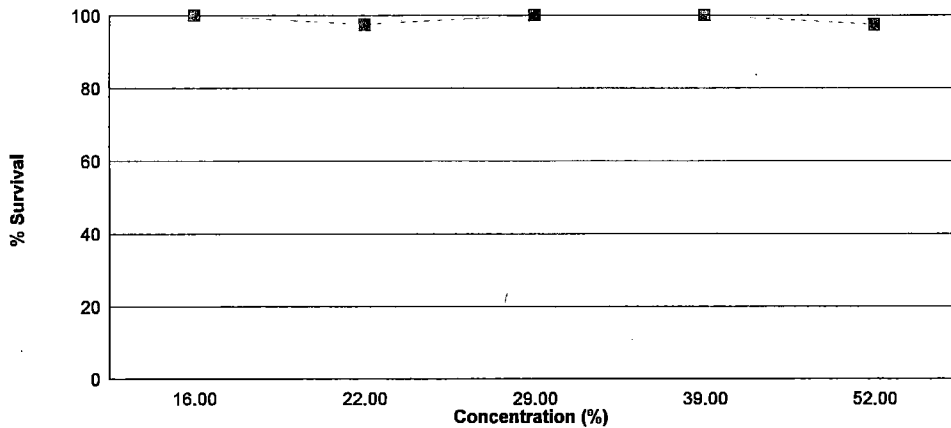
Larvae are exposed in a static renewal system for seven days to different concentrations of effluent with dilution water. Test results are based on the survival and growth (increase in weight) of the larvae.

Effluent dilutions for this test were 16 %, 22 %, 29 %, 39 %, 52 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 39 % effluent.

The test was initiated on April 12, 2016 at 1610 and continued through April 19, 2016 at 1500. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

- a.) NOEC survival = 52 % effluent
- b.) NOEC growth = 52 % effluent



Summary of the 7-day Fathead Minnow Survival and Growth		
Concentration	Percent Survival	Mean Growth (mg)
Control	100	0.329
16 %	100	0.313
22 %	97.5	0.352
29 %	100	0.352
39 %	100	0.339
52 %	97.5	0.338

VII. Results Summary *Ceriodaphnia dubia*, Cladoceran Survival and Reproduction Test -- Method 1002.0

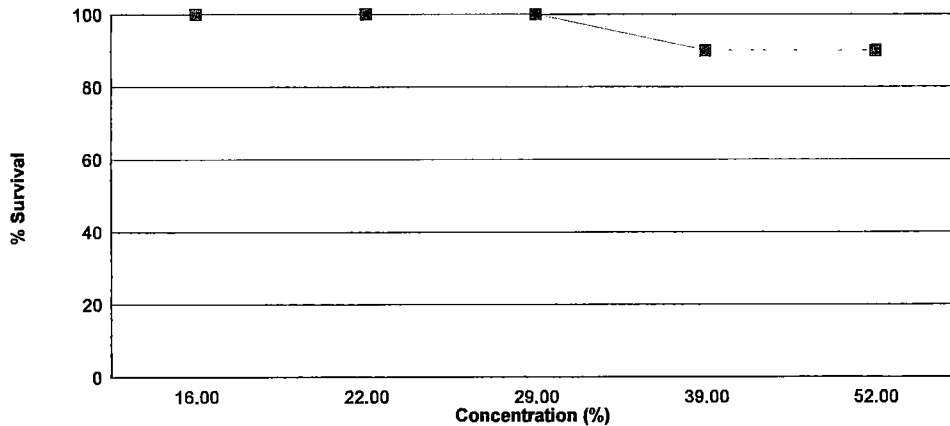
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring with an average of at least 15 young per female.

Effluent dilutions for this test were 16 %, 22 %, 29 %, 39 %, 52 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 39 % effluent.

The test was initiated on April 12, 2016 at 1520 and continued through April 18, 2016 at 1435. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

- a.) NOEC survival = 52 % effluent
- b.) NOEC reproduction = 52 % effluent



Summary of the 6-day <i>Ceriodaphnia dubia</i> Survival and Reproduction Data		
Concentration	Percent Survival	Mean Reproduction
Control	100	25.9
16 %	100	28.2
22 %	100	27.0
29 %	100	27.1
39 %	90.0	24.2
52 %	90.0	22.4

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Survival

Date and Time Test Initiated: April 12, 2016 at 1610
Date and Time Test Terminated: April 19, 2016 at 1500

Concentration Replicate		Number of Survivors						
		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
16 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
22 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	7
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
29 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
39 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
52 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	7	7
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Growth

Test Initiated: April 12, 2016 at 1610
Test Terminated: April 19, 2016 at 1500

Drying Started: April 15, 2016 at 1343
Drying Ended: April 20, 2016 at 1600

Concentration	Replicate	Weight of pan	Weight of pan + fish	Total weight of fish (g)	Original # of fish	Mean dry weight (mg)
Control	A	.94226	.94462	0.00236	8	0.295
	B	.94035	.94305	0.00270	8	0.338
	C	.94199	.94457	0.00258	8	0.322
	D	.94851	.95132	0.00281	8	0.351
	E	.94460	.94730	0.00270	8	0.338
16 %	A	.94728	.95010	0.00282	8	0.352
	B	.94127	.94382	0.00255	8	0.319
	C	.94048	.94266	0.00218	8	0.272
	D	.94228	.94435	0.00207	8	0.259
	E	.94348	.94638	0.00290	8	0.362
22 %	A	.93759	.94031	0.00272	8	0.340
	B	.94428	.94714	0.00286	8	0.358
	C	.93682	.93997	0.00315	8	0.394
	D	.93952	.94249	0.00297	8	0.371
	E	.93100	.93338	0.00238	8	0.298
29 %	A	.94943	.95218	0.00275	8	0.344
	B	.93744	.94031	0.00287	8	0.359
	C	.94550	.94818	0.00268	8	0.335
	D	.94928	.95214	0.00286	8	0.358
	E	.94418	.94708	0.00290	8	0.362
39 %	A	.94469	.94725	0.00256	8	0.320
	B	.94344	.94623	0.00279	8	0.349
	C	.94040	.94291	0.00251	8	0.314
	D	.94449	.94716	0.00267	8	0.334
	E	.94183	.94487	0.00304	8	0.380
52 %	A	.94658	.94943	0.00285	8	0.356
	B	.94041	.94298	0.00257	8	0.321
	C	.94292	.94544	0.00252	8	0.315
	D	.93889	.94107	0.00218	8	0.272
	E	.93377	.93718	0.00341	8	0.426

