August 10, 2012

Test Results of
Third Quarter
Chronic 7-Day Renewal
Biomonitoring Testing
for
Outfall 001
Huntsville, AR

Control No. 159780-1

Prepared for:

Mr. Bill Eoff
Huntsville Water Utilities
Post Office Box 430
Huntsville, AR 72740

Prepared by:

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AMERICAN INTERPLEX CORPORATION
LABORATORIES

Huntsville Water Utilities
ATTN: Mr. Bill Eoff
Post Office Box 430
Huntsville, AR 72740

Re: Chronic 7-Day Renewal utilizing *Pimephales promelas* (Fathead minnow) and *Ceriodaphnia dubia*
Outfall 001 - Huntsville, AR
NPDES Permit No. AR0022004 AFIN# 44-00018

Dear Mr. Bill Eoff:

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 laboratory director 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 100 % effluent, which is equal to the critical dilution of 100 %. The NOEC for growth occurred at 100 % effluent, which is equal to the critical dilution of 100 %. **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 100 % effluent, which is equal to the critical dilution of 100 %. The NOEC for reproduction occurred at 100 % effluent, which is equal to the critical dilution of 100 %. **The sample, therefore, PASSED both lethal and sub-lethal effects for the *Ceriodaphnia dubia* test.**

AMERICAN INTERPLEX CORPORATION

John Overbey
Laboratory Director

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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	0.361	PASS
Control Growth CV < or = 40%	8.23	PASS
Growth Minimum Significant Difference 12 to 30%	19.6	PASS
Critical Dilution CV < or = 40%	15.6	PASS

Ceriodaphnia dubia Method 1002.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	90.0	PASS
Control Reproduction > or = 15 per Surviving Female	22.1	PASS
Control CV < or = 40% per Surviving Female	19.9	PASS
Reproduction Minimum Significant Difference 13 to 47%	16.8	PASS
Critical Dilution CV < or = 40%	12.3	PASS

II. Outlined Report

A. Introduction

1. Permit Number: AR0022004 AFIN# 44-00018
2. Test Requirements: Chronic Biomonitoring, Quarterly
   Test Methods 1000.0 and 1002.0
3. Receiving Stream: White River Basin

B. Source of Effluent/Dilution Water

1. Effluent Samples:
   a. Sampling Point: Outfall 001
   b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	7.8	7.3	4.5
pH (standard units)	8.1	7.9	8.4
Alkalinity (mg/l as CaCO3)	9.8	12	12
Hardness (mg/l as CaCO3)	220	230	210
Conductivity (umhos/cm)	870	820	830
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05
Ammonia as N (mg/l)	4.4	0.36	2.6

2. Dilution Water Samples: Synthetic Moderately Hard Water #3895
   a. Dates Prepared: July 28 through August 11, 2012
   b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	8.0	7.7	7.5
pH (standard units)	8.2	8.1	8.1
Alkalinity (mg/l as CaCO3)	57	57	57
Hardness (mg/l as CaCO3)	83	82	80
Conductivity (umhos/cm)	200	160	160
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05

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:	July 31, 2012 at 1505
Date & Time Test Terminated:	August 7, 2012 at 1445
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:	July 31, 2012 at 1410
Date & Time Test Terminated:	August 6, 2012 at 1325
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 July 10, 2012 at 1515 to July 17, 2012 at 1320
The results were as follows: (Control No. 159240-2.)
Survival LC-50: 5830 mg/l
Growth IC-25: 4405 mg/l
Growth PMSD: 24

Ceriodaphnia dubia

Chronic reference tests are performed monthly.
A chronic reference test was performed on July 10, 2012 at 1350 to July 16, 2012 at 1335
The results were as follows: (Control No. 159240-1.)
Survival LC-50: 2125 mg/l
Growth IC-25: 1433 mg/l
Growth PMSD: 21.8

V. Chemical Analysis/Quality Control

Parameter	Method	% Recovery	Relative % Difference
Alkalinity	SM 2320 B	NA	0.00
Hardness	EPA 200.7	102	0.740
pH	SM 4500-H+ B	101	0.133
Conductivity	EPA 120.1	106	3.74

VI. Organism History

Pimephales promelas (Fathead minnow)

Date: July 31, 2012
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: July 31, 2012
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

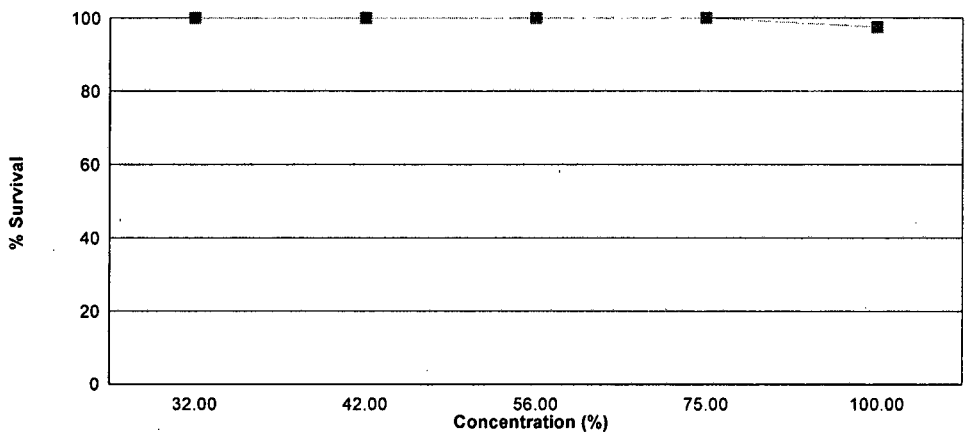
Larvae are exposed in a static renewal system for seven days to different concentrations of effluent with dilution water. Test results are based on the survival and growth (increase in weight) of the larvae.

Effluent dilutions for this test were 32 %, 42 %, 56 %, 75 %, 100 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 100 % effluent.

