4500 NORTH WEST AVE. • P.O. BOX 231 • EL DORADO, AR. 71731 • (870) 863-1400

EL DORADO
CHEMICAL COMPANY

September 16, 2015

Arkansas Department of Environmental Quality
Water Enforcement Branch
5301 Northshore Drive
North Little Rock, AR 72118-5317

RE: NPDES Permit AR0000752 Discharge Monitoring Report for period ending August 31, 2015.

Enclosed you will find the Discharge Monitoring Reports ending August 31, 2015. The DMR's for Outfall 010-A were entered on the blank DMR forms provided by Amy Schluterman, ADEQ Water Enforcement.

Enclosed also is the addition of the description NA=NODI Code 9 provided by Layne Pemberton on three of the pages where the designation N/A has been used in the past reports.

If you have any questions regarding this report, please contact Les Morgan at (870) 863-1400.

Sincerely,

Les Morgan

Environmental Technician

Enclosures

August 14, 2015

Test Results of
Third Quarter
Acute 48 hour Renewal
Biomonitoring Testing
for
Outfall 010
El Dorado, AR

Control No. 192995-1

Prepared for:

Mr. Eddie Pearson
El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

Prepared by:

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

El Dorado Chemical Company
ATTN: Mr. Eddie Pearson
4500 North West Avenue
El Dorado, AR 71730

Re: Acute 48 hour Renewal Biomonitoring utilizing *Pimephales promelas* (Fathead Minnow) and *Daphnia pulex*
Outfall 010 - El Dorado, AR
Client NPDES Permit No. AR0000752

Dear Mr. Eddie Pearson:

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 appropriate laboratory director or qualified designee.

Testing procedures and Quality Assurance were in accordance with "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" EPA-821-R-02-012, Fifth Edition, October 2002. Test results are summarized below:

Acute *Pimephales promelas* (Fathead Minnow) Survival Test: The No Observable Effects Concentration (NOEC) for survival was 23% effluent, and the LC-50 value was >23% effluent; the sample, therefore, **PASSED** at low flow of 17% effluent for lethal effects.

Acute *Daphnia pulex* Survival Test: The No Observable Effects Concentration (NOEC) for survival was 23% effluent, and the LC-50 value was >23% effluent; the sample, therefore, **PASSED** at low flow of 17% effluent for lethal effects.

AMERICAN INTERPLEX CORPORATION

John Overbey
Laboratory Director

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Table of Contents

I. Introduction and Summary

Biomonitoring testing of 48-hour renewal definitive toxicity tests using *Daphnia pulex* and *Pimephales promelas* were performed.

The *Daphnia pulex* test was conducted from August 6, 2015 at 1710 to August 8, 2015 at 1530.

The *Pimephales promelas* test was conducted from August 6, 2015 at 1540 to August 8, 2015 at 1435.

The tests were performed in accordance with EPA-821-R-02-012. Statistical analyses were performed on the observed data.

The tests were conducted in temperature and light cycle controlled environmental chamber. The test temperature was 25 degrees C +/- 1 degree for the *Daphnia pulex* and 25 degrees C +/- 1 degree for the *Pimephales promelas.*

II. Control Acceptance Criteria

ORGANISM	CRITERIA	RESULTS	PASS/FAIL
Daphnia pulex	Control Survival >= 90%	100	PASS
Pimephales promelas	Control Survival >= 90%	100	PASS

III. Outlined Report

A. Introduction

1. Permit Number: AR0000752
2. Test Requirements: 48-hour renewal definitive toxicity test using:
   Daphnia pulex
   Pimephales promelas

B. Source of Effluent/Dilution Water

1. Effluent Samples:
   a. Sampling Point: Outfall 010
   August 6
   b. Chemical Data:

Analysis	Sample 1	Sample 2
Dissolved oxygen (mg/l)	7.1	7.4
pH (standard units)	7.9	8.0
Alkalinity (mg/l as CaCO3)	46	48
Hardness (mg/l as CaCO3)	39	40
Conductivity (umhos/cm)	350	350
Residual Chlorine (mg/l)	0.050	0.050

2. Dilution Water Samples: Synthetic Soft Water #4242
   a. Dates Collected/Prepared: August 6 through August 20, 2015
   b. Chemical Data:

