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GENERAL MANAGER
Daniel K. Dawson
ASSISTANT GENERAL
MANAGER
Tim W. Cleveland

July 12, 2013

CERTIFIED MAIL, Return Receipt Requested: 7010.2780 0002 5135 3145

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

Re: Searcy Wastewater Treatment Plant
NPDES Permit No. AR0021601
AFIN No. 73-00055

To Whom It May Concern:

Enclosed you will please find discharge monitoring reports (DMRs) for the monitoring period ending June 30, 2013.

Due to my having to be out of town for much of this month (July), I am authorizing Tim Cleveland, our Assistant General Manager, to sign these enclosed DMRs in my absence for this month only.

If you have any questions, please feel free to contact me.

Sincerely,

SEARCY WATER UTILITIES

A handwritten signature in black ink, appearing to read "Dan Dawson", is written over the typed name and title.

Daniel K. Dawson
General Manager

Enclosures

Monthly Overflow Report
In accordance with Part III (4) of NPDES Permit No. AR0021601

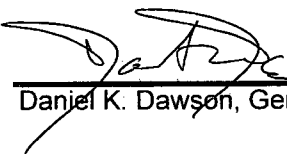
DMR Period: From: To:
 6/1/2013 6/30/2013

<u>Overflow #</u>	<u>Date</u>	<u>Time</u>	<u>Duration</u>	<u>Location</u>	<u>Est. Volume</u>	<u>Cause</u>	<u>Env. Impact</u>	<u>Action Taken</u>	<u>Discharge</u>
None									

Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Report submitted by:



Daniel K. Dawson, General Manager

Date signed:

July 12, 2013

CERTIFIED MAIL, Return Receipt Requested: 7010 2780 0002 5135 3145

May 29, 2013

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

Control No. 167401-1

Prepared for:

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

Prepared by:

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



May 29, 2013
Control No. 167401-1
Page 2 of 31

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 %. Any statistical difference with sublethal effects cannot be considered toxic due to the minimum significant difference (PMSD) calculated result being below the lower PMSD bounds. **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

A handwritten signature in black ink is written over a horizontal line. Below the signature, the name 'John Overbey' and title 'Laboratory Director' are printed.

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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	0.332	PASS
Control Growth CV < or = 40%	7.14	PASS
Growth Minimum Significant Difference 12 to 30%	9.77	BELOW
Critical Dilution CV < or = 40%	4.05	PASS

Ceriodaphnia dubia Method 1002.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Reproduction > or = 15 per Surviving Female	23.4	PASS
Control CV < or = 40% per Surviving Female	11.8	PASS
Reproduction Minimum Significant Difference 13 to 47%	20.0	PASS
Critical Dilution CV < or = 40%	33.9	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)	7.8	8.4	7.3
pH (standard units)	7.5	7.4	7.7
Alkalinity (mg/l as CaCO ₃)	41	33	33
Hardness (mg/l as CaCO ₃)	38	41	38
Conductivity (umhos/cm)	290	320	330
Residual Chlorine (mg/l)	<0.05	<0.05	0.16
Ammonia as N (mg/l)	0.32	0.40	0.22

2. Dilution Water Samples: Synthetic Soft Water #3991

- a. Dates Prepared: May 13 through May 27, 2013
- b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	8.0	7.9	7.3
pH (standard units)	7.3	7.4	7.7
Alkalinity (mg/l as CaCO ₃)	30	30	30
Hardness (mg/l as CaCO ₃)	44	44	44
Conductivity (umhos/cm)	180	180	180
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 15, 2013 at 1055
Date & Time Test Terminated: May 22, 2013 at 1250
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 15, 2013 at 1425
Date & Time Test Terminated: May 22, 2013 at 1320
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 April 2, 2013 at 1330 to April 9, 2013 at 1130

The results were as follows: (Control No. 166187-1.)

Survival LC-50: 5995 mg/l

Growth IC-25: 5499 mg/l

Growth PMSD: 17.2

Ceriodaphnia dubia

Chronic reference tests are performed monthly.

A chronic reference test was performed on April 2, 2013 at 1510 to April 9, 2013 at 1500

The results were as follows: (Control No. 166187-2.)

Survival LC-50: 1732 mg/l

Growth IC-25: 1250 mg/l

Growth PMSD: 8.05

V. Chemical Analysis/Quality Control

Parameter	Method	% Recovery	Relative % Difference
Alkalinity	SM 2320 B	NA	1.37
Hardness	EPA 200.7	100	1.20
pH	SM 4500-H+ B	101	0.134
Conductivity	EPA 120.1	101	0.656

VI. Organism History

Pimephales promelas (Fathead minnow)