The test was initiated on July 31, 2012 at 1505 and continued through August 7, 2012 at 1445. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

a.) NOEC survival = 100 % effluent
b.) NOEC growth = 100 % effluent



Summary of the 7-day Fathead Minnow Survival and Growth		
Concentration	Percent Survival	Mean Growth (mg)
Control	100	0.361
32 %	100	0.377
42 %	100	0.379
56 %	100	0.377
75 %	100	0.435
100 %	97.5	0.381

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

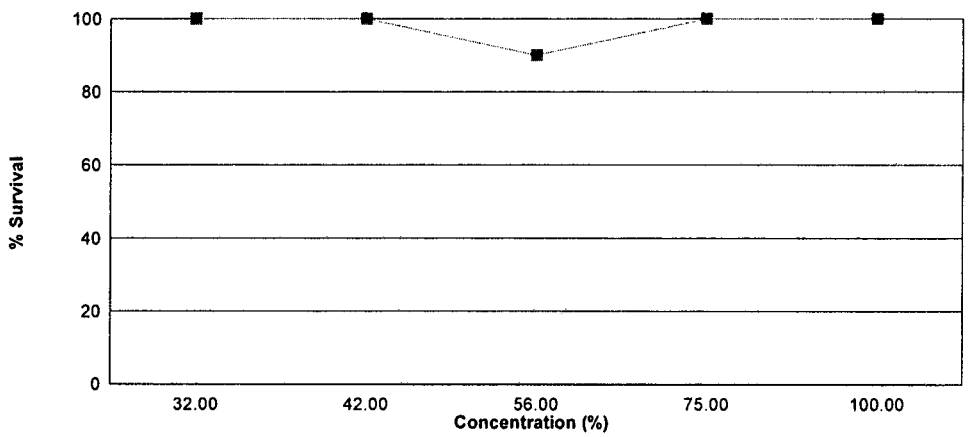
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring with an average of at least 15 young per female.

Effluent dilutions for this test were 32 %, 42 %, 56 %, 75 %, 100 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 100 % effluent.

The test was initiated on July 31, 2012 at 1410 and continued through August 6, 2012 at 1325. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

a.) NOEC survival = 100 % effluent
b.) NOEC reproduction = 100 % effluent



Summary of the 6-day *Ceriodaphnia dubia* Survival and Reproduction Data		
Concentration	Percent Survival	Mean Reproduction
Control	90.0	19.9
32 %	100	21.2
42 %	100	21.0
56 %	90.0	18.9
75 %	100	16.8
100 %	100	19.6

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Survival

Date and Time Test Initiated: July 31, 2012 at 1505
Date and Time Test Terminated: August 7, 2012 at 1445

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
32 %	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
42 %	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
56 %	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
75 %	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
100 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	7	7	7
	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: July 31, 2012 at 1505
Test Terminated: August 7, 2012 at 1445
Drying Started: August 6, 2012 at 1443
Drying Ended: August 8, 2012 at 1227

Concentration	Replicate	Weight of pan	Weight of pan + fish	Total weight of fish (g)	Original # of fish	Mean dry weight (mg)
Control	A	.94696	.94990	0.00294	8	0.368
	B	.95544	.95827	0.00283	8	0.354
	C	.95569	.95865	0.00296	8	0.370
	D	.95535	.95787	0.00252	8	0.315
	E	.95318	.95635	0.00317	8	0.396
32 %	A	.94969	.95223	0.00254	8	0.318
	B	.92085	.92398	0.00313	8	0.391
	C	.92120	.92443	0.00323	8	0.404
	D	.91980	.92315	0.00335	8	0.419
	E	.91820	.92104	0.00284	8	0.355
42 %	A	.91787	.92048	0.00261	8	0.326
	B	.91800	.92155	0.00355	8	0.444
	C	.91968	.92271	0.00303	8	0.379
	D	.91982	.92281	0.00299	8	0.374
	E	.91880	.92176	0.00296	8	0.370
56 %	A	.91850	.92115	0.00265	8	0.331
	B	.91844	.92196	0.00352	8	0.440
	C	.91970	.92206	0.00236	8	0.295
	D	.92025	.92352	0.00327	8	0.409
	E	.92031	.92361	0.00330	8	0.412
75 %	A	.91848	.92184	0.00336	8	0.420
	B	.91747	.92091	0.00344	8	0.430
	C	.91608	.92016	0.00408	8	0.510
	D	.91689	.92006	0.00317	8	0.396
	E	.91865	.92200	0.00335	8	0.419
100 %	A	.91946	.92259	0.00313	8	0.391
	B	.91977	.92300	0.00323	8	0.404
	C	.92128	.92396	0.00268	8	0.335
	D	.91740	.92110	0.00370	8	0.462
	E	.91851	.92101	0.00250	8	0.312

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: July 31, 2012 at 1410
Date and Time Test Terminated: August 6, 2012 at 1325

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	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	4	3	4	3	0	3	5	5	3	3	33	10	3.30
4	0	0	0	0	X	0	0	0	2	3	5	9	0.556
5	6	8	6	9	X	8	8	8	0	8	61	9	6.78
6	11	13	11	15	X	12	14	12	12	14E	100	9	11.1
7													
8													
TOTAL	21	24	21	27	0	23	27	25	17	14	199	10	19.9

E = Excluded fourth brood neonates

Concentration: 32 %													
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	4	0	3	2	4	4	4	4	3	32	10	3.20
4	0	0	0	0	0	0	0	0	0	0	0	10	0.00
5	7	9	7	8	6	5	8	5	7	7	69	10	6.90
6	10	11	9	13	11	10	14	11	12	10	111	10	11.1
7													
8													
TOTAL	21	24	16	24	19	19	26	20	23	20	212	10	21.2

Concentration: 42 %													
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	4	3	3	4	4	4	5	3	0	33	10	3.30
4	0	0	0	0	0	0	0	0	0	0	0	10	0.00
5	5	6	7	8	5	6	6	7	5	10	65	10	6.50
6	12	10	11	13	12	10	10	12	9	13	112	10	11.2
7													
8													
TOTAL	20	20	21	24	21	20	20	24	17	23	210	10	21.0

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: July 31, 2012 at 1410
Date and Time Test Terminated: August 6, 2012 at 1325