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: April 12, 2016 at 1520

Date and Time Test Terminated: April 18, 2016 at 1435

Concentration: Control														
Day	Replicate										No. of Young	No. of Adults	Young per Adult	
	1	2	3	4	5	6	7	8	9	10				
1	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	3	4	1	5	0	4	2	5	4	4	32	10	3.20	
4	0	0	0	0	5	0	0	9	0	7	21	10	2.10	
5	8	8	8	10	10	9	9	0	9	0	71	10	7.10	
6	13	15	13	12	14	15	13	13	13	14	135	10	13.5	
7														
8														
TOTAL	24	27	22	27	29	28	24	27	26	25	259	10	25.9	

Concentration: 16 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	4	0	5	4	2	4	3	4	5	6	37	10	3.70
4	0	4	0	0	0	0	0	11	0	12	27	10	2.70
5	8	9	11	11	8	11	10	0	11	0	79	10	7.90
6	14	13	16	15	13	12	11	16	14	15	139	10	13.9
7													
8													
TOTAL	26	26	32	30	23	27	24	31	30	33	282	10	28.2

Concentration: 22 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	3	0	5	5	0	5	4	5	5	4	36	10	3.60
4	0	4	0	0	3	0	0	0	0	0	7	10	0.700
5	9	10	11	10	10	9	10	0	9	11	89	10	8.90
6	15	13	14	14	13	12	16	12	14	15	138	10	13.8
7													
8													
TOTAL	27	27	30	29	26	26	30	17	28	30	270	10	27.0

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: April 12, 2016 at 1520
Date and Time Test Terminated: April 18, 2016 at 1435

Concentration: 29 %														
Day	Replicate										No. of Young	No. of Adults	Young per Adult	
	1	2	3	4	5	6	7	8	9	10				
1	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	4	0	5	0	0	4	5	3	3	1	25	10	2.50	
4	0	1	0	5	4	0	0	10	0	0	20	10	2.00	
5	8	9	10	10	10	11	10	0	10	13	91	10	9.10	
6	16	12	14	11	16	12	14	14	13	13	135	10	13.5	
7														
8														
TOTAL	28	22	29	26	30	27	29	27	26	27	271	10	27.1	

Concentration: 39 %														
Day	Replicate										No. of Young	No. of Adults	Young per Adult	
	1	2	3	4	5	6	7	8	9	10				
1	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	2	4	4	0	4	4	4	4	3	3	32	10	3.20	
4	0	0	0	0	0	0	0	9	0	0	9	10	0.900	
5	10	8	9	11	10	9	11	0	X	12	80	9	8.89	
6	13	12	15	12	14	13	14	11	X	17	121	9	13.4	
7														
8														
TOTAL	25	24	28	23	28	26	29	24	3	32	242	10	24.2	

Concentration: 52 %														
Day	Replicate										No. of Young	No. of Adults	Young per Adult	
	1	2	3	4	5	6	7	8	9	10				
1	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	4	0	4	0	4	3	0	4	4	5	28	10	2.80	
4	0	4	0	2	0	0	6	8	0	X	20	9	2.22	
5	11	8	10	10	10	6	8	0	9	X	72	9	8.00	
6	13	12	12	9	13	13	0	17	15	X	104	9	11.6	
7														
8														
TOTAL	28	24	26	21	27	22	14	29	28	5	224	10	22.4	

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Survival

Transformation of Data			Transform: Arc Sin(Square Root(Y))	
Group	Identification	Rep	Value	Transformed
1	Control	1	1.00000	1.39310
1	Control	2	1.00000	1.39310
1	Control	3	1.00000	1.39310
1	Control	4	1.00000	1.39310
1	Control	5	1.00000	1.39310
2	16 %	1	1.00000	1.39310
2	16 %	2	1.00000	1.39310
2	16 %	3	1.00000	1.39310
2	16 %	4	1.00000	1.39310
2	16 %	5	1.00000	1.39310
3	22 %	1	1.00000	1.39310
3	22 %	2	1.00000	1.39310
3	22 %	3	0.87500	1.20940
3	22 %	4	1.00000	1.39310
3	22 %	5	1.00000	1.39310
4	29 %	1	1.00000	1.39310
4	29 %	2	1.00000	1.39310
4	29 %	3	1.00000	1.39310
4	29 %	4	1.00000	1.39310
4	29 %	5	1.00000	1.39310
5	39 %	1	1.00000	1.39310
5	39 %	2	1.00000	1.39310
5	39 %	3	1.00000	1.39310
5	39 %	4	1.00000	1.39310
5	39 %	5	1.00000	1.39310
6	52 %	1	1.00000	1.39310
6	52 %	2	0.87500	1.20940
6	52 %	3	1.00000	1.39310
6	52 %	4	1.00000	1.39310
6	52 %	5	1.00000	1.39310