Date: May 15, 2013

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 15, 2013

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

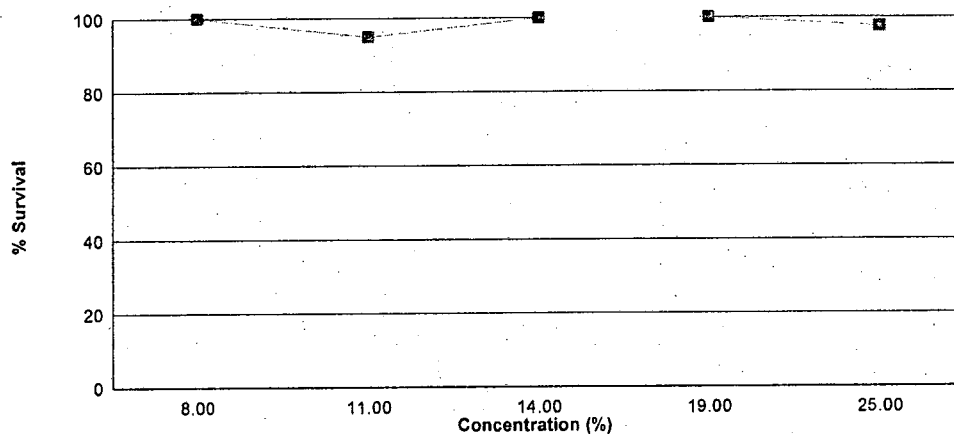
Larvae are exposed in a static renewal system for seven days to different concentrations of effluent with dilution water. Test results are based on the survival and growth (increase in weight) of the larvae.

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 15, 2013 at 1055 and continued through May 22, 2013 at 1250. 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	0.332
8 %	100	0.340
11 %	95.0	0.339
14 %	100	0.366
19 %	100	0.361
25 %	97.5	0.356

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

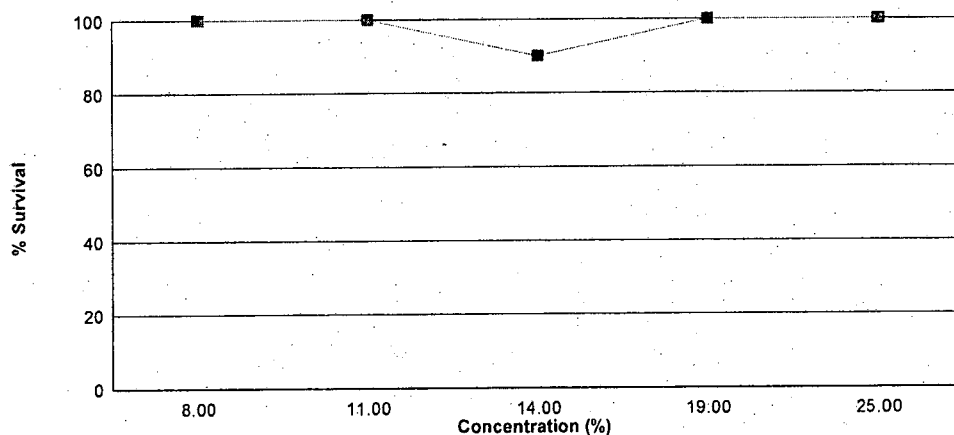
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring with an average of at least 15 young per female.

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 15, 2013 at 1425 and continued through May 22, 2013 at 1320. 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



Concentration	Percent Survival	Mean Reproduction
Control	100	23.4
8 %	100	23.7
11 %	100	23.7
14 %	90.0	18.5
19 %	100	19.0
25 %	100	19.6

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Survival

Date and Time Test Initiated: May 15, 2013 at 1055
Date and Time Test Terminated: May 22, 2013 at 1250

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	8	8	8	8
11 %	A	8	8	8	7	7	7	7
	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	7	7	7	7	7
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	7	7	7	7	7	7
	E	8	8	8	8	8	8	8

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Growth

Test Initiated: May 15, 2013 at 1055
Test Terminated: May 22, 2013 at 1250

Drying Started: May 20, 2013 at 1625
Drying Ended: May 24, 2013 at 1135

Concentration	Replicate	Weight of pan	Weight of pan + fish	Total weight of fish (g)	Original # of fish	Mean dry weight (mg)
Control	A	.93177	.93440	0.00263	8	0.329
	B	.92830	.93117	0.00287	8	0.359
	C	.93055	.93314	0.00259	8	0.324
	D	.93338	.93617	0.00279	8	0.349
	E	.93353	.93591	0.00238	8	0.298
8 %	A	.93790	.94052	0.00262	8	0.328
	B	.93735	.93972	0.00237	8	0.296
	C	.93577	.93841	0.00264	8	0.330
	D	.93560	.93845	0.00285	8	0.356
	E	.93499	.93810	0.00311	8	0.389
11 %	A	.93871	.94129	0.00258	8	0.322
	B	.93243	.93530	0.00287	8	0.359
	C	.93146	.93414	0.00268	8	0.335
	D	.93128	.93396	0.00268	8	0.335
	E	.93464	.93740	0.00276	8	0.345
14 %	A	.93334	.93606	0.00272	8	0.340
	B	.93371	.93673	0.00302	8	0.378
	C	.93529	.93811	0.00282	8	0.352
	D	.93662	.93959	0.00297	8	0.371
	E	.93855	.94167	0.00312	8	0.390
19 %	A	.93395	.93669	0.00274	8	0.342
	B	.93825	.94118	0.00293	8	0.366
	C	.93360	.93651	0.00291	8	0.364
	D	.94101	.94405	0.00304	8	0.380
	E	.93399	.93680	0.00281	8	0.351
25 %	A	.90683	.90969	0.00286	8	0.358
	B	.93108	.93389	0.00281	8	0.351
	C	.93368	.93674	0.00306	8	0.382
	D	.90791	.91062	0.00271	8	0.339
	E	.90775	.91056	0.00281	8	0.351

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: May 15, 2013 at 1425
Date and Time Test Terminated: May 22, 2013 at 1320