Concentration: 56 %													
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	4	3	2	3	3	4	5	0	1	28	10	2.80
4	0	0	0	0	0	0	0	0	0	0	0	10	0.00
5	8	8	6	4	5	7	8	9	X	6	61	9	6.78
6	12	14	10	11	11	11	9	12	X	10	100	9	11.1
7													
8													
TOTAL	23	26	19	17	19	21	21	26	0	17	189	10	18.9

Concentration: 75 %													
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	4	0	2	3	2	3	4	3	4	29	10	2.90
4	4	0	0	0	0	0	0	0	0	2	6	10	0.600
5	0	7	0	8	7	0	6	5	0	8	41	10	4.10
6	9	12	10	10	12	9	10	9	11	0	92	10	9.20
7													
8													
TOTAL	17	23	10	20	22	11	19	18	14	14	168	10	16.8

Concentration: 100 %													
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	4	3	0	4	1	3	4	3	2	27	10	2.70
4	0	0	0	2	1	0	0	0	0	0	3	10	0.300
5	7	4	5	4	6	6	8	6	6	7	59	10	5.90
6	10	11	13	8	12	11	10	11	11	10	107	10	10.7
7													
8													
TOTAL	20	19	21	14	23	18	21	21	20	19	196	10	19.6

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	32 %	1	1.00000	1.39310
2	32 %	2	1.00000	1.39310
2	32 %	3	1.00000	1.39310
2	32 %	4	1.00000	1.39310
2	32 %	5	1.00000	1.39310
3	42 %	1	1.00000	1.39310
3	42 %	2	1.00000	1.39310
3	42 %	3	1.00000	1.39310
3	42 %	4	1.00000	1.39310
3	42 %	5	1.00000	1.39310
4	56 %	1	1.00000	1.39310
4	56 %	2	1.00000	1.39310
4	56 %	3	1.00000	1.39310
4	56 %	4	1.00000	1.39310
4	56 %	5	1.00000	1.39310
5	75 %	1	1.00000	1.39310
5	75 %	2	1.00000	1.39310
5	75 %	3	1.00000	1.39310
5	75 %	4	1.00000	1.39310
5	75 %	5	1.00000	1.39310
6	100 %	1	1.00000	1.39310
6	100 %	2	1.00000	1.39310
6	100 %	3	0.87500	1.20940
6	100 %	4	1.00000	1.39310
6	100 %	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))
D = 0.027		
W = 0.4161		
Critical W = 0.9	(alpha = 0.01, N = 30)	
Critical W = 0.927	(alpha = 0.05, N = 30)	

Data FAIL normality test (alpha = 0.01).

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	32 %	27.50	16.00	5.00	
3	42 %	27.50	16.00	5.00	
4	56 %	27.50	16.00	5.00	
5	75 %	27.50	16.00	5.00	
6	100 %	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
D = 0.05409		
W = 0.9759		
Critical W = 0.9	(alpha = 0.01, N = 30)	
Critical W = 0.927	(alpha = 0.05, N = 30)	
Data PASS normality test (alpha = 0.01).		

Bartlett's Test for Homogeneity of Variance		No Transformation
Calculated B1 statistic = 2.492		
Critical B = 15.086	(alpha = 0.01, df = 5)	
Data PASS B1 homogeneity test at 0.01 level.		

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Growth

ANOVA Table				No Transformation
SOURCE	DF	SS	MS	F
Between	5	0.01635	0.00327	1.451
Within (Error)	24	0.05408	0.002253	
Total	29	0.07043		

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	0.3606	0.3606		
2	32 %	0.3774	0.3774	-0.5596	
3	42 %	0.3786	0.3786	-0.5996	
4	56 %	0.3774	0.3774	-0.5596	
5	75 %	0.435	0.435	-2.478	
6	100 %	0.3808	0.3808	-0.6729	

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	32 %	5	0.07085	19.6	-0.0168
3	42 %	5	0.07085	19.6	-0.018
4	56 %	5	0.07085	19.6	-0.0168
5	75 %	5	0.07085	19.6	-0.0744
6	100 %	5	0.07085	19.6	-0.0202

Appendix A2: Statistics

Ceriodaphnia dubia Survival

Fisher's Exact Test

Identification	Dead	Alive	Total Animals
Control	1	9	10
32 %	0	10	10
Total	1	19	20

Critical Fisher's value (10,10,1) (alpha=0.05) is negative. b value is 0. NO SIGNIFICANT DIFFERENCE.

Fisher's Exact Test

Identification	Dead	Alive	Total Animals
Control	1	9	10
42 %	0	10	10
Total	1	19	20

Critical Fisher's value (10,10,1) (alpha=0.05) is negative. b value is 0. NO SIGNIFICANT DIFFERENCE.

Fisher's Exact Test

Identification	Alive	Dead	Total Animals
Control	9	1	10
56 %	9	1	10
Total	18	2	20

Critical Fisher's value (10,10,9) (alpha=0.05) is 4. b value is 9. Since b is greater than 4 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test

Identification	Dead	Alive	Total Animals
Control	1	9	10
75 %	0	10	10
Total	1	19	20

Critical Fisher's value (10,10,1) (alpha=0.05) is negative. b value is 0. NO SIGNIFICANT DIFFERENCE.

Appendix A2: Statistics

Ceriodaphnia dubia Survival

Fisher's Exact Test			
Identification	Dead	Alive	Total Animals
Control	1	9	10
100 %	0	10	10
Total	1	19	20

Critical Fisher's value (10,10,1) (alpha=0.05) is negative. b value is 0. NO SIGNIFICANT DIFFERENCE.

Summary of Fisher's Exact Test				
Group	Identification	Exposed	Dead	Sig 0.05
0	Control	10	1	
1	32 %	10	0	
2	42 %	10	0	
3	56 %	10	1	
4	75 %	10	0	
5	100 %	10	0	

Appendix A2: Statistics

Ceriodaphnia dubia Reproduction

Chi-Square Test for Normality		No Transformation
Chi-Square = 9.6207		
Critical Chi-Square = 13.28	(alpha = 0.01, df = 4)	
Data PASS normality test (alpha = 0.01).		