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Survival

Shapiro - Wilk's Test for Normality		Transform: Arc Sin(Square Root(Y))
<p>D = 0.05399 W = 0.5466 Critical W = 0.9 (alpha = 0.01, N = 30) Critical W = 0.927 (alpha = 0.05, N = 30)</p> <p>Data FAIL normality test (alpha = 0.01).</p>		

Steel's Many-One Rank Test				Transform: Arc Sin(Square Root(Y))	
Ho:Control<Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	16 %	27.50	16.00	5.00	
3	22 %	25.00	16.00	5.00	
4	29 %	27.50	16.00	5.00	
5	39 %	27.50	16.00	5.00	
6	52 %	25.00	16.00	5.00	
Critical values are 1 tailed (k=5)					

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Growth

Shapiro - Wilk's Test for Normality	No Transformation
<p>D = 0.0322 W = 0.9774 Critical W = 0.9 (alpha = 0.01, N = 30) Critical W = 0.927 (alpha = 0.05, N = 30)</p> <p>Data PASS normality test (alpha = 0.01).</p>	

Bartlett's Test for Homogeneity of Variance	No Transformation
<p>Calculated B1 statistic = 9.761 Critical B = 15.086 (alpha = 0.01, df = 5)</p> <p>Data PASS B1 homogeneity test at 0.01 level.</p>	

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Growth

ANOVA Table				No Transformation
SOURCE	DF	SS	MS	F
Between	5	0.005519	0.001104	0.8227
Within (Error)	24	0.0322	0.001342	
Total	29	0.03772		
Critical F = 3.9 (alpha = 0.01, df = 5,24)				
2.62 (alpha = 0.05, df = 5,24)				
Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)				

Dunnett's Test - Table 1 of 2					No Transformation
Ho:Control<Treatment					
Group	Identification	Transformed Mean	Mean In Original Units	T Stat	Sig 0.05
1	Control	0.3288	0.3288		
2	16 %	0.3128	0.3128	0.6906	
3	22 %	0.3522	0.3522	-1.01	
4	29 %	0.3516	0.3516	-0.9841	
5	39 %	0.3394	0.3394	-0.4575	
6	52 %	0.338	0.338	-0.3971	
Dunnett's critical value = 2.36 (1 Tailed, alpha = 0.05, df = 5,24)					

Dunnett's Test - Table 2 of 2					No Transformation
Ho:Control<Treatment					
Group	Identification	Num of Reps	Min Sig Diff (In Orig. Units)	% of Control	Difference From Control
1	Control	5			
2	16 %	5	0.05468	16.6	0.016
3	22 %	5	0.05468	16.6	-0.0234
4	29 %	5	0.05468	16.6	-0.0228
5	39 %	5	0.05468	16.6	-0.0106
6	52 %	5	0.05468	16.6	-0.0092

Appendix A2: Statistics

Ceriodaphnia dubia Survival

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
16 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
22 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
29 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
39 %	9	1	10
Total	19	1	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 9. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Appendix A2: Statistics

Ceriodaphnia dubia Survival

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
52 %	9	1	10
Total	19	1	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 9. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Summary of Fisher's Exact Test				
Group	Identification	Exposed	Dead	Sig 0.05
0	Control	10	0	
1	16 %	10	0	
2	22 %	10	0	
3	29 %	10	0	
4	39 %	10	1	
5	52 %	10	1	

Appendix A2: Statistics

Ceriodaphnia dubia Reproduction

Kolmogorov Test for Normality	No Transformation
<p>D = 0.1931 D* = 1.515 Critical D* = 1.035 (alpha = 0.01, N = 60)</p> <p>Data FAIL normality test (alpha = 0.01).</p>	

Steel's Many-One Rank Test					No Transformation
Ho:Control<Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	16 %	123.50	75.00	10.00	
3	22 %	125.00	75.00	10.00	
4	29 %	121.50	75.00	10.00	
5	39 %	104.50	75.00	10.00	
6	52 %	95.00	75.00	10.00	

Critical values are 1 tailed (k=5)

Appendix A2: Statistics

Ceriodaphnia dubia Reproduction

Dunnett's Test for PMSD Calculation (excluding deaths if applicable)

ANOVA Table				No Transformation	
SOURCE	DF	SS	MS	F	
Between	5	80.72	16.14	1.453	
Within (Error)	52	577.6	11.11		
Total	57	658.3			

Critical F = 3.39 (alpha = 0.01, df = 5,52)
2.39 (alpha = 0.05, df = 5,52)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

Dunnett's Test - Table 1 of 2					No Transformation	
Ho: Control < Treatment						
Group	Identification	Transformed Mean	Mean In Original Units	T Stat	Sig 0.05	
1	Control	25.9	25.9			
2	16 %	28.2	28.2	-1.543		
3	22 %	27	27	-0.7379		
4	29 %	27.1	27.1	-0.805		
5	39 %	26.556	26.556	-0.4283		
6	52 %	24.333	24.333	1.023		

Dunnett's critical value = 2.31 (1 Tailed, alpha = 0.05, df [used] = 5,40) (Actual df = 5,52)
WARNING - Unequal replicate sizes. Critical values assuming equal replicate sizes have been used.

