AMERICAN INTERPLEX CORPORATION
LABORATORIES

May 27, 2014

Test Results of
Second Quarter
Chronic 7-Day Renewal
Biomonitoring Testing
for
Effluent
Searcy, AR

Control No. 178588-1

Prepared for:

Mr. Paul Abernathy
Searcy Water and Sewer System
Post Office Box 1319
Searcy, AR 72145

Prepared by:

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AMERICAN INTERPLEX CORPORATION
LABORATORIES

Searcy Water and Sewer System
ATTN: Mr. Paul Abernathy
Post Office Box 1319
Searcy, AR 72145

Re: Chronic 7-Day Renewal utilizing *Pimephales promelas* (Fathead minnow) and *Ceriodaphnia dubia*
Effluent - Searcy, AR
NPDES Permit No. AR0021601 AFIN# 73-00055

Dear Mr. Paul Abernathy:

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 25 % effluent, which is above the critical dilution of 19 %. The NOEC for growth occurred at 25 % effluent, which is above the critical dilution of 19 %. **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 25 % effluent, which is above the critical dilution of 19 %. The NOEC for reproduction occurred at 25 % effluent, which is above the critical dilution of 19 %. **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	0.274	PASS
Control Growth CV < or = 40%	3.80	PASS
Growth Minimum Significant Difference 12 to 30%	18.1	PASS
Critical Dilution CV < or = 40%	10.2	PASS

Ceriodaphnia dubia Method 1002.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Reproduction > or = 15 per Surviving Female	23.8	PASS
Control CV < or = 40% per Surviving Female	39.6	PASS
Reproduction Minimum Significant Difference 13 to 47%	34.0	PASS
Critical Dilution CV < or = 40%	28.9	PASS

II. Outlined Report

A. Introduction

1. Permit Number: AR0021601 AFIN# 73-00055
2. Test Requirements: Chronic Biomonitoring, Quarterly
   Test Methods 1000.0 and 1002.0
3. Receiving Stream: Little Red River

B. Source of Effluent/Dilution Water

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

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	8.5	9.0	8.2
pH (standard units)	6.6	6.6	6.6
Alkalinity (mg/l as CaCO3)	43	24	15
Hardness (mg/l as CaCO3)	40	42	38
Conductivity (umhos/cm)	240	200	180
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05
Ammonia as N (mg/l)	1.7	0.83	0.27

2. Dilution Water Samples: Synthetic Soft Water #4098
   a. Dates Prepared: May 5 through May 19, 2014
   b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	8.1	7.4	8.1
pH (standard units)	7.5	7.0	7.2
Alkalinity (mg/l as CaCO3)	30	30	30
Hardness (mg/l as CaCO3)	42	46	46
Conductivity (umhos/cm)	150	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:	May 14, 2014 at 1615
Date & Time Test Terminated:	May 21, 2014 at 1415
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:	May 14, 2014 at 1640
Date & Time Test Terminated:	May 21, 2014 at
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 Bartlett's test and analyzed with Dunnett's 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 April 1, 2014 at 1715 to April 8, 2014 at 1655
The results were as follows: (Control No. 177015-1.)
Survival LC-50: 4852.9 mg/l
Growth IC-25: 2979 mg/l
Growth PMSD: 11.8

Ceriodaphnia dubia

Chronic reference tests are performed monthly.
A chronic reference test was performed on April 1, 2014 at 1700 to April 8, 2014 at 1510
The results were as follows: (Control No. 177015-2.)
Survival LC-50: 1968 mg/l
Growth IC-25: 1264 mg/l
Growth PMSD: 14.6

V. Chemical Analysis/Quality Control

Parameter	Method	% Recovery	Relative % Difference
Alkalinity	SM 2320 B	NA	0.00
Hardness	EPA 200.7	98.9	1.40
pH	SM 4500-H+ B	100	1.21
Conductivity	EPA 120.1	102	6.90

VI. Organism History

Pimephales promelas (Fathead minnow)

Date: May 14, 2014
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: May 14, 2014
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

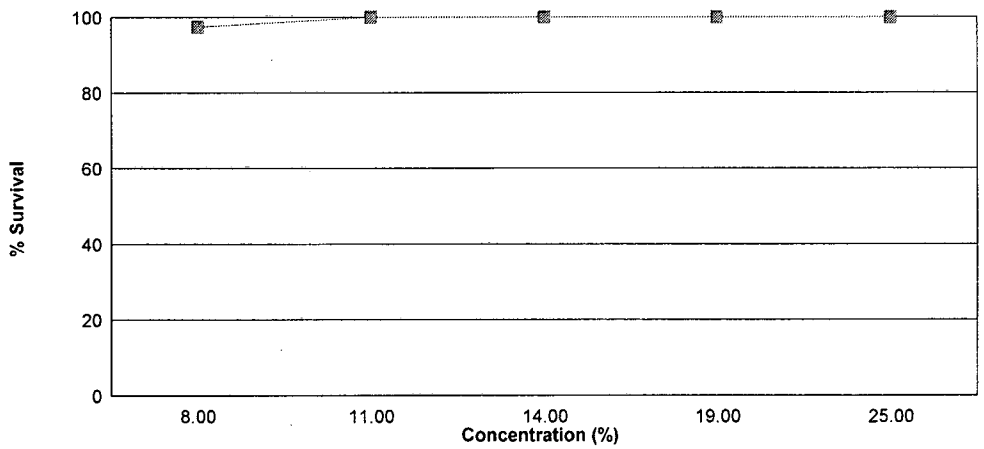
Larvae are exposed in a static renewal system for seven days to different concentrations of effluent with dilution water. Test results are based on the survival and growth (increase in weight) of the larvae.

Effluent dilutions for this test were 8 %, 11 %, 14 %, 19 %, 25 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 19 % effluent.