Kolmogorov Test for Normality		No Transformation
D = 0.1443		
D* = 1.132		
Critical D* = 1.035	(alpha = 0.01, N = 60)	
Data FAIL normality test (alpha = 0.01).		

Steel's Many-One Rank Test					No Transformation
Ho:Control<Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	32 %	99.50	75.00	10.00	
3	42 %	96.00	75.00	10.00	
4	56 %	96.00	75.00	10.00	
5	75 %	82.00	75.00	10.00	
6	100 %	89.00	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	174.1	34.82	3.004
Within (Error)	52	602.5	11.59	
Total	57	776.6		

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

Since F > Critical F 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	22.111	22.111		
2	32 %	21.2	21.2	0.5824	
3	42 %	21	21	0.7103	
4	56 %	21	21	0.6923	
5	75 %	16.8	16.8	3.395	*
6	100 %	19.6	19.6	1.605	

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	9			
2	32 %	10	3.613	16.3	0.911
3	42 %	10	3.613	16.3	1.111
4	56 %	9	3.707	16.8	1.111
5	75 %	10	3.613	16.3	5.311
6	100 %	10	3.613	16.3	2.511

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: July 31, 2012 at 0927
Date and Time Test Terminated: August 7, 2012 at 1445

Effluent Conc.: Control		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.0	7.8	7.7	7.8	7.5	7.8	8.0
	Final *1	7.0	5.4	6.2	7.0	7.2	7.4	6.7
	Final *2	8.1	8.0	8.0	8.1	8.3	8.1	NA
pH, units	Initial	8.2	8.0	8.1	8.2	8.1	8.2	8.0
	Final *1	8.0	7.6	7.6	7.9	8.1	8.0	7.8
	Final *2	8.4	8.4	8.6	8.6	8.6	8.2	NA
Alkalinity, mg CaCO3/l		57	NA	57	NA	57	NA	NA
Hardness, mg CaCO3/l		83	NA	82	NA	80	NA	NA
Conductivity, umhos/cm		200	160	160	150	160	160	NA
Res. Chlorine, mg/l		<0.05	NA	<0.05	NA	<0.05	NA	NA

Effluent Conc.: 32 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.7	8.0	7.4	7.8	7.3	7.6	8.0
	Final *1	7.3	6.4	5.1	7.4	7.4	7.3	6.4
	Final *2	8.0	7.6	7.9	8.0	8.0	8.2	NA
pH, units	Initial	8.1	8.1	8.1	8.1	8.2	8.2	8.0
	Final *1	8.2	7.9	7.7	8.1	8.3	8.1	7.8
	Final *2	8.5	8.5	8.5	8.6	8.6	8.3	NA

Effluent Conc.: 42 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.8	7.9	7.5	4.3	7.6	7.6	8.0
	Final *1	6.9	5.6	5.5	7.0	6.9	7.3	5.8
	Final *2	7.9	7.9	8.1	7.9	7.9	8.0	NA
pH, units	Initial	8.1	8.2	8.1	8.1	8.3	8.1	8.0
	Final *1	8.2	7.8	7.8	8.1	8.2	8.2	7.8
	Final *2	8.5	8.6	8.6	8.6	8.6	8.4	NA

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: July 31, 2012 at 0927
Date and Time Test Terminated: August 7, 2012 at 1445

Effluent Conc.: 56 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.7	7.8	7.2	7.8	7.5	7.8	8.0
	Final *1	6.8	6.3	5.3	7.2	7.6	7.2	8.2
	Final *2	8.0	8.0	7.9	8.0	8.1	8.0	NA
pH, units	Initial	8.1	8.2	8.1	8.2	8.4	8.2	8.0
	Final *1	8.2	8.0	7.9	8.2	8.2	8.2	8.0
	Final *2	8.6	8.6	8.6	8.7	8.7	8.4	NA

Effluent Conc.: 75 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.7	7.6	7.6	4.3	4.6	7.4	8.0
	Final *1	6.9	6.8	5.4	7.1	7.0	7.4	5.9
	Final *2	8.0	7.8	7.7	8.0	8.0	8.2	NA
pH, units	Initial	8.1	8.2	8.2	8.1	8.3	8.1	8.0
	Final *1	8.3	8.1	8.0	8.3	8.4	8.3	8.0
	Final *2	8.6	8.6	8.7	8.8	8.8	8.5	NA

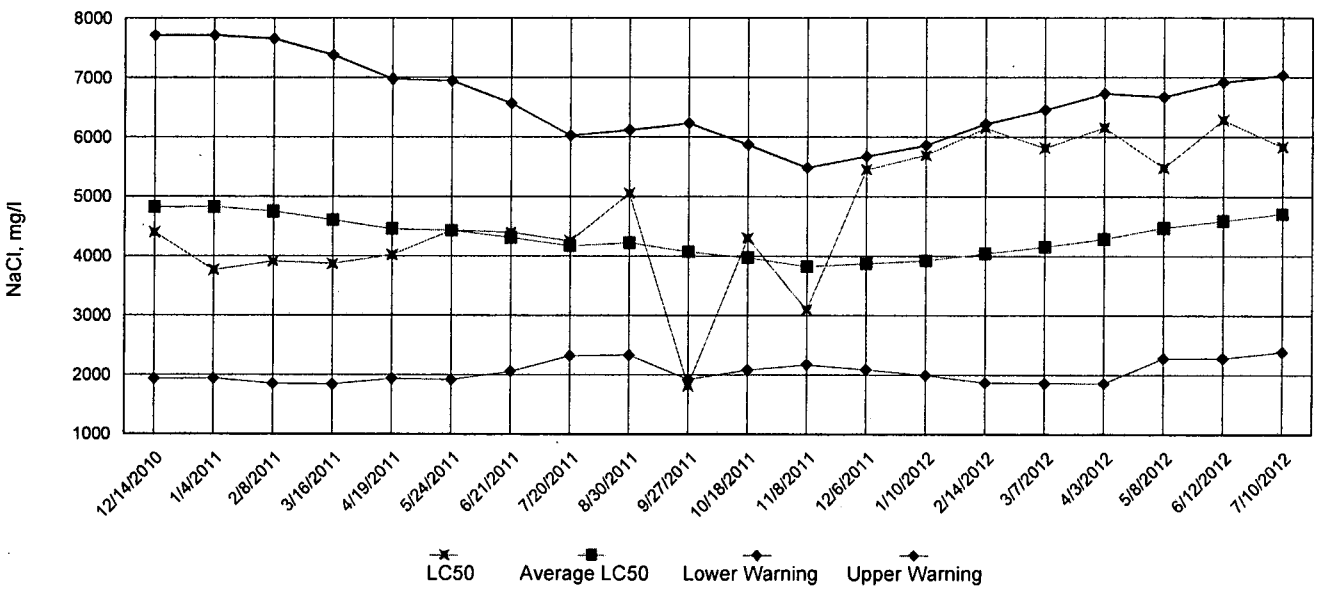
Effluent Conc.: 100 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.8	8.2	7.3	4.2	4.5	7.5	7.6
	Final *1	7.2	6.7	5.6	7.4	6.9	7.6	6.1
	Final *2	7.8	7.9	7.9	8.2	8.4	8.1	NA
pH, units	Initial	8.1	8.1	7.9	7.9	8.4	8.0	7.9
	Final *1	8.4	8.2	8.1	8.4	8.3	8.3	8.1
	Final *2	8.6	8.7	8.7	8.8	8.8	8.5	NA
Alkalinity, mg CaCO3/l		9.8	NA	12	NA	12	NA	NA
Hardness, mg CaCO3/l		220	NA	230	NA	210	NA	NA
Conductivity, umhos/cm		870	870	820	780	830	840	NA
Res. Chlorine, mg/l		<0.05	NA	<0.05	NA	<0.05	NA	NA