Dunnett's Test - Table 2 of 2						No Transformation
Ho: Control < Treatment						
Group	Identification	Num of Reps	Min Sig Diff (In Orig. Units)	% of Control	Difference From Control	
1	Control	10				
2	16 %	10	3.443	13.3	-2.3	
3	22 %	10	3.443	13.3	-1.1	
4	29 %	10	3.443	13.3	-1.2	
5	39 %	9	3.538	13.7	-0.656	
6	52 %	9	3.538	13.7	1.567	

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

 Date and Time Test Initiated: April 12, 2016 at 1526
 Date and Time Test Terminated: April 19, 2016 at 1435

Effluent Conc.: Control		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.3	7.6	7.8	7.5	7.8	7.5	7.8
	Final *1	7.5	7.2	7.0	7.0	7.5	7.4	6.9
	Final *2	7.6	7.6	7.7	7.6	7.6	7.4	
pH, units	Initial	7.5	7.7	7.7	7.5	7.9	8.0	7.8
	Final *1	7.6	7.6	7.5	7.8	8.0	7.7	7.6
	Final *2	8.0	7.9	8.0	7.9	8.0	7.9	
Alkalinity, mg CaCO ₃ /l		58	NA	NA	NA	NA	NA	NA
Hardness, mg CaCO ₃ /l		83	NA	NA	NA	NA	NA	NA
Conductivity, umhos/cm		350	320	330	350	330	340	330
Res. Chlorine, mg/l		<0.05	NA	NA	NA	NA	NA	NA

Effluent Conc.: 16 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.7	7.8	7.2	7.5	7.7	7.4	7.6
	Final *1	7.6	7.2	7.1	7.2	7.5	7.3	6.5
	Final *2	7.7	7.7	7.9	7.5	7.6	7.8	
pH, units	Initial	7.4	7.6	7.7	7.6	7.9	8.0	7.6
	Final *1	7.6	7.6	7.5	7.7	8.0	7.6	7.4
	Final *2	7.9	8.0	8.0	7.8	8.0	8.0	

Effluent Conc.: 22 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.6	8.0	7.6	7.7	7.8	7.6	7.9
	Final *1	6.9	7.2	7.1	7.1	7.6	7.5	6.8
	Final *2	7.9	7.6	8.1	7.8	7.8	7.9	
pH, units	Initial	7.4	7.6	7.6	7.5	7.8	7.9	7.6
	Final *1	7.5	7.5	7.5	7.8	8.0	7.6	7.4
	Final *2	8.0	8.0	8.0	7.8	7.9	8.1	

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: April 12, 2016 at 1526

Date and Time Test Terminated: April 19, 2016 at 1435

Effluent Conc.: 29 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.5	7.7	7.5	7.6	7.6	7.6	7.6
	Final *1	7.2	7.0	7.2	7.2	7.4	7.4	6.7
	Final *2	7.7	7.6	7.8	7.6	7.8	7.7	
pH, units	Initial	7.3	7.6	7.6	7.5	7.8	7.9	7.5
	Final *1	7.6	7.5	7.6	7.7	8.0	7.6	7.4
	Final *2	7.8	8.0	8.0	7.8	8.0	8.0	

Effluent Conc.: 39 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.2	7.7	7.8	7.5	7.7	7.6	7.6
	Final *1	7.3	6.8	7.3	7.3	7.5	7.5	6.7
	Final *2	7.5	7.6	7.9	7.6	7.7	7.7	
pH, units	Initial	7.2	7.5	7.6	7.5	7.8	7.7	7.5
	Final *1	7.5	7.5	7.6	7.8	8.0	7.6	7.4
	Final *2	7.9	8.0	8.0	7.8	7.9	8.0	
Alkalinity, mg CaCO ₃ /l	61	NA	NA	NA	NA	NA	NA	NA
Hardness, mg CaCO ₃ /l	60	NA	NA	NA	NA	NA	NA	NA
Conductivity, umhos/cm	320	290	300	320	300	290	290	
Res. Chlorine, mg/l	<0.05	NA	NA	NA	NA	NA	NA	NA

Effluent Conc.: 52 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.4	7.7	7.6	7.5	7.7	7.2	7.4
	Final *1	7.6	7.2	7.2	7.1	7.4	7.3	6.5
	Final *2	7.5	7.6	7.9	7.5	7.4	7.8	
pH, units	Initial	7.2	7.5	7.5	7.4	7.7	7.8	7.4
	Final *1	7.6	7.6	7.6	7.7	7.9	7.6	7.4
	Final *2	7.8	8.0	8.1	7.7	7.9	8.0	

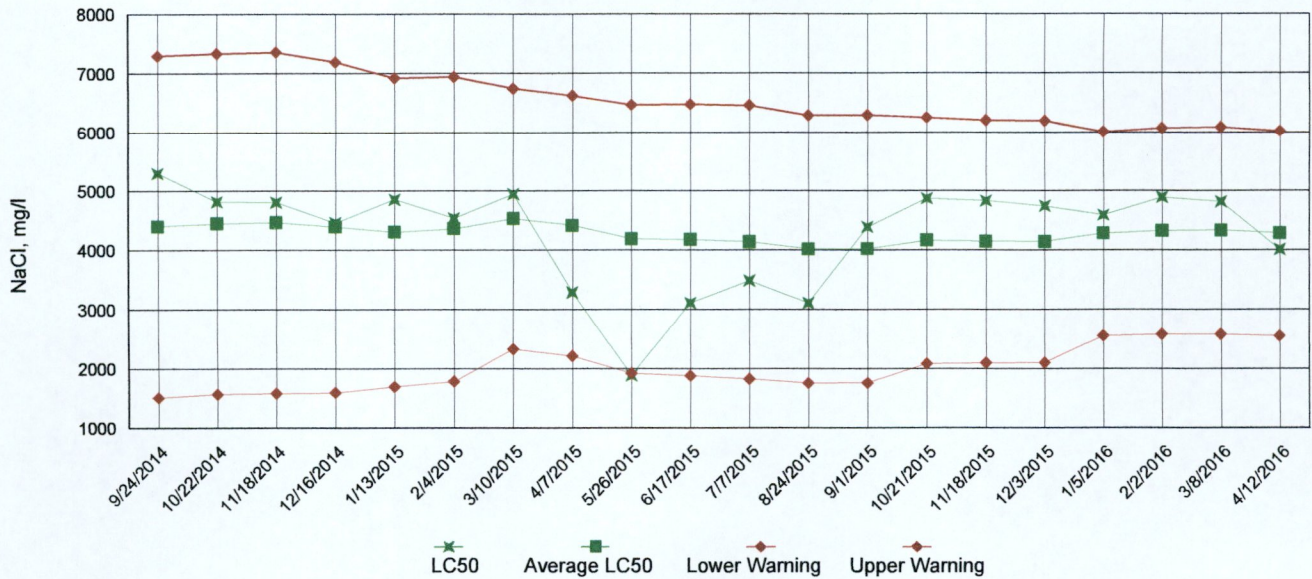
*1 = data from the *Pimephales promelas* (Fathead Minnow) test