The test was initiated on May 14, 2014 at 1615 and continued through May 21, 2014 at 1415. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

a.) NOEC survival = 25 % effluent
b.) NOEC growth = 25 % effluent



Summary of the 7-day Fathead Minnow Survival and Growth		
Concentration	Percent Survival	Mean Growth (mg)
Control	100	0.274
8 %	97.5	0.278
11 %	100	0.270
14 %	100	0.287
19 %	100	0.298
25 %	100	0.287

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

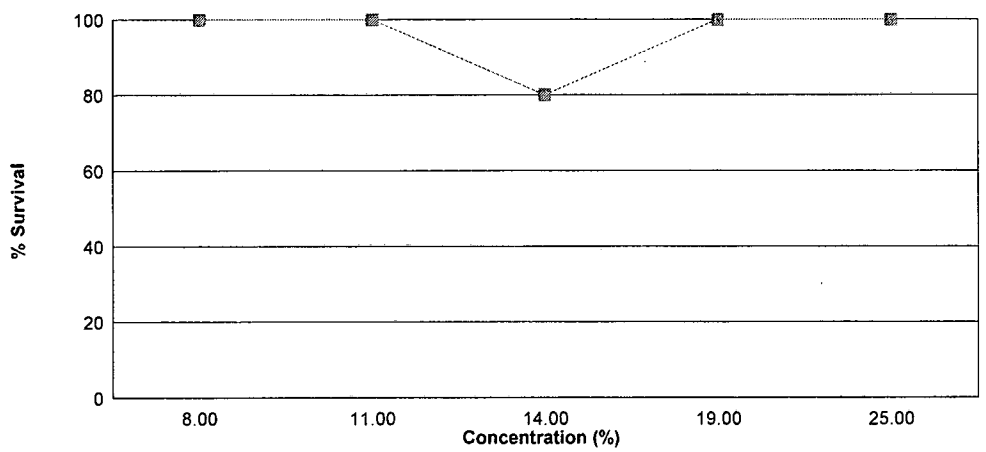
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring with an average of at least 15 young per female.

Effluent dilutions for this test were 8 %, 11 %, 14 %, 19 %, 25 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 19 % effluent.

The test was initiated on May 14, 2014 at 1640 and continued through May 21, 2014 at. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

a.) NOEC survival = 25 % effluent
b.) NOEC reproduction = 25 % effluent



Summary of the 7-day *Ceriodaphnia dubia* Survival and Reproduction Data		
Concentration	Percent Survival	Mean Reproduction
Control	100	23.8
8 %	100	29.7
11 %	100	32.9
14 %	80.0	27.5
19 %	100	30.7
25 %	100	25.6

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Survival

Date and Time Test Initiated: May 14, 2014 at 1615
Date and Time Test Terminated: May 21, 2014 at 1415

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
8 %	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	7	7	7	7
11 %	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
14 %	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
19 %	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
25 %	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

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Growth

Test Initiated: May 14, 2014 at 1615
Test Terminated: May 21, 2014 at 1415

Drying Started: May 20, 2014 at 0900
Drying Ended: May 22, 2014 at 1111

Concentration	Replicate	Weight of pan	Weight of pan + fish	Total weight of fish (g)	Original # of fish	Mean dry weight (mg)
Control	A	.92908	.93130	0.00222	8	0.278
	B	.92560	.92773	0.00213	8	0.266
	C	.92693	.92909	0.00216	8	0.270
	D	.92950	.93162	0.00212	8	0.265
	E	.92667	.92899	0.00232	8	0.290
8 %	A	.92710	.92943	0.00233	8	0.291
	B	.92829	.93037	0.00208	8	0.260
	C	.92558	.92772	0.00214	8	0.268
	D	.92630	.92855	0.00225	8	0.281
	E	.92919	.93149	0.00230	8	0.288
11 %	A	.92775	.92927	0.00152	8	0.190
	B	.92864	.93043	0.00179	8	0.224
	C	.93065	.93303	0.00238	8	0.298
	D	.92719	.92955	0.00236	8	0.295
	E	.92907	.93180	0.00273	8	0.341
14 %	A	.93023	.93239	0.00216	8	0.270
	B	.92788	.92982	0.00194	8	0.242
	C	.92979	.93209	0.00230	8	0.288
	D	.92205	.92462	0.00257	8	0.321
	E	.92216	.92467	0.00251	8	0.314
19 %	A	.92484	.92743	0.00259	8	0.324
	B	.92353	.92571	0.00218	8	0.272
	C	.92560	.92804	0.00244	8	0.305
	D	.92965	.93228	0.00263	8	0.329
	E	.93005	.93214	0.00209	8	0.261
25 %	A	.93269	.93507	0.00238	8	0.298
	B	.93337	.93537	0.00200	8	0.250
	C	.93144	.93382	0.00238	8	0.298
	D	.93275	.93526	0.00251	8	0.314
	E	.93174	.93393	0.00219	8	0.274

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: May 14, 2014 at 1640
Date and Time Test Terminated: May 21, 2014 at

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	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	5	0	3	4	4	4	0	0	2	0	22	10	2.20
5	0	6	8	9	8	0	3	3	6	4	47	10	4.70
6	16	14	10	0	0	9	0	0	0	8	57	10	5.70
7	20	10	0	13	8	21	8	8	14	10	112	10	11.2
8													
TOTAL	41	30	21	26	20	34	11	11	22	22	238	10	23.8

Concentration: 8 %													
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	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	0	4	3	4	4	4	3	2	4	0	28	10	2.80
5	4	11	0	8	0	0	0	12	10	2	47	10	4.70
6	0	0	12	0	14	13	14	0	0	8	61	10	6.10
7	13	19	19	8	21	22	18	21	10	10	161	10	16.1
8													
TOTAL	17	34	34	20	39	39	35	35	24	20	297	10	29.7