*1 = data from the *Pimephales promelas* (Fathead Minnow) test *2 = data from the *Ceriodaphnia dubia* test

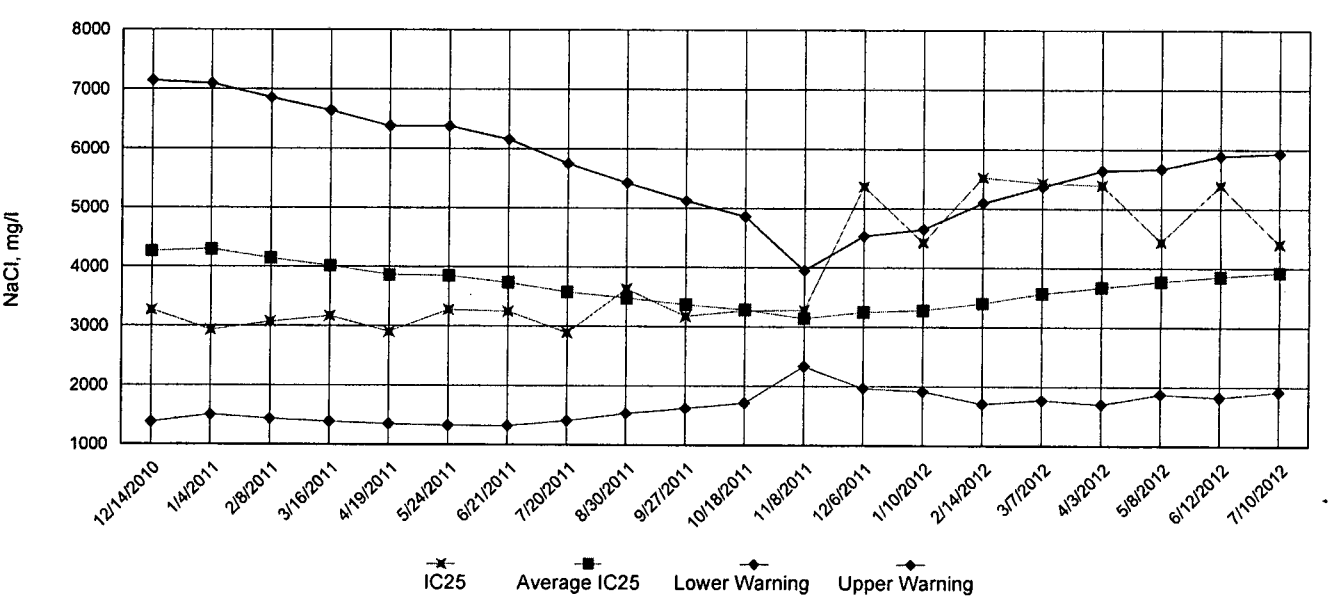
Appendix A4: Test 1000.0

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

LC50 Survival Data



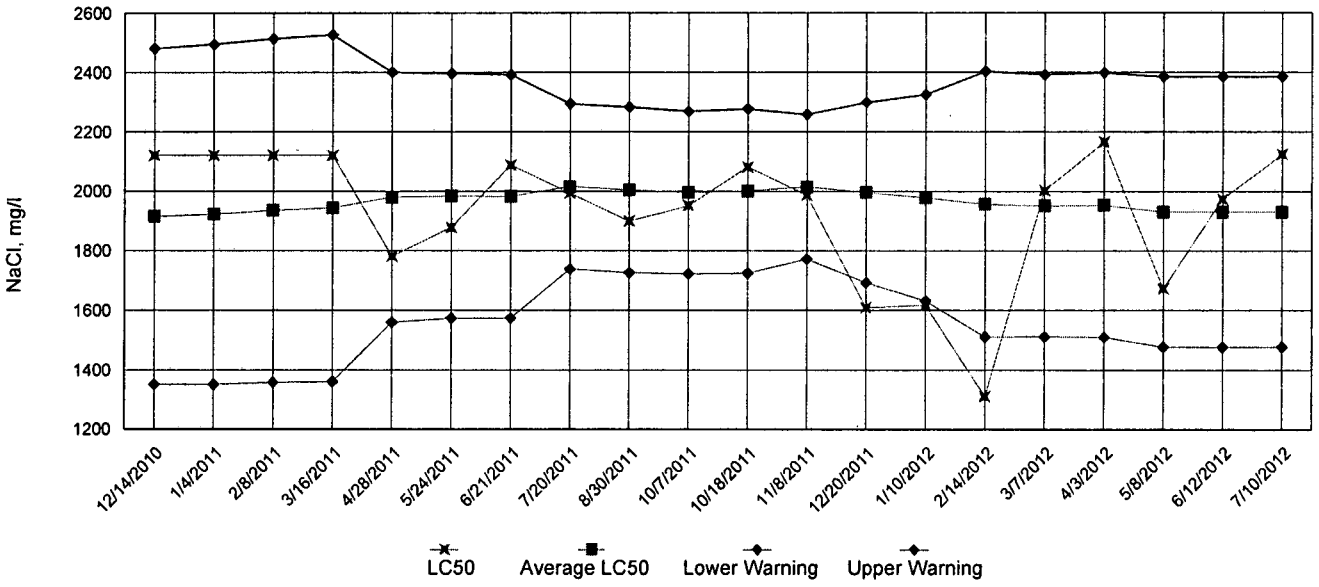
IC25 Growth Data



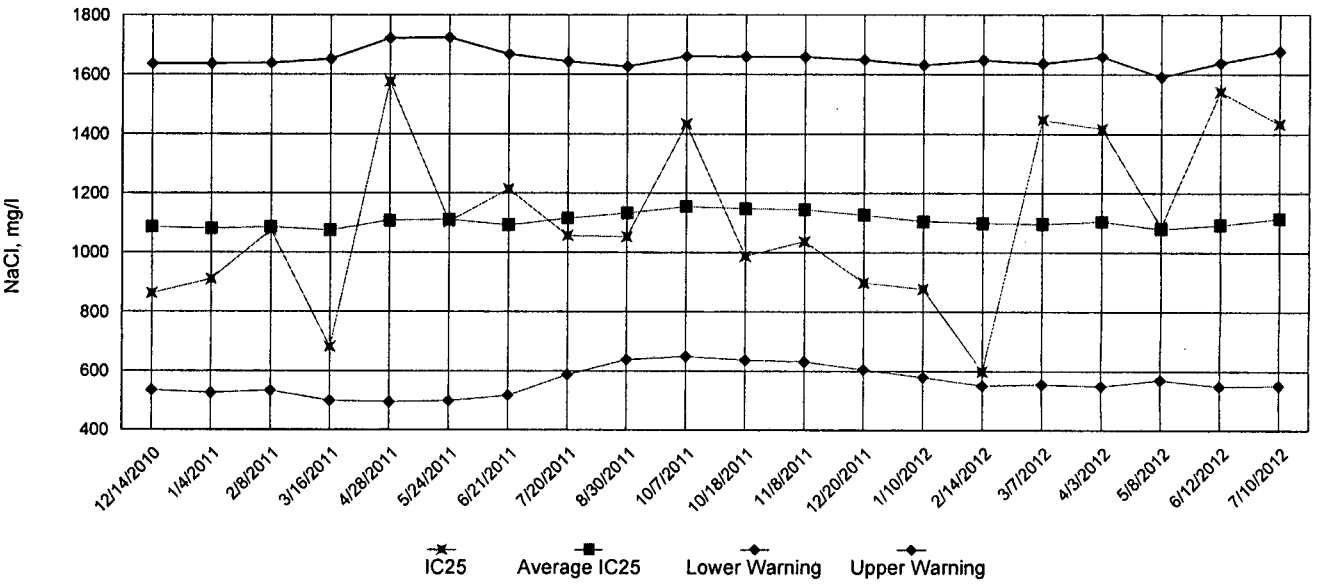
Appendix A4: Test 1002.0

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: Huntsville Water Utilities

NPDES No.: AR0022004 AFIN# 44-00018

Date and Time Test Initiated: July 31, 2012 at 1505
Date and Time Test Terminated: August 7, 2012 at 1445
Dilution water used: Synthetic Moderately Hard Water #3895

DATA TABLE FOR SURVIVAL

Effluent Conc. %	Percent Survival in replicate chambers A	B	C	D	E	Mean percent survival 24 hr	48 hr	7 days	CV%
Control	100	100	100	100	100	100	100	100	0.00
32 %	100	100	100	100	100	100	100	100	0.00
42 %	100	100	100	100	100	100	100	100	0.00
56 %	100	100	100	100	100	100	100	100	0.00
75 %	100	100	100	100	100	100	100	100	0.00
100 %	100	100	87.5	100	100	100	100	97.5	5.73

DATA TABLE FOR GROWTH