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	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	4	3	4	4	4	4	4	4	2	3	36	10	3.60	
5	10	7	6	9	7	8	8	9	8	9	81	10	8.10	
6	0	12	0	10	11	0	13	13	0	0	59	10	5.90	
7	15	0	10	0	0	11	0	0	10	12	58	10	5.80	
8														
TOTAL	29	22	20	23	22	23	25	26	20	24	234	10	23.4	

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	4	4	4	0	4	4	0	2	5	3	30	10	3.00	
5	8	5	7	12	10	6	10	9	0	8	75	10	7.50	
6	0	12	11	15	12	12	15	11	16	0	104	10	10.4	
7	16	0	0	0	0	0	0	0	0	12	28	10	2.80	
8														
TOTAL	28	21	22	27	26	22	25	22	21	23	237	10	23.7	

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	2	4	0	3	3	0	4	4	4	28	10	2.80	
5	0	8	4	9	4	9	11	7	10	5	67	10	6.70	
6	13	0	15	17	13	15	14	13	15	14	129	10	12.9	
7	0	13	0	0	0	0	0	0	0	0	13	10	1.30	
8														
TOTAL	17	23	23	26	20	27	25	24	29	23	237	10	23.7	

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: May 15, 2013 at 1425

Date and Time Test Terminated: May 22, 2013 at 1320

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	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	X	0	0	0	0	0	0	0	0	9	0.00
4	4	2	4	X	2	2	0	3	2	3	22	9	2.44	
5	0	6	5	X	6	0	2	3	8	0	30	9	3.33	
6	10	11	12	X	0	13	15	14	10	14	99	9	11.0	
7	10	0	0	X	16	8	0	0	0	0	34	9	3.78	
8														
TOTAL	24	19	21	0	24	23	17	20	20	17	185	10	18.5	

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	2	0	3	4	0	0	2	4	4	4	23	10	2.30	
5	8	6	3	6	7	2	11	3	1	1	48	10	4.80	
6	0	13	0	0	10	12	14	10	13	15	87	10	8.70	
7	17	0	0	14	0	0	1	0	0	0	32	10	3.20	
8														
TOTAL	27	19	6	24	17	14	28	17	18	20	190	10	19.0	

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	0	3	3	0	0	3	0	4	4	2	19	10	1.90	
5	0	8	9	3	6	0	8	2	5	6	47	10	4.70	
6	0	14	13	11	15	14	13	15	16	0	111	10	11.1	
7	4	0	0	1	0	2	1	0	0	11	19	10	1.90	
8														
TOTAL	4	25	25	15	21	19	22	21	25	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	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	1.00000	1.39310
3	11 %	1	0.87500	1.20940
3	11 %	2	1.00000	1.39310
3	11 %	3	1.00000	1.39310
3	11 %	4	1.00000	1.39310
3	11 %	5	0.87500	1.20940
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	0.87500	1.20940
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 = 0.06749		
W = 0.7138		
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 %	27.50	16.00	5.00	
3	11 %	22.50	16.00	5.00	
4	14 %	27.50	16.00	5.00	
5	19 %	27.50	16.00	5.00	
6	25 %	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 = 0.01133 W = 0.9878 Critical W = 0.9 Critical W = 0.927	(alpha = 0.01, N = 30) (alpha = 0.05, N = 30)
Data PASS normality test (alpha = 0.01).	

Bartlett's Test for Homogeneity of Variance	No Transformation
Calculated B1 statistic = 4.976 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	0.004794	0.0009588	2.031	
Within (Error)	24	0.01133	0.0004721		
Total	29	0.01612			
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	0.3318	0.3318			
2	8 %	0.3398	0.3398	-0.5822		
3	11 %	0.3392	0.3392	-0.5385		
4	14 %	0.3662	0.3662	-2.503		
5	19 %	0.3606	0.3606	-2.096		
6	25 %	0.3562	0.3562	-1.776		
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	0.03243	9.77	-0.008	
3	11 %	5	0.03243	9.77	-0.0074	
4	14 %	5	0.03243	9.77	-0.0344	
5	19 %	5	0.03243	9.77	-0.0288	
6	25 %	5	0.03243	9.77	-0.0244	

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 %	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.

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	1	
4	19 %	10	0	
5	25 %	10	0	

Appendix A2: Statistics

Ceriodaphnia dubia Reproduction

Kolmogorov Test for Normality	No Transformation
D = 0.1576 D* = 1.236 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	8 %	107.00	75.00	10.00	
3	11 %	112.00	75.00	10.00	
4	14 %	77.00	75.00	10.00	
5	19 %	80.50	75.00	10.00	
6	25 %	84.50	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	237.7	47.54	2.448	
Within (Error)	53	1029	19.42		
Total	58	1267			
Critical F = 3.39 (alpha = 0.01, df = 5,53)					
2.39 (alpha = 0.05, df = 5,53)					
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	23.4	23.4			
2	8 %	23.7	23.7	-0.1522		
3	11 %	23.7	23.7	-0.1522		
4	14 %	20.556	20.556	1.405		
5	19 %	19	19	2.233		
6	25 %	19.6	19.6	1.928		
Dunnett's critical value = 2.31 (1 Tailed, alpha = 0.05, df [used] = 5,40) (Actual df = 5,53)						
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	4.553	19.5	-0.3	
3	11 %	10	4.553	19.5	-0.3	
4	14 %	9	4.677	20	2.844	
5	19 %	10	4.553	19.5	4.4	
6	25 %	10	4.553	19.5	3.8	