Concentration: 11 %													
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	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	4	0	4	3	4	2	5	4	3	4	33	10	3.30
5	0	5	0	13	0	10	0	12	0	12	52	10	5.20
6	8	12	10	0	11	0	12	0	11	0	64	10	6.40
7	17	21	20	9	20	19	20	21	23	10	180	10	18.0
8													
TOTAL	29	38	34	25	35	31	37	37	37	26	329	10	32.9

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: May 14, 2014 at 1640
Date and Time Test Terminated: May 21, 2014 at

Concentration: 14 %													
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	0	0	0	0	0	X	0	0	0	0	0	9	0.00
4	4	4	3	4	4	X	0	3	4	4	30	9	3.33
5	0	13	0	0	0	X	X	12	11	12	48	8	6.00
6	10	0	14	12	14	X	X	0	0	0	50	8	6.25
7	19	19	21	22	21	X	X	20	15	10	147	8	18.4
8													
TOTAL	33	36	38	38	39	0	0	35	30	26	275	10	27.5

Concentration: 19 %													
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	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	3	4	4	0	5	4	3	4	4	4	35	10	3.50
5	0	9	10	2	0	0	0	10	9	11	51	10	5.10
6	10	0	0	0	17	11	12	0	0	0	50	10	5.00
7	16	14	18	9	23	21	22	19	18	11	171	10	17.1
8													
TOTAL	29	27	32	11	45	36	37	33	31	26	307	10	30.7

Concentration: 25 %													
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	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	4	0	0	5	4	3	0	4	3	4	27	10	2.70
5	0	5	7	10	10	12	3	10	11	8	76	10	7.60
6	9	14	13	0	10	0	0	0	0	0	46	10	4.60
7	17	10	0	16	0	14	10	10	19	11	107	10	10.7
8													
TOTAL	30	29	20	31	24	29	13	24	33	23	256	10	25.6

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	8 %	1	1.00000	1.39310
2	8 %	2	1.00000	1.39310
2	8 %	3	1.00000	1.39310
2	8 %	4	1.00000	1.39310
2	8 %	5	0.87500	1.20940
3	11 %	1	1.00000	1.39310
3	11 %	2	1.00000	1.39310
3	11 %	3	1.00000	1.39310
3	11 %	4	1.00000	1.39310
3	11 %	5	1.00000	1.39310
4	14 %	1	1.00000	1.39310
4	14 %	2	1.00000	1.39310
4	14 %	3	1.00000	1.39310
4	14 %	4	1.00000	1.39310
4	14 %	5	1.00000	1.39310
5	19 %	1	1.00000	1.39310
5	19 %	2	1.00000	1.39310
5	19 %	3	1.00000	1.39310
5	19 %	4	1.00000	1.39310
5	19 %	5	1.00000	1.39310
6	25 %	1	1.00000	1.39310
6	25 %	2	1.00000	1.39310
6	25 %	3	1.00000	1.39310
6	25 %	4	1.00000	1.39310
6	25 %	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	8 %	25.00	16.00	5.00	
3	11 %	27.50	16.00	5.00	
4	14 %	27.50	16.00	5.00	
5	19 %	27.50	16.00	5.00	
6	25 %	27.50	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 = 0.02654		
W = 0.9724		
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 = 13.62		
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	0.002753	0.0005506	0.4978
Within (Error)	24	0.02654	0.001106	
Total	29	0.02929		

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	0.2738	0.2738		
2	8 %	0.2776	0.2776	-0.1807	
3	11 %	0.2696	0.2696	0.1997	
4	14 %	0.287	0.287	-0.6276	
5	19 %	0.2982	0.2982	-1.16	
6	25 %	0.2868	0.2868	-0.6181	

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	8 %	5	0.04964	18.1	-0.0038
3	11 %	5	0.04964	18.1	0.0042
4	14 %	5	0.04964	18.1	-0.0132
5	19 %	5	0.04964	18.1	-0.0244
6	25 %	5	0.04964	18.1	-0.013

Appendix A2: Statistics

Ceriodaphnia dubia Survival

Fisher's Exact Test

Identification	Alive	Dead	Total Animals
Control	10	0	10
8 %	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
11 %	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
14 %	8	2	10
Total	18	2	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 8. 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
19 %	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.

Appendix A2: Statistics

Ceriodaphnia dubia Survival

Fisher's Exact Test

Identification	Alive	Dead	Total Animals
Control	10	0	10
25 %	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.

Summary of Fisher's Exact Test

Group	Identification	Exposed	Dead	Sig 0.05
0	Control	10	0	
1	8 %	10	0	
2	11 %	10	0	
3	14 %	10	2	
4	19 %	10	0	
5	25 %	10	0	

Appendix A2: Statistics

Ceriodaphnia dubia Reproduction

Kolmogorov Test for Normality		No Transformation
D = 0.1077		
D* = 0.845		
Critical D* = 1.035	(alpha = 0.01, N = 60)	
Data PASS normality test (alpha = 0.01).		

Bartlett's Test for Homogeneity of Variance		No Transformation
Calculated B1 statistic = 13.23		
Critical B = 15.086	(alpha = 0.01, df = 5)	
Data PASS B1 homogeneity test at 0.01 level.		