*2 = data from the *Ceriodaphnia dubia* test

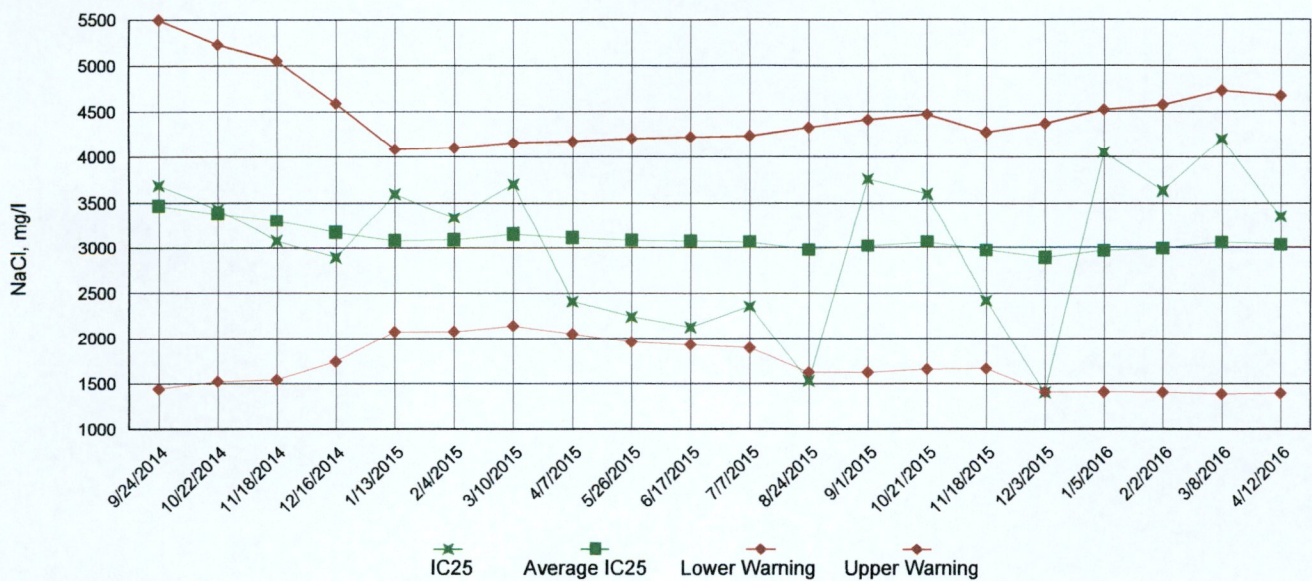
Appendix A4: Test 1000.0

Chronic Reference Toxicant, *Pimephales promelas* (Fathead Minnow)