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: May 15, 2013 at 0940

Date and Time Test Terminated: May 22, 2013 at 1320

Effluent Conc.: Control	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
DO, mg/l	Initial	8.0	7.5	7.9	8.0	7.3	7.6	7.5
	Final *1	7.2	7.2	7.1	7.0	7.7	7.1	7.3
	Final *2	8.1	7.8	7.4	7.7	7.6	8.0	7.8
pH, units	Initial	7.3	7.7	7.4	7.7	7.7	7.4	7.5
	Final *1	7.6	7.6	7.4	7.6	7.7	7.6	7.7
	Final *2	7.6	7.5	7.6	7.4	6.6	7.5	7.8
Alkalinity, mg CaCO ₃ /l	30	NA	30	NA	30	NA	NA	
Hardness, mg CaCO ₃ /l	44	NA	44	NA	44	NA	NA	
Conductivity, umhos/cm	180	180	180	180	180	180	180	
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	8.0	7.6	7.7	7.8	7.2	7.6	7.6
	Final *1	7.2	6.7	7.2	7.5	7.1	7.1	6.8
	Final *2	7.6	7.7	8.0	7.7	7.6	7.8	7.7
pH, units	Initial	7.5	7.8	7.4	7.7	7.6	7.4	7.5
	Final *1	7.6	7.5	7.5	7.6	7.7	7.6	7.5
	Final *2	7.6	7.5	7.7	7.4	6.8	7.4	7.8

Effluent Conc.: 11 %	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
DO, mg/l	Initial	7.8	7.4	7.6	7.8	7.2	7.5	7.5
	Final *1	7.2	6.8	6.9	7.3	7.3	7.2	6.9
	Final *2	7.7	7.6	7.8	7.6	7.6	7.8	7.6
pH, units	Initial	7.5	7.8	7.4	7.7	7.6	7.5	7.5
	Final *1	7.6	7.5	7.5	7.6	7.7	7.6	7.5
	Final *2	7.6	7.5	7.7	7.4	7.0	7.4	7.8

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: May 15, 2013 at 0940
Date and Time Test Terminated: May 22, 2013 at 1320

Effluent Conc.: 14 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.9	7.5	7.6	7.8	7.2	7.8	7.6
	Final *1	7.3	6.6	7.0	6.9	7.5	7.2	6.5
	Final *2	7.8	7.5	7.3	7.4	7.6	7.7	7.7
pH, units	Initial	7.6	7.8	7.4	7.7	7.6	7.4	7.5
	Final *1	7.6	7.5	7.4	7.6	7.7	7.6	7.4
	Final *2	7.6	7.5	7.7	7.5	7.0	7.5	7.7

Effluent Conc.: 19 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.8	7.4	7.7	7.8	7.2	7.6	7.4
	Final *1	7.2	6.4	7.2	7.1	7.6	7.2	6.8
	Final *2	7.7	7.3	7.5	7.5	7.5	7.9	7.3
pH, units	Initial	7.6	7.8	7.4	7.7	7.7	7.4	7.5
	Final *1	7.6	7.5	7.5	7.6	7.7	7.6	7.4
	Final *2	7.6	7.6	7.7	7.3	7.1	7.5	7.7
Alkalinity, mg CaCO ₃ /l	33	NA	25	NA	33	NA	NA	NA
Hardness, mg CaCO ₃ /l	47	NA	47	NA	48	NA	NA	NA
Conductivity, umhos/cm	200	200	200	200	210	210	210	210
Res. Chlorine, mg/l	<0.05	NA	<0.05	NA	<0.05	NA	NA	NA

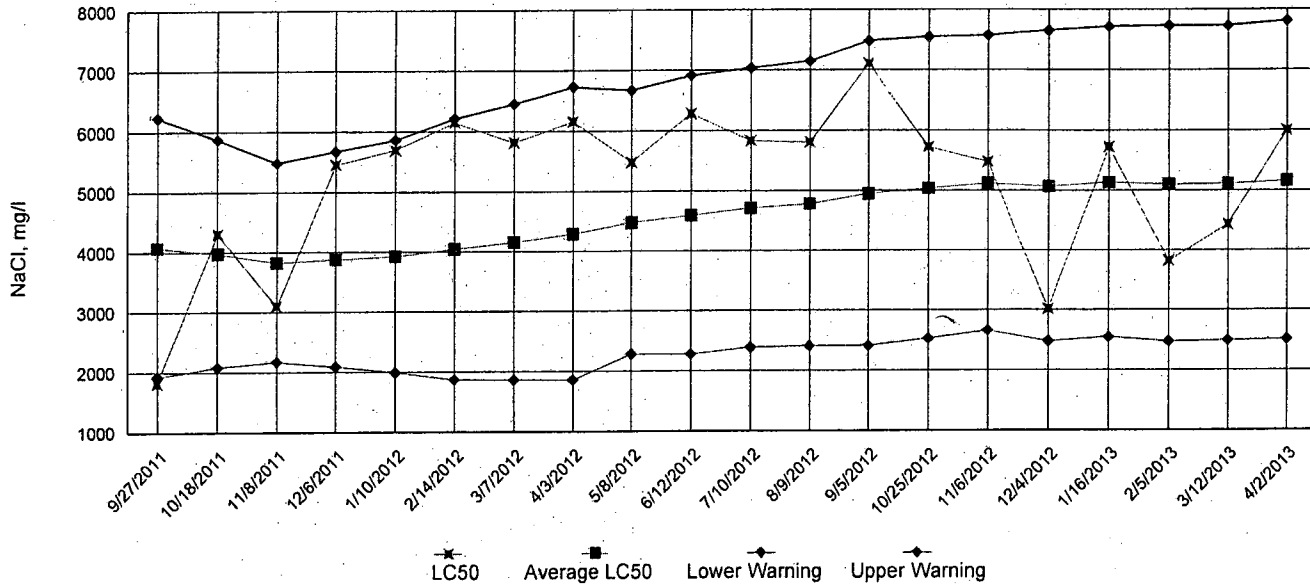
Effluent Conc.: 25 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.8	7.5	7.3	7.7	7.3	7.5	7.5
	Final *1	7.1	6.8	7.1	7.3	7.3	7.2	6.2
	Final *2	7.7	7.2	7.9	7.7	7.6	7.8	7.8
pH, units	Initial	7.6	7.7	7.4	7.6	7.6	7.4	7.5
	Final *1	7.6	7.5	7.5	7.6	7.6	7.6	7.4
	Final *2	7.6	7.5	7.7	7.4	7.2	7.5	7.7