Effluent Conc. %	Average dry weight, mg replicate chambers A	B	C	D	E	Mean dry weight, mg	CV%
Control	0.368	0.354	0.370	0.315	0.396	0.361	8.23
32 %	0.318	0.391	0.404	0.419	0.355	0.377	10.8
42 %	0.326	0.444	0.379	0.374	0.370	0.379	11.2
56 %	0.331	0.440	0.295	0.409	0.412	0.377	16.3
75 %	0.420	0.430	0.510	0.396	0.419	0.435	10.1
100 %	0.391	0.404	0.335	0.462	0.312	0.381	15.6

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	(100 %)	_____YES	X NO
b.) 1/2 LOW FLOW DILUTION	(NA)	_____YES	_____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	(100 %)	_____YES	X NO
b.) 1/2 LOW FLOW DILUTION	(NA)	_____YES	_____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: 100 % (TOP6C)

6. LOEC Pimephales Lethality: 100 % (TXP6C)

7. NOEC Pimephales Sublethality: 100 % (TPP6C)

8. LOEC Pimephales Sublethality: 100 % (TYP6C)

9. Coefficient of variation for Pimephales growth: 15.6 (TQP6C)

Appendix B: Test 1000.0

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

PERMITTEE: Huntsville Water Utilities
NPDES NO.: AR0022004 AFIN# 44-00018
CONTACT: Mr. Bill Eoff
ANALYST: 275, 280, 298, 304