LC50 Survival Data

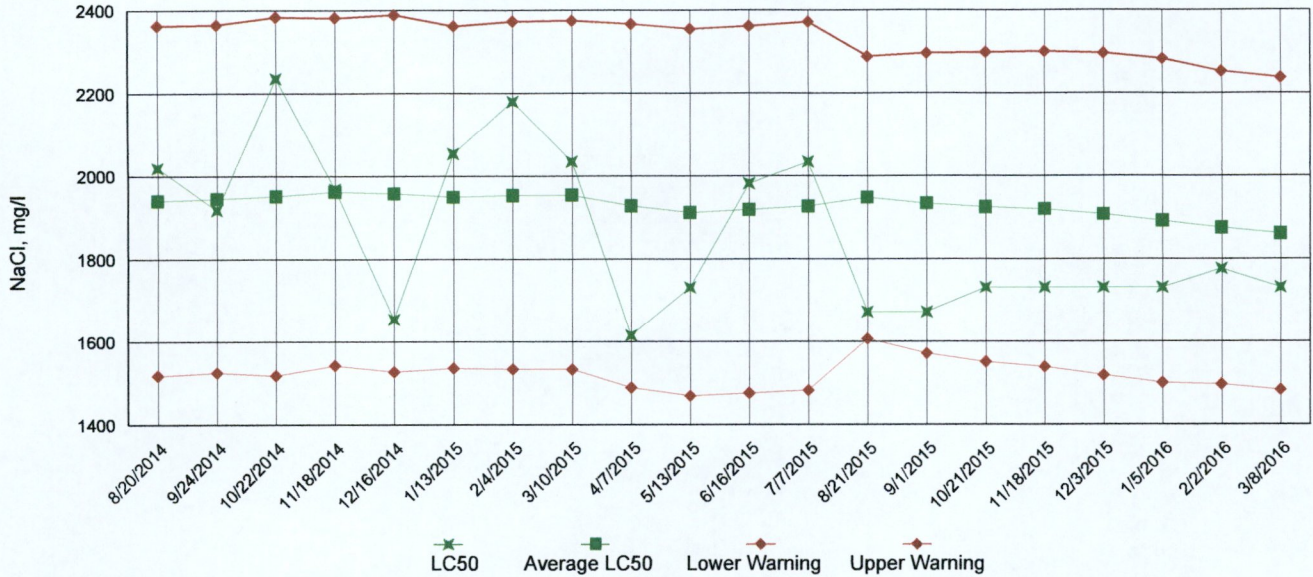


IC25 Growth Data

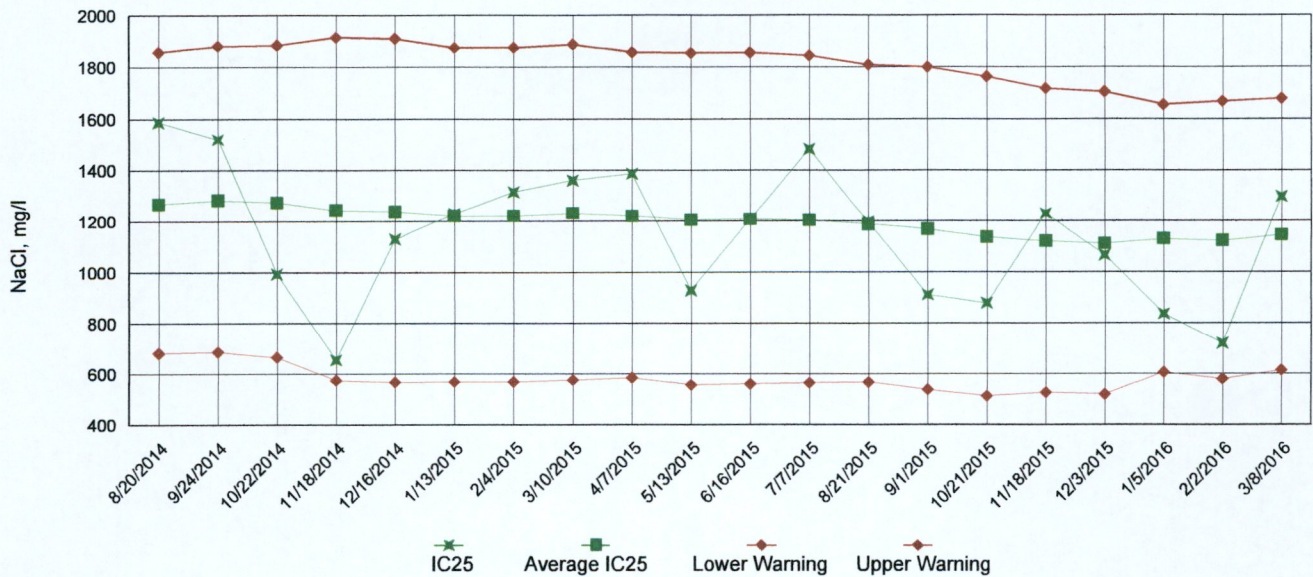


Appendix A4: Test 1002.0
Chronic Reference Toxicant, *Ceriodaphnia dubia*

LC50 Survival Data



IC25 Reproduction Data



Appendix B: Test 1000.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Pimephales promelas (Fathead Minnow)
SURVIVAL AND GROWTH

Permittee: McClelland Consulting Engineers, Inc.

NPDES No.: AR0033987 AFIN 21-00045

Date and Time Test Initiated: April 12, 2016 at 1610

Date and Time Test Terminated: April 19, 2016 at 1500

Dilution water used: Synthetic Moderately Hard Water #4319

DATA TABLE FOR SURVIVAL

Effluent Conc. %	Percent Survival in replicate chambers					Mean percent survival			CV%
	A	B	C	D	E	24 hr	48 hr	7 days	
Control	100	100	100	100	100	100	100	100	0.00
16 %	100	100	100	100	100	100	100	100	0.00
22 %	100	100	87.5	100	100	100	100	97.5	5.73
29 %	100	100	100	100	100	100	100	100	0.00
39 %	100	100	100	100	100	100	100	100	0.00
52 %	100	87.5	100	100	100	100	100	97.5	5.73

DATA TABLE FOR GROWTH

Effluent Conc. %	Average dry weight, mg replicate chambers					Mean dry weight, mg	CV%
	A	B	C	D	E		
Control	0.295	0.338	0.322	0.351	0.338	0.329	6.54
16 %	0.352	0.319	0.272	0.259	0.362	0.313	14.8
22 %	0.340	0.358	0.394	0.371	0.298	0.352	10.3
29 %	0.344	0.359	0.335	0.358	0.362	0.352	3.30
39 %	0.320	0.349	0.314	0.334	0.380	0.339	7.78
52 %	0.356	0.321	0.315	0.272	0.426	0.338	17.0

CV = Coefficient of variation = standard deviation * 100 / mean

Appendix B: Test 1000.0
SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Pimephales promelas (Fathead Minnow)
SURVIVAL AND GROWTH

1. Steel's Many-One Rank Test:

Is the mean survival significantly different ($p=0.05$) than the control survival for the % effluent corresponding to (lethality):

a.) LOW FLOW OR CRITICAL DILUTION	(39 %)	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<input type="checkbox"/> YES	<input type="checkbox"/> NO

2. Dunnett's Test:

Is the mean dry weight (growth) significantly different ($p=0.05$) than the control's dry weight (growth) for the % effluent corresponding to (significant non-lethal effects):

a.) LOW FLOW OR CRITICAL DILUTION	(39 %)	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<input type="checkbox"/> YES	<input type="checkbox"/> NO

3. If you answered NO to 1.a) enter [0] otherwise enter [1]: 0 (TLP6C)
4. If you answered NO to 2.a) enter [0] otherwise enter [1]: 0 (TGP6C)
5. NOEC *Pimephales* Lethality: 52 % (TOP6C)
6. LOEC *Pimephales* Lethality: 52 % (TXP6C)
7. NOEC *Pimephales* Sublethality: 52 % (TPP6C)
8. LOEC *Pimephales* Sublethality: 52 % (TYP6C)
9. Coefficient of variation for *Pimephales* growth: 7.78 (TQP6C)