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

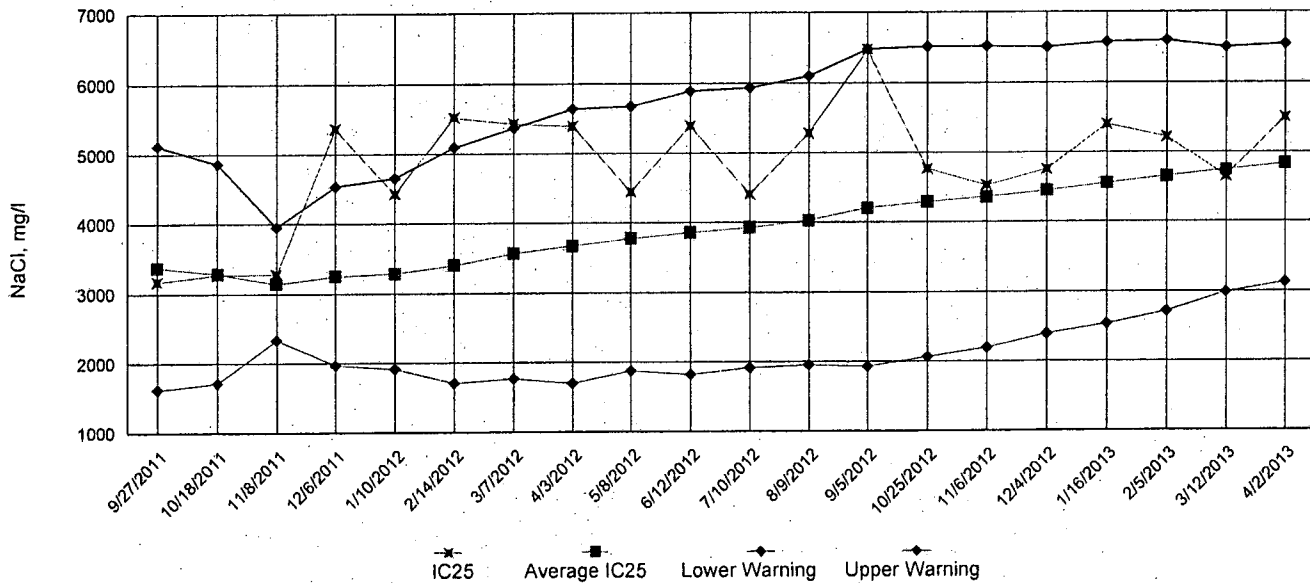
Appendix A4: Test 1000.0

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

LC50 Survival Data

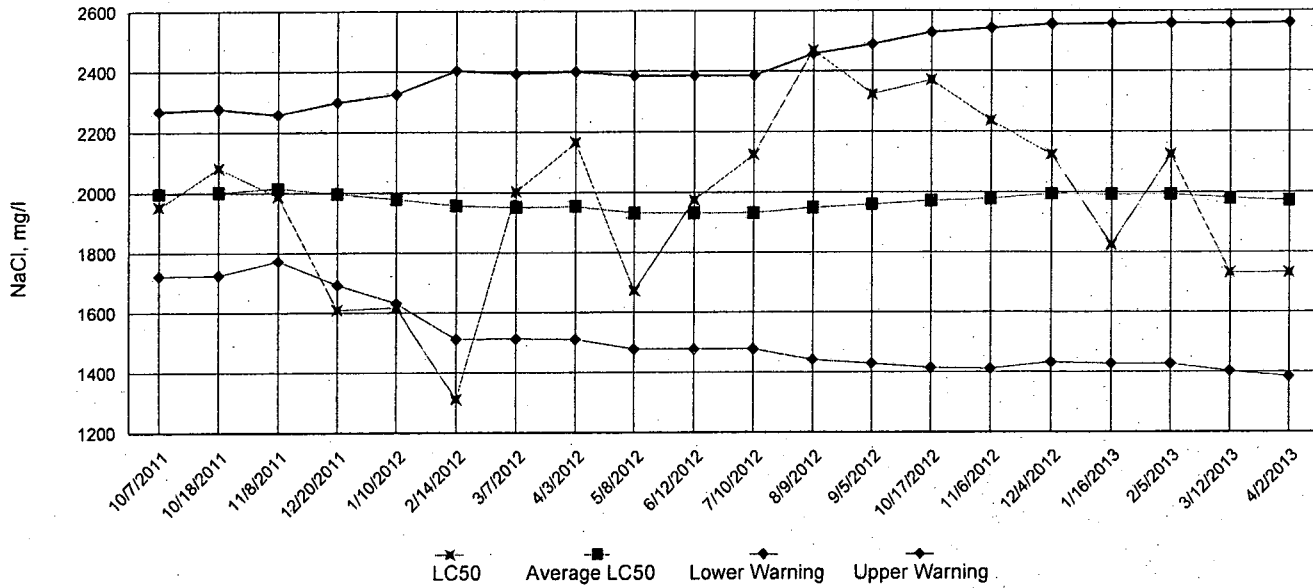


IC25 Growth Data

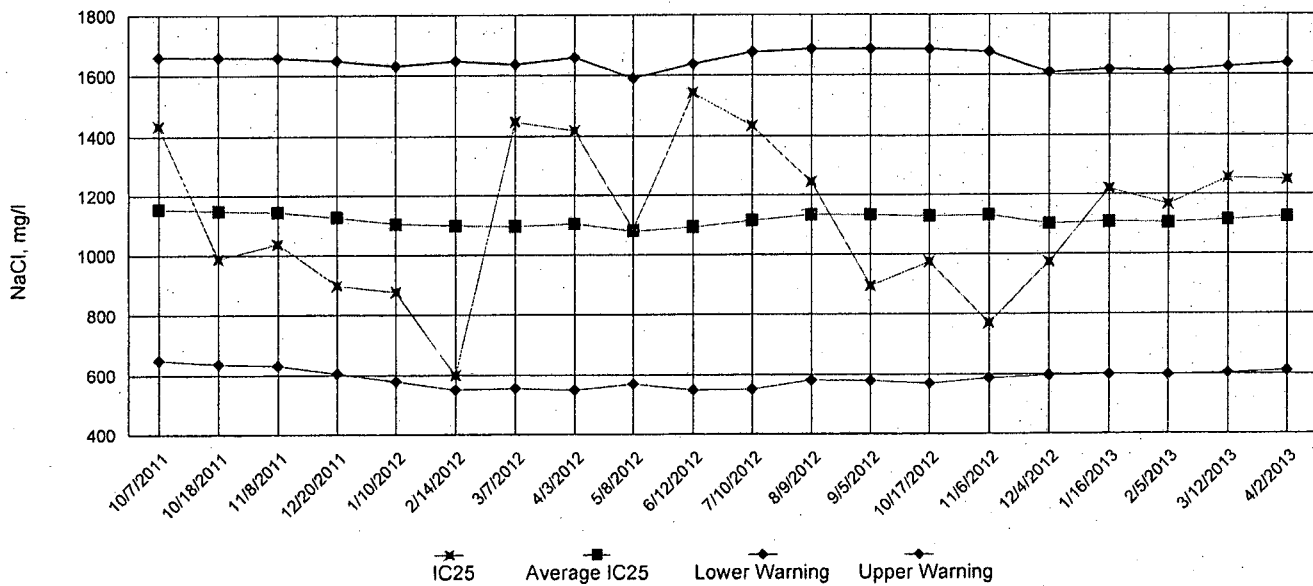


Appendix A4: Test 1002.0
Chronic Reference Toxicant, *Ceriodaphnia dubia*

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 15, 2013 at 1055

Date and Time Test Terminated: May 22, 2013 at 1250

Dilution water used: Synthetic Soft Water #3991

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
8 %	100	100	100	100	100	100	100	100	0.00
11 %	87.5	100	100	100	87.5	100	100	95.0	7.21
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	87.5	100	100	97.5	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	0.329	0.359	0.324	0.349	0.298	0.332	7.14
8 %	0.328	0.296	0.330	0.356	0.389	0.34	10.2
11 %	0.322	0.359	0.335	0.335	0.345	0.339	4.06
14 %	0.340	0.378	0.352	0.371	0.390	0.366	5.49
19 %	0.342	0.366	0.364	0.380	0.351	0.361	4.05
25 %	0.358	0.351	0.382	0.339	0.351	0.356	4.48

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 %)	<u> </u> YES	<u> X </u> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<u> </u> YES	<u> </u> 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 %)	<u> </u> YES	<u> X </u> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<u> </u> YES	<u> </u> 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: 7.14 (TQP6C)

Appendix B: Test 1000.0

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

PERMITTEE: <u>Searcy Water and Sewer System</u>	SAMPLE No. 1 COLLECTED ending: _____	DATE: <u>May 14, 2013</u>	TIME: <u>1140</u>
NPDES NO.: <u>AR0021601 AFIN# 73-00055</u>	SAMPLE No. 2 COLLECTED ending: _____	DATE: <u>May 16, 2013</u>	TIME: <u>1115</u>
CONTACT: <u>Mr. Paul Abernathy</u>	SAMPLE No. 3 COLLECTED ending: _____	DATE: <u>May 19, 2013</u>	TIME: <u>1145</u>
ANALYST: <u>280, 298, 304, 307</u>	Test Initiated: DATE: <u>May 15, 2013</u>	TIME: <u>1055</u>	
	Test Terminated: DATE: <u>May 22, 2013</u>	TIME: <u>1250</u>	