Appendix A2: Statistics

Ceriodaphnia dubia Reproduction

ANOVA Table				No Transformation
SOURCE	DF	SS	MS	F
Between	5	570.3	114.1	1.304
Within (Error)	54	4726	87.52	
Total	59	5296		

Critical F = 3.38 (alpha = 0.01, df = 5,54)
2.38 (alpha = 0.05, df = 5,54)

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	23.8	23.8		
2	8 %	29.7	29.7	-1.41	
3	11 %	32.9	32.9	-2.175	
4	14 %	27.5	27.5	-0.8844	
5	19 %	30.7	30.7	-1.649	
6	25 %	25.6	25.6	-0.4302	

Dunnett's critical value = 2.31 (1 Tailed, alpha = 0.05, df [used] = 5,40) (Actual df = 5,54)

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	8 %	10	9.665	40.6	-5.9
3	11 %	10	9.665	40.6	-9.1
4	14 %	10	9.665	40.6	-3.7
5	19 %	10	9.665	40.6	-6.9
6	25 %	10	9.665	40.6	-1.8

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	796.1	159.2	2.92
Within (Error)	52	2835	54.52	
Total	57	3631		

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	23.8	23.8		
2	8 %	29.7	29.7	-1.787	
3	11 %	32.9	32.9	-2.756	
4	14 %	34.375	34.375	-3.019	
5	19 %	30.7	30.7	-2.09	
6	25 %	25.6	25.6	-0.5451	

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	8 %	10	7.628	32.1	-5.9
3	11 %	10	7.628	32.1	-9.1
4	14 %	8	8.091	34	-10.58
5	19 %	10	7.628	32.1	-6.9
6	25 %	10	7.628	32.1	-1.8

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: May 14, 2014 at 1322
Date and Time Test Terminated: May 21, 2014 at 1500

Effluent Conc.: Control		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.1	7.9	7.4	8.3	8.1	8.1	8.0
	Final *1	7.0	7.9	7.5	8.7	8.3	7.7	7.4
	Final *2	7.9	7.9	7.7	8.0	8.5	8.4	8.0
pH, units	Initial	7.5	7.4	7.0	7.5	7.2	7.2	7.3
	Final *1	7.4	7.5	7.2	7.4	7.5	7.3	7.3
	Final *2	7.4	7.1	7.5	7.2	7.6	7.5	7.5
Alkalinity, mg CaCO3/l		30	NA	30	NA	30	NA	NA
Hardness, mg CaCO3/l		42	NA	46	NA	46	NA	NA
Conductivity, umhos/cm		150	160	160	150	160	150	150
Res. Chlorine, mg/l		<0.05	NA	<0.05	NA	<0.05	NA	NA

Effluent Conc.: 8 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.1	7.9	7.4	8.1	8.0	8.1	8.1
	Final *1	7.2	8.2	7.3	8.7	8.2	7.5	7.4
	Final *2	8.0	7.6	8.0	7.8	8.6	8.3	7.8
pH, units	Initial	7.2	7.4	7.0	7.4	7.2	7.1	7.3
	Final *1	7.4	7.5	7.1	7.4	7.5	7.3	7.3
	Final *2	7.3	7.0	7.5	7.2	7.6	7.4	7.4

Effluent Conc.: 11 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.9	7.9	7.4	8.2	8.0	8.3	8.0
	Final *1	7.2	7.9	7.0	8.0	8.2	7.7	7.3
	Final *2	8.0	7.6	8.0	7.9	8.4	8.3	7.8
pH, units	Initial	7.1	7.4	7.0	7.4	7.1	7.1	7.2
	Final *1	7.4	7.5	7.0	7.4	7.5	7.3	7.3
	Final *2	7.3	7.0	7.5	7.1	7.6	7.4	7.4

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: May 14, 2014 at 1322
Date and Time Test Terminated: May 21, 2014 at 1500

Effluent Conc.: 14 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.2	7.9	7.7	8.1	8.0	8.2	8.0
	Final *1	7.1	8.0	7.1	7.9	8.2	7.7	7.5
	Final *2	7.8	7.8	7.8	7.9	8.3	8.3	7.9
pH, units	Initial	7.1	7.4	7.0	7.4	7.2	7.1	7.2
	Final *1	7.4	7.4	7.1	7.4	7.4	7.3	7.3
	Final *2	7.3	7.0	7.5	7.1	7.6	7.4	7.4

Effluent Conc.: 19 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.2	7.9	7.9	8.1	8.0	8.2	7.9
	Final *1	7.0	8.0	7.2	8.0	8.1	7.6	7.7
	Final *2	7.4	7.9	7.7	7.9	8.4	8.3	7.8
pH, units	Initial	7.0	7.4	7.0	7.3	7.2	7.0	7.2
	Final *1	7.4	7.5	7.1	7.4	7.5	7.3	7.3
	Final *2	7.3	7.0	7.5	7.2	7.5	7.4	7.4
Alkalinity, mg CaCO3/l		35	NA	30	NA	29	NA	NA
Hardness, mg CaCO3/l		42	NA	45	NA	44	NA	NA
Conductivity, umhos/cm		160	170	180	160	170	160	160
Res. Chlorine, mg/l		<0.05	NA	<0.05	NA	<0.05	NA	NA