SAMPLE No. 1 COLLECTED ending: DATE: July 30, 2012 TIME: 0500
SAMPLE No. 2 COLLECTED ending: DATE: August 1, 2012 TIME: 0500
SAMPLE No. 3 COLLECTED ending: DATE: August 3, 2012 TIME: 0500
Test Initiated: DATE: July 31, 2012 TIME: 1505
Test Terminated: DATE: August 7, 2012 TIME: 1445

DILUTION Control	DAY 1	2	3	4	5	6	7
D.O. Initial	8.0	7.8	7.7	7.8	7.5	7.8	8.0
Final	7.0	5.4	6.2	7.0	7.2	7.4	6.7
pH Initial	8.2	8.0	8.1	8.2	8.1	8.2	8.0
Final	8.0	7.6	7.6	7.9	8.1	8.0	7.8
Alkalinity	57	NA	57	NA	57	NA	NA
Hardness	83	NA	82	NA	80	NA	NA
Conductivity	200	160	160	150	160	160	NA
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 32 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.7	8.0	7.4	7.8	7.3	7.6	8.0
Final	7.3	6.4	5.1	7.4	7.4	7.3	6.4
pH Initial	8.1	8.1	8.1	8.1	8.2	8.2	8.0
Final	8.2	7.9	7.7	8.1	8.3	8.1	7.8
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	410	410	390	360	370	360	NA
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 42 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.8	7.9	7.5	4.3	7.6	7.6	8.0
Final	6.9	5.6	5.5	7.0	6.9	7.3	5.8
pH Initial	8.1	8.2	8.1	8.1	8.3	8.1	8.0
Final	8.2	7.8	7.8	8.1	8.2	8.2	7.8
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	480	480	460	400	440	420	NA
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 56 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.7	7.8	7.2	7.8	7.5	7.8	8.0
Final	6.8	6.3	5.3	7.2	7.6	7.2	8.2
pH Initial	8.1	8.2	8.1	8.2	8.4	8.2	8.0
Final	8.2	8.0	7.9	8.2	8.2	8.2	8.0
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	570	570	550	510	530	510	NA
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 75 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.7	7.6	7.6	4.3	4.6	7.4	8.0
Final	6.9	6.8	5.4	7.1	7.0	7.4	5.9
pH Initial	8.1	8.2	8.2	8.1	8.3	8.1	8.0
Final	8.3	8.1	8.0	8.3	8.4	8.3	8.0
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	700	700	670	610	640	640	NA
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 100 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.8	8.2	7.3	4.2	4.5	7.5	7.6
Final	7.2	6.7	5.6	7.4	6.9	7.6	6.1
pH Initial	8.1	8.1	7.9	7.9	8.4	8.0	7.9
Final	8.4	8.2	8.1	8.4	8.3	8.3	8.1
Alkalinity	9.8	NA	12	NA	12	NA	NA
Hardness	220	NA	230	NA	210	NA	NA
Conductivity	870	870	820	780	830	840	NA
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

Appendix B: Test 1002.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

Permittee: Huntsville Water Utilities

NPDES No.: AR0022004 AFIN# 44-00018

Date and Time Test Initiated: July 31, 2012 at 1410
Date and Time Test Terminated: August 6, 2012 at 1325
Dilution water used: Synthetic Moderately Hard Water #3895

PERCENT SURVIVAL

		Percent Effluent				
Time of Reading	Control	32 %	42 %	56 %	75 %	100 %
24 hour	100	100	100	100	100	100
48 hour	100	100	100	100	100	100
6 day	90.0	100	100	90.0	100	100

NUMBER OF YOUNG PRODUCED PER FEMALE @ 6 DAYS

		Percent Effluent				
Replicates	Control	32 %	42 %	56 %	75 %	100 %
A	21	21	20	23	17	20
B	24	24	20	26	23	19
C	21	16	21	19	10	21
D	27	24	24	17	20	14
E	0	19	21	19	22	23
F	23	19	20	21	11	18
G	27	26	20	21	19	21
H	25	20	24	26	18	21
I	17	23	17	0	14	20
J	14	20	23	17	14	19
Mean per Adult	19.9	21.2	21.0	18.9	16.8	19.6
Mean per Surviving Adult	22.1	21.2	21.0	21.0	16.8	19.6
CV %	19.9	14.2	10.3	16.3	26.4	12.3

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	(100 %)	_____YES	__X__ NO
b.) 1/2 LOW FLOW DILUTION	(NA)	_____YES	_____ 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	(100 %)	_____YES	__X__ NO
b.) 1/2 LOW FLOW DILUTION	(NA)	_____YES	_____ 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: 100 % (TOP3B)

6. LOEC Ceriodaphnia Lethality: 100 % (TXP3B)

7. NOEC Ceriodaphnia Sublethality: 100 % (TPP3B)

8. LOEC Ceriodaphnia Sublethality: 100 % (TYP3B)

9. Coefficient of variation for Ceriodaphnia Reproduction: 19.9 (TQP3B)

AMERICAN INTERPLEX CORPORATION
LABORATORIES

Appendix B: Test 1002.0

CHRONIC TOXICITY SUMMARY FORM
Ceriodaphnia dubia
CHEMICAL PARAMETERS CHART

PERMITTEE: Huntsville Water Utilities
NPDES NO.: AR0022004 AFIN# 44-00018
CONTACT: Mr. Bill Eoff
ANALYST: 275, 280, 298, 304

SAMPLE No. 1 COLLECTED ending: DATE: July 30, 2012 TIME: 0500
SAMPLE No. 2 COLLECTED ending: DATE: August 1, 2012 TIME: 0500
SAMPLE No. 3 COLLECTED ending: DATE: August 3, 2012 TIME: 0500
Test Initiated: DATE: July 31, 2012 TIME: 1410
Test Terminated: DATE: August 6, 2012 TIME: 1325