DILUTION Control	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.0	7.5	7.9	8.0	7.3	7.6	7.5
Final	7.2	7.2	7.1	7.0	7.7	7.1	7.3
pH Initial	7.3	7.7	7.4	7.7	7.7	7.4	7.5
Final	7.6	7.6	7.4	7.6	7.7	7.6	7.7
Alkalinity	30	NA	30	NA	30	NA	NA
Hardness	44	NA	44	NA	44	NA	NA
Conductivity	180	180	180	180	180	180	180
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 8 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.0	7.6	7.7	7.8	7.2	7.6	7.6
Final	7.2	6.7	7.2	7.5	7.1	7.1	6.8
pH Initial	7.5	7.8	7.4	7.7	7.6	7.4	7.5
Final	7.6	7.5	7.5	7.6	7.7	7.6	7.5
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	180	190	180	180	190	200	180
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 11 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	7.8	7.4	7.6	7.8	7.2	7.5	7.5
Final	7.2	6.8	6.9	7.3	7.3	7.2	6.9
pH Initial	7.5	7.8	7.4	7.7	7.6	7.5	7.5
Final	7.6	7.5	7.5	7.6	7.7	7.6	7.5
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	190	190	190	190	200	200	190
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 14 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	7.9	7.5	7.6	7.8	7.2	7.8	7.6
Final	7.3	6.6	7.0	6.9	7.5	7.2	6.5
pH Initial	7.6	7.8	7.4	7.7	7.6	7.4	7.5
Final	7.6	7.5	7.4	7.6	7.7	7.6	7.4
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	190	190	190	200	200	210	200
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 19 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	7.8	7.4	7.7	7.8	7.2	7.6	7.4
Final	7.2	6.4	7.2	7.1	7.6	7.2	6.8
pH Initial	7.6	7.8	7.4	7.7	7.7	7.4	7.5
Final	7.6	7.5	7.5	7.6	7.7	7.6	7.4
Alkalinity	33	NA	25	NA	33	NA	NA
Hardness	47	NA	47	NA	48	NA	NA
Conductivity	200	200	200	200	210	210	210
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 25 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	7.8	7.5	7.3	7.7	7.3	7.5	7.5
Final	7.1	6.8	7.1	7.3	7.3	7.2	6.2
pH Initial	7.6	7.7	7.4	7.6	7.6	7.4	7.5
Final	7.6	7.5	7.5	7.6	7.6	7.6	7.4
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	200	210	210	210	220	210	220
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 15, 2013 at 1425

Date and Time Test Terminated: May 22, 2013 at 1320

Dilution water used: Synthetic Soft Water #3991

PERCENT SURVIVAL

Time of Reading	Control	Percent Effluent				
		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	90.0	100	100

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

Replicates	Control	Percent Effluent				
		8 %	11 %	14 %	19 %	25 %
A	29	28	17	24	27	4
B	22	21	23	19	19	25
C	20	22	23	21	6	25
D	23	27	26	0	24	15
E	22	26	20	24	17	21
F	23	22	27	23	14	19
G	25	25	25	17	28	22
H	26	22	24	20	17	21
I	20	21	29	20	18	25
J	24	23	23	17	20	19
Mean per Adult	23.4	23.7	23.7	18.5	19.0	19.6
Mean per Surviving Adult	23.4	23.7	23.7	20.6	19.0	19.6
CV %	11.8	10.9	14.5	13.1	33.9	32.4

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 %)	<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	(19 %)	<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: 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: 33.9 (TQP3B)

Appendix B: Test 1002.0

CHRONIC TOXICITY SUMMARY FORM

Ceriodaphnia dubia

CHEMICAL PARAMETERS CHART

PERMITTEE: Searcy Water and Sewer System SAMPLE No. 1 COLLECTED ending: DATE: May 14, 2013 TIME: 1140
 NPDES NO.: AR0021601 AFIN# 73-00055 SAMPLE No. 2 COLLECTED ending: DATE: May 16, 2013 TIME: 1115
 CONTACT: Mr. Paul Abernathy SAMPLE No. 3 COLLECTED ending: DATE: May 19, 2013 TIME: 1145
 ANALYST: 280, 298, 304, 307 Test Initiated: DATE: May 15, 2013 TIME: 1425
 Test Terminated: DATE: May 22, 2013 TIME: 1320