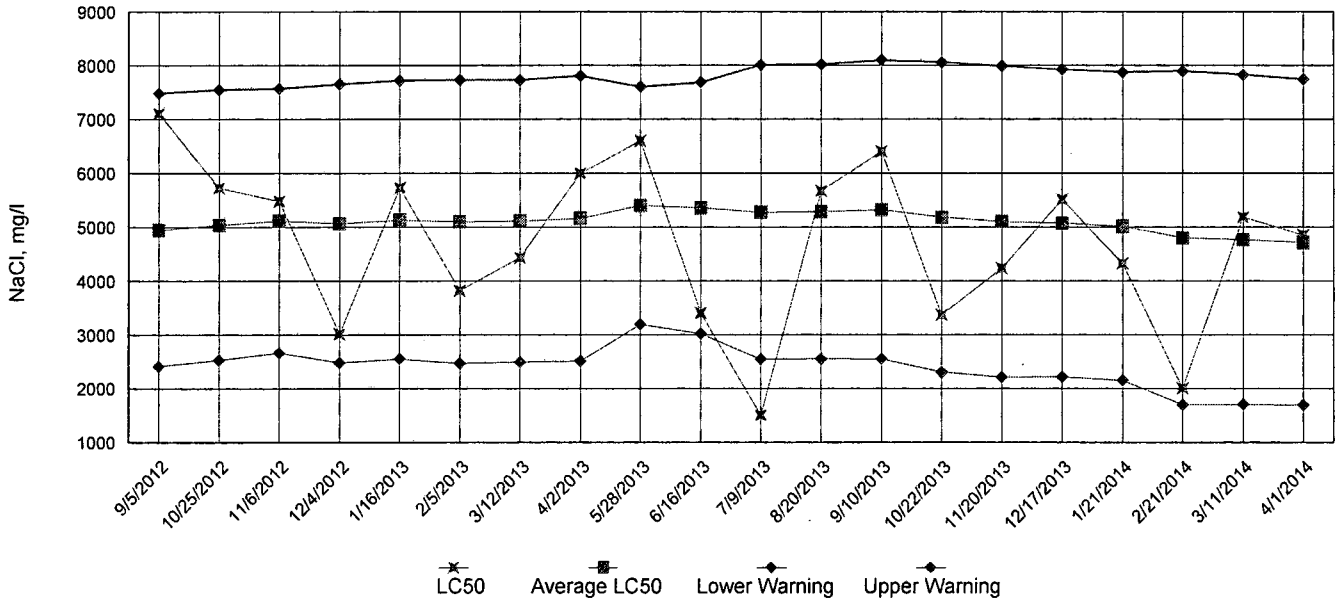
Effluent Conc.: 25 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.1	7.9	7.7	8.1	8.0	8.2	7.9
	Final *1	7.1	8.0	7.0	8.1	8.2	7.6	7.6
	Final *2	7.8	7.7	8.0	8.0	8.5	8.2	7.8
pH, units	Initial	7.0	7.4	7.0	7.2	7.1	7.0	7.1
	Final *1	7.4	7.5	7.1	7.4	7.5	7.2	7.3
	Final *2	7.2	7.1	7.6	7.2	7.6	7.4	7.4