Appendix B: Test 1000.0

CHRONIC TOXICITY SUMMARY FORM
Pimephales promelas (Fathead minnow)
CHEMICAL PARAMETERS CHART

PERMITTEE: McClelland Consulting Engineers,
NPDES NO.: AR0033987 AFIN 21-00045
CONTACT: Mr. Matt Bienvenu
ANALYST: 280, 304, 310, 314

Test Initiated: DATE: April 12, 2016 TIME: 1610
Test Terminated: DATE: April 19, 2016 TIME: 1500

DILUTION Control	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.3	7.6	7.8	7.5	7.8	7.5	7.8
Final	7.5	7.2	7.0	7.0	7.5	7.4	6.9
pH Initial	7.5	7.7	7.7	7.5	7.9	8.0	7.8
Final	7.6	7.6	7.5	7.8	8.0	7.7	7.6
Alkalinity	58	NA	NA	NA	NA	NA	NA
Hardness	83	NA	NA	NA	NA	NA	NA
Conductivity	350	320	330	350	330	340	330
Chlorine	<0.05	NA	NA	NA	NA	NA	NA

DILUTION 16 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.7	7.8	7.2	7.5	7.7	7.4	7.6
Final	7.6	7.2	7.1	7.2	7.5	7.3	6.5
pH Initial	7.4	7.6	7.7	7.6	7.9	8.0	7.6
Final	7.6	7.6	7.5	7.7	8.0	7.6	7.4
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	340	310	320	330	320	320	310
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 22 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.6	8.0	7.6	7.7	7.8	7.6	7.9
Final	6.9	7.2	7.1	7.1	7.6	7.5	6.8
pH Initial	7.4	7.6	7.6	7.5	7.8	7.9	7.6
Final	7.5	7.5	7.5	7.8	8.0	7.6	7.4
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	340	300	320	340	310	310	300
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 29 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.5	7.7	7.5	7.6	7.6	7.6	7.6
Final	7.2	7.0	7.2	7.2	7.4	7.4	6.7
pH Initial	7.3	7.6	7.6	7.5	7.8	7.9	7.5
Final	7.6	7.5	7.6	7.7	8.0	7.6	7.4
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	330	300	310	330	310	310	300
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 39 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.2	7.7	7.8	7.5	7.7	7.6	7.6
Final	7.3	6.8	7.3	7.3	7.5	7.5	6.7
pH Initial	7.2	7.5	7.6	7.5	7.8	7.7	7.5
Final	7.5	7.5	7.6	7.8	8.0	7.6	7.4
Alkalinity	61	NA	NA	NA	NA	NA	NA
Hardness	60	NA	NA	NA	NA	NA	NA
Conductivity	320	290	300	320	300	290	290
Chlorine	<0.05	NA	NA	NA	NA	NA	NA

DILUTION 52 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.4	7.7	7.6	7.5	7.7	7.2	7.4
Final	7.6	7.2	7.2	7.1	7.4	7.3	6.5
pH Initial	7.2	7.5	7.5	7.4	7.7	7.8	7.4
Final	7.6	7.6	7.6	7.7	7.9	7.6	7.4
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	310	280	300	310	290	290	280
Chlorine	NA	NA	NA	NA	NA	NA	NA

Appendix B: Test 1002.0
SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

Permittee: McClelland Consulting Engineers, Inc.

NPDES No.: AR0033987 AFIN 21-00045

Date and Time Test Initiated: April 12, 2016 at 1520

Date and Time Test Terminated: April 18, 2016 at 1435

Dilution water used: Synthetic Moderately Hard Water #4319

PERCENT SURVIVAL

Time of Reading	Control	Percent Effluent				
		16 %	22 %	29 %	39 %	52 %
24 hour	100	100	100	100	100	100
48 hour	100	100	100	100	100	100
6 day	100	100	100	100	90.0	90.0

NUMBER OF YOUNG PRODUCED PER FEMALE @ 6 DAYS

Replicates	Control	Percent Effluent				
		16 %	22 %	29 %	39 %	52 %
A	24	26	27	28	25	28
B	27	26	27	22	24	24
C	22	32	30	29	28	26
D	27	30	29	26	23	21
E	29	23	26	30	28	27
F	28	27	26	27	26	22
G	24	24	30	29	29	14
H	27	31	17	27	24	29
I	26	30	28	26	3	28
J	25	33	30	27	32	5
Mean per Adult	25.9	28.2	27.0	27.1	24.2	22.4
Mean per Surviving Adult	25.9	28.2	27.0	27.1	26.6	24.3
CV %	8.23	12.3	14.3	8.24	11.0	19.6

CV = Coefficient of variation = standard deviation * 100 / mean
(calculated based on young produced by surviving females)

Appendix B: Test 1002.0
SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

1. Fisher's Exact Test:

Is the mean survival significantly different ($p=0.05$) than the control survival for the % effluent corresponding to (lethality):

a.) LOW FLOW OR CRITICAL DILUTION	(39 %)	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<input type="checkbox"/> YES	<input type="checkbox"/> NO

2. Steel's Many-One Rank Test:

Is the mean number of young produced per female significantly different ($p=0.05$) than the control's number of young per female for the % effluent corresponding to (significant non-lethal effects):

a.) LOW FLOW OR CRITICAL DILUTION	(39 %)	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<input type="checkbox"/> YES	<input type="checkbox"/> NO