DILUTION	DAY						
	1	2	3	4	5	6	7
Control							
D.O. Initial	8.0	7.5	7.9	8.0	7.3	7.6	7.5
Final	8.1	7.8	7.4	7.7	7.6	8.0	7.8
pH Initial	7.3	7.7	7.4	7.7	7.7	7.4	7.5
Final	7.6	7.5	7.6	7.4	6.6	7.5	7.8
Alkalinity	30	NA	30	NA	30	NA	NA
Hardness	44	NA	44	NA	44	NA	NA
Conductivity	180	180	180	180	180	180	180
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION	DAY						
	1	2	3	4	5	6	7
8 %							
D.O. Initial	8.0	7.6	7.7	7.8	7.2	7.6	7.6
Final	7.6	7.7	8.0	7.7	7.6	7.8	7.7
pH Initial	7.5	7.8	7.4	7.7	7.6	7.4	7.5
Final	7.6	7.5	7.7	7.4	6.8	7.4	7.8
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	180	190	180	180	190	200	180
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION	DAY						
	1	2	3	4	5	6	7
11 %							
D.O. Initial	7.8	7.4	7.6	7.8	7.2	7.5	7.5
Final	7.7	7.6	7.8	7.6	7.6	7.8	7.6
pH Initial	7.5	7.8	7.4	7.7	7.6	7.5	7.5
Final	7.6	7.5	7.7	7.4	7.0	7.4	7.8
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	190	190	190	190	200	200	190
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION	DAY						
	1	2	3	4	5	6	7
14 %							
D.O. Initial	7.9	7.5	7.6	7.8	7.2	7.8	7.6
Final	7.8	7.5	7.3	7.4	7.6	7.7	7.7
pH Initial	7.6	7.8	7.4	7.7	7.6	7.4	7.5
Final	7.6	7.5	7.7	7.5	7.0	7.5	7.7
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	190	190	190	200	200	210	200
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION	DAY						
	1	2	3	4	5	6	7
19 %							
D.O. Initial	7.8	7.4	7.7	7.8	7.2	7.6	7.4
Final	7.7	7.3	7.5	7.5	7.5	7.9	7.3
pH Initial	7.6	7.8	7.4	7.7	7.7	7.4	7.5
Final	7.6	7.6	7.7	7.3	7.1	7.5	7.7
Alkalinity	33	NA	25	NA	33	NA	NA
Hardness	47	NA	47	NA	48	NA	NA
Conductivity	200	200	200	200	210	210	210
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION	DAY						
	1	2	3	4	5	6	7
25 %							
D.O. Initial	7.8	7.5	7.3	7.7	7.3	7.5	7.5
Final	7.7	7.2	7.9	7.7	7.6	7.8	7.8
pH Initial	7.6	7.7	7.4	7.6	7.6	7.4	7.5
Final	7.6	7.5	7.7	7.4	7.2	7.5	7.7
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	200	210	210	210	220	210	220
Chlorine	NA	NA	NA	NA	NA	NA	NA

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: Searcy			PO No.		NO OF BOTTLES 2	ANALYSES REQUESTED										AIC CONTROL NO: 167401								
Project Reference:			SAMPLE MATRIX			Ascorbic Acid C.V.T. Phenols metals + NO TSS											AIC PROPOSAL NO:							
Project Manager: Paul Abernathy			WATER	SOIL													Carrier:							
Sampled Walton White						GRAB	COMPOSITE											Received Temperature C 2						
By: OKing John													Remarks											
AIC No.	Sample Identification	Date/Time Collected																						
(2)	EFF STD	11-15-13 11:45AM 11-16-13 11:54AM																						
*	North Sludge Pond	5-16-13 10:00 AM																						
*	South Sludge Pond	5-16-13 10:14 AM																						
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																
Turnaround Time Requested: (Please circle) NORMAL or EXPEDITED IN _____ DAYS						Relinquished By: John Walker Whitlow Johnny Fowler						Date/Time 5-17-13 06:00				Received By: Tom Hautsfield				Date/Time 5-17-13 06:00				
Expedited results requested by: _____						Relinquished By: Tom Hautsfield						Date/Time 5-17-13 08:38				Received in Lab By: Luigi H. J...				Date/Time 5-17-13 0838				
Who should AIC contact with questions: _____						Comments: * North + South Sludge Ponds are 5 grabs composite in Searcy Lab																		
Report Attention to: Searcy Water + Sewer																								
Report Address to: P.O. Box 137 Searcy, AR 72145																								



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: <i>SEARCS</i>			PO No.	NO OF BOTTLES <i>2</i>	ANALYSES REQUESTED ¹										AIC CONTROL NO: <i>167401</i>							
Project Reference:			SAMPLE MATRIX		<i>No metal Cont'd</i>															AIC PROPOSAL NO:		
Project Manager: <i>Paul Abel Vajny</i>			WATER																	SOIL		
Sampled By: <i>Johanna Fowler</i>			G R A B	C O M P																Received Temperature C <i>26</i>		
AIC No.	Sample Identification	Date/Time Collected																			Remarks	
<i>3</i>	<i>EFF</i>	<i>Site 1 8-18-13/11/1400 Site 2 5-19-13/11/1400</i>																				
Container Type																					Field pH calibration on _____ @ _____	
Preservative																					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) <i>NORMAL</i> or EXPEDITED IN _____ DAYS				Relinquished By: <i>John Fowler</i>				Date/Time <i>5-20-13 06:00</i>				Received By: <i>Tom Hartsfield</i>				Date/Time <i>5-20-13 06:00</i>						
Expedited results requested by: _____				Relinquished By: <i>Tom Hartsfield</i>				Date/Time <i>5-20-13 09:00</i>				Received in Lab By: <i>Gregg Hynes</i>				Date/Time <i>5-20-13 09:10</i>						
Who should AIC contact with questions: _____				Comments: <i>1</i>																		
Phone: _____ Fax: _____				Report Attention to: _____																		
Report Address to: <i>Searcs West v. Sewer PO Box 135 SEARCS, AR 71455</i>																						

CERTIFIED MAIL™



7010 2780 0002 5135 3145



SEARCY WATER UTILITIES

300 NORTH ELM STREET

P.O. BOX 1319

SEARCY, ARKANSAS 72145-1319

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