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

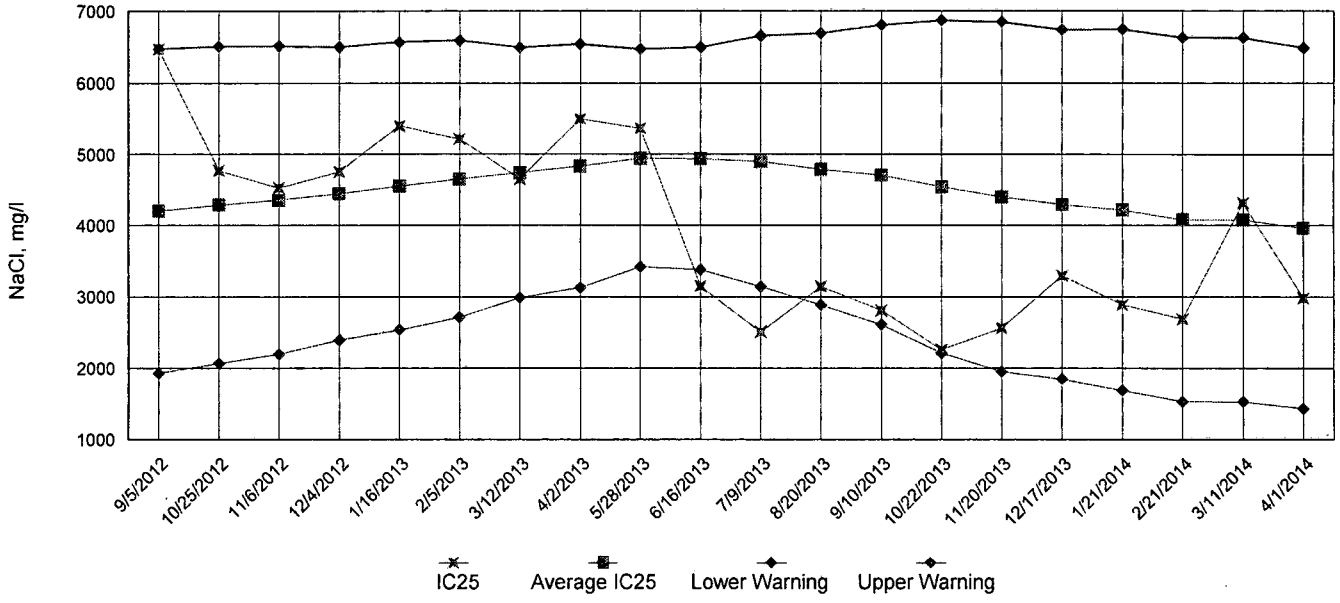
Appendix A4: Test 1000.0

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

LC50 Survival Data



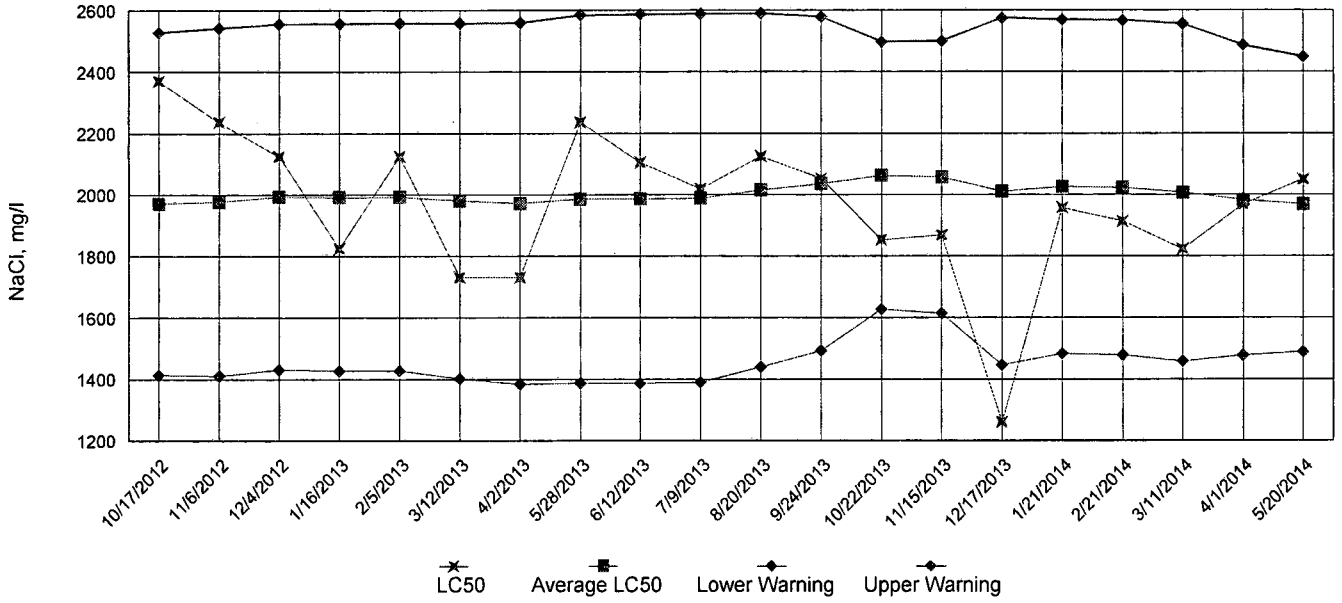
IC25 Growth Data



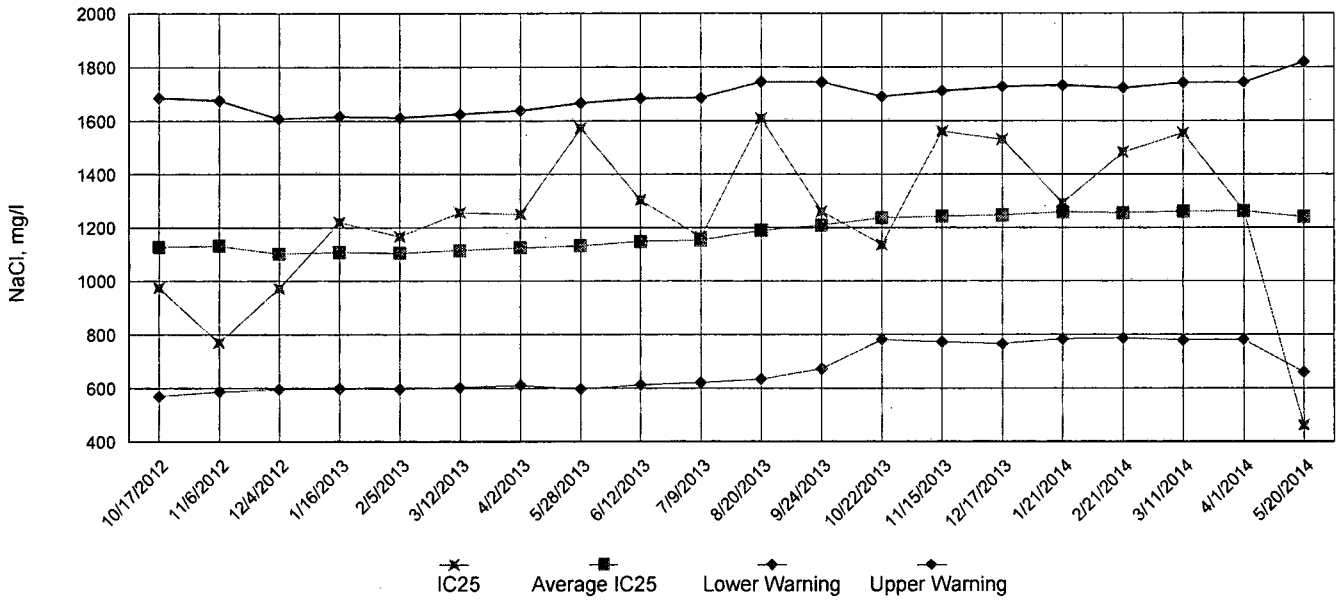
Appendix A4: Test 1002.0

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: Searcy Water and Sewer System

NPDES No.: AR0021601 AFIN# 73-00055

Date and Time Test Initiated: May 14, 2014 at 1615
Date and Time Test Terminated: May 21, 2014 at 1415
Dilution water used: Synthetic Soft Water #4098

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
8 %	100	100	100	100	87.5	100	100	97.5	5.73
11 %	100	100	100	100	100	100	100	100	0.00
14 %	100	100	100	100	100	100	100	100	0.00
19 %	100	100	100	100	100	100	100	100	0.00
25 %	100	100	100	100	100	100	100	100	0.00

DATA TABLE FOR GROWTH

Effluent Conc. %	Average dry weight, mg replicate chambers A	B	C	D	E	Mean dry weight, mg	CV%
Control	0.278	0.266	0.270	0.265	0.290	0.274	3.80
8 %	0.291	0.260	0.268	0.281	0.288	0.278	4.77
11 %	0.190	0.224	0.298	0.295	0.341	0.27	22.7
14 %	0.270	0.242	0.288	0.321	0.314	0.287	11.3
19 %	0.324	0.272	0.305	0.329	0.261	0.298	10.2
25 %	0.298	0.250	0.298	0.314	0.274	0.287	8.73

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	(19 %)	____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	(19 %)	____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: 25 % (TOP6C)

6. LOEC Pimephales Lethality: 25 % (TXP6C)

7. NOEC Pimephales Sublethality: 25 % (TPP6C)

8. LOEC Pimephales Sublethality: 25 % (TYP6C)

9. Coefficient of variation for Pimephales growth: 10.2 (TQP6C)

AMERICAN INTERPLEX CORPORATION
LABORATORIES

Appendix B: Test 1000.0

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

PERMITTEE: Searcy Water and Sewer System
NPDES NO.: AR0021601 AFIN# 73-00055
CONTACT: Mr. Paul Abernathy
ANALYST: 280, 304, 307, 310