DILUTION Control	DAY 1	2	3	4	5	6	7
D.O. Initial	8.0	7.8	7.7	7.8	7.5	7.8	8.0
Final	8.1	8.0	8.0	8.1	8.3	8.1	NA
pH Initial	8.2	8.0	8.1	8.2	8.1	8.2	8.0
Final	8.4	8.4	8.6	8.6	8.6	8.2	NA
Alkalinity	57	NA	57	NA	57	NA	NA
Hardness	83	NA	82	NA	80	NA	NA
Conductivity	200	160	160	150	160	160	NA
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 32 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.7	8.0	7.4	7.8	7.3	7.6	8.0
Final	8.0	7.6	7.9	8.0	8.0	8.2	NA
pH Initial	8.1	8.1	8.1	8.1	8.2	8.2	8.0
Final	8.5	8.5	8.5	8.6	8.6	8.3	NA
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	410	410	390	360	370	360	NA
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 42 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.8	7.9	7.5	4.3	7.6	7.6	8.0
Final	7.9	7.9	8.1	7.9	7.9	8.0	NA
pH Initial	8.1	8.2	8.1	8.1	8.3	8.1	8.0
Final	8.5	8.6	8.6	8.6	8.6	8.4	NA
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	480	480	460	400	440	420	NA
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 56 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.7	7.8	7.2	7.8	7.5	7.8	8.0
Final	8.0	8.0	7.9	8.0	8.1	8.0	NA
pH Initial	8.1	8.2	8.1	8.2	8.4	8.2	8.0
Final	8.6	8.6	8.6	8.7	8.7	8.4	NA
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	570	570	550	510	530	510	NA
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 75 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.7	7.6	7.6	4.3	4.6	7.4	8.0
Final	8.0	7.8	7.7	8.0	8.0	8.2	NA
pH Initial	8.1	8.2	8.2	8.1	8.3	8.1	8.0
Final	8.6	8.6	8.7	8.8	8.8	8.5	NA
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	700	700	670	610	640	640	NA
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 100 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.8	8.2	7.3	4.2	4.5	7.5	7.6
Final	7.8	7.9	7.9	8.2	8.4	8.1	NA
pH Initial	8.1	8.1	7.9	7.9	8.4	8.0	7.9
Final	8.6	8.7	8.7	8.8	8.8	8.5	NA
Alkalinity	9.8	NA	12	NA	12	NA	NA
Hardness	220	NA	230	NA	210	NA	NA
Conductivity	870	870	820	780	830	840	NA
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

AMERICAN INTERPLEX CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, AR 72204-2322
(501) 224-5060
FAX (501) 224-5072

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

PAGE OF

Client: Huntsville Water Utilities
Project Reference: Bio Monitoring
Project Manager: Bill Eoff
Sampled By: Bill Eoff

PO No.

AIC CONTROL NO: 159780
AIC PROPOSAL NO:
Carrier: fed-x
Received on Ice (4°C)? YES 2°c NO
Remarks

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	SAMPLE MATRIX: WATER	SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Cd & Fh Chronic
(1)	Huntsville #1	7/29/12 @3:00 7/30/12 @5:00		X	X		3	X
		Container Type	P					
		Preservative	4C					

Field pH calibration on _____ @ _____
Buffer:

G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate
NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions: Bill Eoff
Phone: (479) - 738 - 2081 Fax: (479) - 738 - 1285
Report Attention to: Bill Eoff
Report Address to: Bill Eoff
Huntsville Water Utilities
P.O. Box 430
Huntsville, AR 72740

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7/30/12 8:00		
Relinquished By:	Date/Time	Received in Lab By: [signature]	Date/Time 7-31-12 9:00am

Comments:
8764 3753 5518

5/01

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, AR 72204-2322
(501) 224-5060
FAX (501) 224-5072

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

PAGE OF

Client: Huntsville Water Utilities
Project Reference: Bio Monitoring
Project Manager: Bill Eoff
Sampled By: Bill Eoff

PO No.

AIC CONTROL NO: 159780
AIC PROPOSAL NO:
Carrier: Fed-Ex
Received on Ice (4°C)? (YES) NO 2

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	SAMPLE MATRIX: WATER	SAMPLE MATRIX: SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Cd & Fh Chronic	Remarks
2	Huntsville #2	7/31/12 @ 7:00 8/1/12 @ 5:00		X	X		3	X	
		Container Type	P						
		Preservative	4C						

Field pH calibration
on _____ @ _____
Buffer:

G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate
NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ___ DAYS
Expedited results requested by: _____
Who should AIC contact with questions: Bill Eoff
Phone: (479) - 738 - 208 Fax: (479) - 738 - 1285
Report Attention to: Bill Eoff
Report Address to: Bill Eoff
Huntsville Water Utilities
P.O. Box 430
Huntsville AR 72740

Relinquished By:	Date/Time	Received By:	Date/Time
BM	8/1/12 @ 8:00		
Relinquished By:	Date/Time	Received in Lab By: Eugene Hopton	Date/Time 8-2-12 0800

Comments:
8764 3753492

5/01

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, AR 72204-2322
(501) 224-5060
FAX (501) 224-5072

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

PAGE OF

Client: Huntsville Water Utilities
Project Reference: Bio Monitoring
Project Manager: Bill Eoff
Sampled By: Bill Eoff

PO No.

AIC CONTROL NO: 159780
AIC PROPOSAL NO:
Carrier: Fed Ex
Received on Ice (4°C)? (YES) NO

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	SAMPLE MATRIX: WATER	SOIL		NO OF BOTTLES	ANALYSES REQUESTED: Cd & Fh Chronic	Remarks
3	Huntsville #3	8/2/12 @7:00 8/3/12 @5:00		X	X			3	X	
		Container Type	P							
		Preservative	4C							

Field pH calibration on _____ @ _____ Buffer:

G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate
NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ___ DAYS
Expedited results requested by: _____
Who should AIC contact with questions: Bill Eoff
Phone: (479) - 738 - 2081 Fax: (479) - 738 - 1285
Report Attention to: Bill Eoff
Report Address to: Bill Eoff
Huntsville Water Utilities
P.O. Box 430

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	8/3/12 @ 8:00		
Relinquished By:	Date/Time	Received in Lab By: [signature]	Date/Time 8-4-12 8:20

Comments:
8764 3753 5507

Huntsville Water Utilities
P.O. Box 430
Huntsville, AR 72740

ADEQ
NPDES Enforcement Division
5301 Northshore Drive
North Little Rock, AR 72118-5317