3. If you answered NO to 1.a) enter [0] otherwise enter [1]: 0 (TLP3B)
4. If you answered NO to 2.a) enter [0] otherwise enter [1]: 0 (TGP3B)
5. NOEC *Ceriodaphnia* Lethality: 52 % (TOP3B)
6. LOEC *Ceriodaphnia* Lethality: 52 % (TXP3B)
7. NOEC *Ceriodaphnia* Sublethality: 52 % (TPP3B)
8. LOEC *Ceriodaphnia* Sublethality: 52 % (TYP3B)
9. Coefficient of variation for *Ceriodaphnia* Reproduction: 11 (TQP3B)

Appendix B: Test 1002.0
CHRONIC TOXICITY SUMMARY FORM
Ceriodaphnia dubia
CHEMICAL PARAMETERS CHART

PERMITTEE: McClelland Consulting Engineers,
NPDES NO.: AR0033987 AFIN 21-00045
CONTACT: Mr. Matt Bienvenu
ANALYST: 280, 304, 310, 314

Test Initiated: DATE: April 12, 2016 TIME: 1520
Test Terminated: DATE: April 18, 2016 TIME: 1435

DILUTION Control	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.3	7.6	7.8	7.5	7.8	7.5	7.8
Final	7.6	7.6	7.7	7.6	7.6	7.4	—
pH Initial	7.5	7.7	7.7	7.5	7.9	8.0	7.8
Final	8.0	7.9	8.0	7.9	8.0	7.9	—
Alkalinity	58	NA	NA	NA	NA	NA	NA
Hardness	83	NA	NA	NA	NA	NA	NA
Conductivity	350	320	330	350	330	340	330
Chlorine	<0.05	NA	NA	NA	NA	NA	NA

DILUTION 16 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.7	7.8	7.2	7.5	7.7	7.4	7.6
Final	7.7	7.7	7.9	7.5	7.6	7.8	—
pH Initial	7.4	7.6	7.7	7.6	7.9	8.0	7.6
Final	7.9	8.0	8.0	7.8	8.0	8.0	—
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	340	310	320	330	320	320	310
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 22 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.6	8.0	7.6	7.7	7.8	7.6	7.9
Final	7.9	7.6	8.1	7.8	7.8	7.9	—
pH Initial	7.4	7.6	7.6	7.5	7.8	7.9	7.6
Final	8.0	8.0	8.0	7.8	7.9	8.1	—
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	340	300	320	340	310	310	300
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 29 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.5	7.7	7.5	7.6	7.6	7.6	7.6
Final	7.7	7.6	7.8	7.6	7.8	7.7	—
pH Initial	7.3	7.6	7.6	7.5	7.8	7.9	7.5
Final	7.8	8.0	8.0	7.8	8.0	8.0	—
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	330	300	310	330	310	310	300
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 39 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.2	7.7	7.8	7.5	7.7	7.6	7.6
Final	7.5	7.6	7.9	7.6	7.7	7.7	—
pH Initial	7.2	7.5	7.6	7.5	7.8	7.7	7.5
Final	7.9	8.0	8.0	7.8	7.9	8.0	—
Alkalinity	61	NA	NA	NA	NA	NA	NA
Hardness	60	NA	NA	NA	NA	NA	NA
Conductivity	320	290	300	320	300	290	290
Chlorine	<0.05	NA	NA	NA	NA	NA	NA

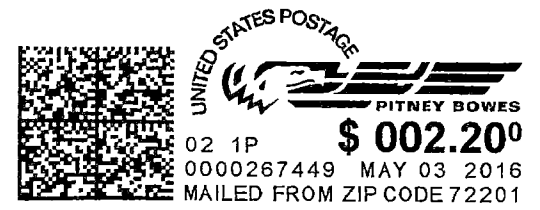
DILUTION 52 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.4	7.7	7.6	7.5	7.7	7.2	7.4
Final	7.5	7.6	7.9	7.5	7.4	7.8	—
pH Initial	7.2	7.5	7.5	7.4	7.7	7.8	7.4
Final	7.8	8.0	8.1	7.7	7.9	8.0	—
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	310	280	300	310	290	290	280
Chlorine	NA	NA	NA	NA	NA	NA	NA



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: <u>mce</u>			PO No.		NO OF BOTTLES <u>9</u>	ANALYSES REQUESTED										AIC CONTROL NO: <u>20177</u>		
Project Reference:			MATRIX			<u>Dumas</u> <u>BID</u>											AIC PROPOSAL NO:	
Project Manager: <u>MATT BIENVENU</u>																	Carrier:	
Sampled By: <u>Jesse James</u>			G	C	W	S											Received Temperature C <u>6.1/0.1/0.1</u>	
AIC No.	Sample Identification	Date/Time Collected	A	O	A	O											Remarks	
<u>1</u>	<u>Dumas</u>	<u>4/2/16 1230</u>	<u>X</u>		<u>X</u>													
Container Type													Field pH calibration					
Preservative													on _____ @ _____					
G = Glass NO = none			P = Plastic S = Sulfuric acid pH2		V = VOA vials N = Nitric acid pH2		H = HCl to pH2 B = NaOH to pH12		T = Sodium Thiosulfate Z = Zinc acetate		A = (NH ₄) ₂ SO ₄ , NH ₄ OH					Buffer:		
Turnaround Time Requested: (Please circle) NORMAL or EXPEDITED IN _____ DAYS					Relinquished By: <u>Jesse James</u>		Date/Time: <u>4/2/16 1445</u>		Received By:		Date/Time							
Expedited results requested by: _____					Relinquished By:		Date/Time		Received in Lab By: <u>Danny B</u>		Date/Time: <u>4-12-16 1445</u>							
Who should AIC contact with questions: Phone: _____ Fax: _____					Comments:													
Report Attention to: Report Address to: Email Address:																		

Patrick Fitzgerald
P O Box 157
Dumas, AR 71639



ATTN: Kyle Barber
ADEQ Enforcement Analyst
5301 Northshore Drive
North Little Rock, AR 72118-5317