SAMPLE No. 1 COLLECTED ending: DATE: May 13, 2014 TIME: 1140
SAMPLE No. 2 COLLECTED ending: DATE: May 15, 2014 TIME: 1145
SAMPLE No. 3 COLLECTED ending: DATE: May 18, 2014 TIME: 1145
Test Initiated: DATE: May 14, 2014 TIME: 1615
Test Terminated: DATE: May 21, 2014 TIME: 1415

DILUTION Control	DAY 1	2	3	4	5	6	7
D.O. Initial	8.1	7.9	7.4	8.3	8.1	8.1	8.0
Final	7.0	7.9	7.5	8.7	8.3	7.7	7.4
pH Initial	7.5	7.4	7.0	7.5	7.2	7.2	7.3
Final	7.4	7.5	7.2	7.4	7.5	7.3	7.3
Alkalinity	30	NA	30	NA	30	NA	NA
Hardness	42	NA	46	NA	46	NA	NA
Conductivity	150	160	160	150	160	150	150
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 8 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.1	7.9	7.4	8.1	8.0	8.1	8.1
Final	7.2	8.2	7.3	8.7	8.2	7.5	7.4
pH Initial	7.2	7.4	7.0	7.4	7.2	7.1	7.3
Final	7.4	7.5	7.1	7.4	7.5	7.3	7.3
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	150	160	160	150	160	160	150
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 11 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.9	7.9	7.4	8.2	8.0	8.3	8.0
Final	7.2	7.9	7.0	8.0	8.2	7.7	7.3
pH Initial	7.1	7.4	7.0	7.4	7.1	7.1	7.2
Final	7.4	7.5	7.0	7.4	7.5	7.3	7.3
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	160	160	160	150	160	160	160
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 14 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.2	7.9	7.7	8.1	8.0	8.2	8.0
Final	7.1	8.0	7.1	7.9	8.2	7.7	7.5
pH Initial	7.1	7.4	7.0	7.4	7.2	7.1	7.2
Final	7.4	7.4	7.1	7.4	7.4	7.3	7.3
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	160	170	170	160	160	160	160
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 19 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.2	7.9	7.9	8.1	8.0	8.2	7.9
Final	7.0	8.0	7.2	8.0	8.1	7.6	7.7
pH Initial	7.0	7.4	7.0	7.3	7.2	7.0	7.2
Final	7.4	7.5	7.1	7.4	7.5	7.3	7.3
Alkalinity	35	NA	30	NA	29	NA	NA
Hardness	42	NA	45	NA	44	NA	NA
Conductivity	160	170	180	160	170	160	160
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 25 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.1	7.9	7.7	8.1	8.0	8.2	7.9
Final	7.1	8.0	7.0	8.1	8.2	7.6	7.6
pH Initial	7.0	7.4	7.0	7.2	7.1	7.0	7.1
Final	7.4	7.5	7.1	7.4	7.5	7.2	7.3
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	170	180	180	160	170	160	160
Chlorine	NA	NA	NA	NA	NA	NA	NA

Appendix B: Test 1002.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

Permittee: Searcy Water and Sewer System

NPDES No.: AR0021601 AFIN# 73-00055

Date and Time Test Initiated: May 14, 2014 at 1640
Date and Time Test Terminated: May 21, 2014 at
Dilution water used: Synthetic Soft Water #4098

PERCENT SURVIVAL

		Percent Effluent				
Time of Reading	Control	8 %	11 %	14 %	19 %	25 %
24 hour	100	100	100	100	100	100
48 hour	100	100	100	100	100	100
7 day	100	100	100	80.0	100	100

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

		Percent Effluent				
Replicates	Control	8 %	11 %	14 %	19 %	25 %
A	41	17	29	33	29	30
B	30	34	38	36	27	29
C	21	34	34	38	32	20
D	26	20	25	38	11	31
E	20	39	35	39	45	24
F	34	39	31	0	36	29
G	11	35	37	0	37	13
H	11	35	37	35	33	24
I	22	24	37	30	31	33
J	22	20	26	26	26	23
Mean per Adult	23.8	29.7	32.9	27.5	30.7	25.6
Mean per Surviving Adult	23.8	29.7	32.9	34.4	30.7	25.6
CV %	39.6	28.6	14.7	13.1	28.9	23.6

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	(19 %)	____YES	X NO
b.) 1/2 LOW FLOW DILUTION	(NA)	____YES	____NO

2. Dunnett's 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	(19 %)	____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: 25 % (TOP3B)

6. LOEC Ceriodaphnia Lethality: 25 % (TXP3B)

7. NOEC Ceriodaphnia Sublethality: 25 % (TPP3B)

8. LOEC Ceriodaphnia Sublethality: 25 % (TYP3B)

9. Coefficient of variation for Ceriodaphnia Reproduction: 39.6 (TQP3B)

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Appendix B: Test 1002.0

CHRONIC TOXICITY SUMMARY FORM
Ceriodaphnia dubia
CHEMICAL PARAMETERS CHART

PERMITTEE: Searcy Water and Sewer System
NPDES NO.: AR0021601 AFIN# 73-00055
CONTACT: Mr. Paul Abernathy
ANALYST: 280, 304, 307, 310

SAMPLE No. 1 COLLECTED ending: DATE: May 13, 2014 TIME: 1140
SAMPLE No. 2 COLLECTED ending: DATE: May 15, 2014 TIME: 1145
SAMPLE No. 3 COLLECTED ending: DATE: May 18, 2014 TIME: 1145
Test Initiated: DATE: May 14, 2014 TIME: 1640
Test Terminated: DATE: May 21, 2014 TIME:

DILUTION Control	DAY 1	2	3	4	5	6	7
D.O. Initial	8.1	7.9	7.4	8.3	8.1	8.1	8.0
Final	7.9	7.9	7.7	8.0	8.5	8.4	8.0
pH Initial	7.5	7.4	7.0	7.5	7.2	7.2	7.3
Final	7.4	7.1	7.5	7.2	7.6	7.5	7.5
Alkalinity	30	NA	30	NA	30	NA	NA
Hardness	42	NA	46	NA	46	NA	NA
Conductivity	150	160	160	150	160	150	150
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 8 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.1	7.9	7.4	8.1	8.0	8.1	8.1
Final	8.0	7.6	8.0	7.8	8.6	8.3	7.8
pH Initial	7.2	7.4	7.0	7.4	7.2	7.1	7.3
Final	7.3	7.0	7.5	7.2	7.6	7.4	7.4
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	150	160	160	150	160	160	150
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 11 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.9	7.9	7.4	8.2	8.0	8.3	8.0
Final	8.0	7.6	8.0	7.9	8.4	8.3	7.8
pH Initial	7.1	7.4	7.0	7.4	7.1	7.1	7.2
Final	7.3	7.0	7.5	7.1	7.6	7.4	7.4
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	160	160	160	150	160	160	160
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 14 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.2	7.9	7.7	8.1	8.0	8.2	8.0
Final	7.8	7.8	7.8	7.9	8.3	8.3	7.9
pH Initial	7.1	7.4	7.0	7.4	7.2	7.1	7.2
Final	7.3	7.0	7.5	7.1	7.6	7.4	7.4
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	160	170	170	160	160	160	160
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 19 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.2	7.9	7.9	8.1	8.0	8.2	7.9
Final	7.4	7.9	7.7	7.9	8.4	8.3	7.8
pH Initial	7.0	7.4	7.0	7.3	7.2	7.0	7.2
Final	7.3	7.0	7.5	7.2	7.5	7.4	7.4
Alkalinity	35	NA	30	NA	29	NA	NA
Hardness	42	NA	45	NA	44	NA	NA
Conductivity	160	170	180	160	170	160	160
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 25 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.1	7.9	7.7	8.1	8.0	8.2	7.9
Final	7.8	7.7	8.0	8.0	8.5	8.2	7.8
pH Initial	7.0	7.4	7.0	7.2	7.1	7.0	7.1
Final	7.2	7.1	7.6	7.2	7.6	7.4	7.4
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	170	180	180	160	170	160	160
Chlorine	NA	NA	NA	NA	NA	NA	NA

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: Searcy
Project Reference:
Project Manager: Paul Abernathy
Sampled By: Johnny Fowler

PO No.

SAMPLE MATRIX: WATER, SOIL

NO OF BOTTLES

ANALYSES REQUESTED: Bio-monitoring

AIC CONTROL NO: 178588
AIC PROPOSAL NO:
Carrier:/Tracking No.
Received Temperature C: 1.5°C

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL	NO OF BOTTLES	Bio-monitoring	Remarks
1	EFF	START 5-12-14 11:40A		✓	✓		2	✓	
		STOP 5-13-14 11:40A							
		Container Type						P	
		Preservative						NU	

Field pH calibration on _____ @ _____
Buffer:

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

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions: _____
Phone: _____ Fax: _____
Report Attention to:
Report Address to: Searcy Water Utilities
P.O. Box 134
Searcy, AR 72145

Relinquished By:	Date/Time	Received By:	Date/Time
JZ	5-14-14 6:AM	Lynn Brewer	5-14-14 6:AM
Lynn Brewer	5-14-14 9:AM		

Received in Lab By: [signature] Date/Time 5/14/14 0900

Comments:

19-Oct-09

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: Searcy
Project Reference:
Project Manager: Paul Aberwater
Sampled By: Johnny Fowler

PO No.:

AIC CONTROL NO: 178588
AIC PROPOSAL NO:
Carrier:/Tracking No.
Received Temperature C: 3.9 C

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL		NO OF BOTTLES	Biomonitoring	Remarks
(2)	EFF Start / Stop	5-14-14 / 1114 ... / 5-15-14 / 1114 ...		✓	✓			2	✓	
		Container Type							P	
		Preservative							NO	

¹ANALYSES REQUESTED

Field pH calibration on ______ @ ______
Buffer:

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

Turnaround Time Requested: (Please circle)
NORMAL (circled) or EXPEDITED IN ____ DAYS
Expedited results requested by:
Who should AIC contact with questions:
Phone: Fax:
Report Attention to:
Report Address to: Searcy Water Utilities
P.O. Box 1319 Searcy, AR 72145

Relinquished By	Date/Time	Received By	Date/Time
Johnny Fowler	5-16-14 6:00 pm	Raymond ...	5-16-14 6:00 AM
Raymond ...	5-16-14 9:00 am	Received in Lab By: [signature]	5/16/14 0900

Comments:

19-Oct-09

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: Searsy
Project Reference:
Project Manager: Paul Abourezk
Sampled By: Johnny Fowler

PO No.

SAMPLE MATRIX: WATER, SOIL

ANALYSES REQUESTED

AIC CONTROL NO: 78586
AIC PROPOSAL NO:
Carrier/Tracking No.
Received Temperature C: 3.2°C

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL	NO OF BOTTLES	Dio Monitoring	Remarks
(3)	EFF	START 5-17-14/11:45A STOP 5-18-14/11:45A		C			2		
		Container Type						P	Field pH calibration
		Preservative						NU	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: _____
Phone: _____ Fax: _____
Report Attention to:
Report Address to: Searcy Water Utilities P.O. Box 1239 Searcy, AR 72145

Relinquished By:	Date/Time	Received By:	Date/Time
John Fowler	5-19-14 6:AM	Lynn Brewer	5-19-14 6:AM.
Lynn Brewer	5-19-14 9:10		

Received in Lab By: [signature] Date/Time: 5/19/14 0910

Comments:

19-Oct-09

FORM 0060

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300 NORTH ELM STREET
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SEARCY, ARKANSAS 72145-1319

RETURN RECEIPT REQUESTED

NPDES Enforcement Division
A.D.E.Q.
5301 Northshore Dr.
North Little Rock, AR 72118-5317

RETURN RECEIPT REQUESTED