Analysis	Sample 1	Sample 2
Dissolved oxygen (mg/l)	7.6	7.9
pH (standard units)	8.2	8.2
Alkalinity (mg/l as CaCO3)	30	30
Hardness (mg/l as CaCO3)	42	42
Conductivity (umhos/cm)	130	130
Residual Chlorine (mg/l)	<0.05	<0.05

C. Test Methods
1. Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (Fifth Ed.), EPA-821-R-02-012, 48-hour acute definitive test.
   a. Endpoints:
      Death; the criteria employed to establish death are:
      i. No movement
      ii. No reaction to gentle prodding

Criteria	*Pimephales promelas*	*Daphnia pulex*
Type and Volume of Test Chamber	500 ml disposable beaker	30 ml disposable beaker
Volume of Sample	250 ml	25 ml
Organisms per chamber	8	8
Replicates per dilution	5	5
Test Temperature	25 deg. C	25 deg. C
Test Initiated	August 6, 2015 at 1540	August 6, 2015 at 1710
Test Terminated	August 8, 2015 at 1435	August 8, 2015 at 1530
Feeding	None required	None required
Age of Test Organisms	9 days	<24 hours

2. Chemical Methods Employed:

Analysis	Method
Dissolved oxygen (mg/l)	SM 4500-O C
pH (standard units)	SM 4500-H+ B
Alkalinity (mg/l as CaCO3)	SM 2320 B
Hardness (mg/l as CaCO3)	EPA 200.7
Conductivity (umhos/cm)	EPA 120.1
Residual Chlorine (mg/l)	SM 4500-CL- F
Temperature (deg.C)	EPA 170.1

D. Test Organisms
1. Scientific Name
Daphnia pulex
Pimephales promelas

2. Acclimation of test organisms:
Daphnia pulex
Organisms were obtained from in-house cultures. The organisms were raised in moderately hard reconstituted water.
Pimephales promelas
Organisms were obtained from in-house cultures. The organisms were raised in moderately hard reconstituted water.

E. Quality Assurance
1. Toxicity Tests
a. Reference Toxicant: Sodium Chloride
b. Date of test:
Daphnia pulex: July 7, 2015 at 1630 to July 9, 2015 at 1500
Pimephales promelas: July 7, 2015 at 1600 to July 9, 2015 at 1420
c. Synthetic moderately hard dilution water used

Organism	LC50	Warning Limits
Daphnia pulex	2.13 g/l	1.44-2.53 g/l
Pimephales promelas	6.74 g/l	5.18-9.02 g/l

2. Chemical and Physical Analyses

Analysis	% Recovery	Relative % Difference
Alkalinity	NA	1.57
Hardness	99.0	0.200
pH	102	0.133
Conductivity	91.8	0.743

F. Organism History
Daphnia pulex
Date: August 6, 2015 at 1710
Age: <24 hours
Source: In-house culture
Water Chemistry Record:
Alkalinity: 57-64 mg/l
Hardness: 80-100 mg/l
Temperature: 25 deg.C
Pimephales promelas (Fathead minnow)
Date: August 6, 2015 at 1540
Age: 9 days
Source: In-house culture
Water Chemistry Record:
Alkalinity: 57-64 mg/l
Hardness: 80-100 mg/l
Temperature: 25 deg.C

IV. Results Summary

Daphnia pulex and *Pimephales promelas* are exposed in a static renewal system to different concentrations of effluent and dilution water. Effluent dilutions for this test were 7%, 10%, 13%, 17%, 23%. The low-flow concentration was 17%. Test results were based on survival.

Daphnia pulex

The *Daphnia pulex* test was conducted from August 6, 2015 at 1710 to August 8, 2015 at 1530.
Statistical analyses:
NOEC = 23%
LC50 = >23%

Concentration	24 hour % Survival	48 hour % Survival
Control	100	100
7%	100	100
10%	100	100
13%	100	100
17%	100	100
23%	100	100

Pimephales promelas

The *Pimephales promelas* test was conducted from August 6, 2015 at 1540 to August 8, 2015 at 1435.
Statistical analyses:
NOEC = 23%
LC50 = >23%

Concentration	24 hour % Survival	48 hour % Survival
Control	100	100
7%	97.5	97.5
10%	100	100
13%	100	100
17%	100	100
23%	100	100

Appendix: A1

Daphnia pulex
Survival Data

Number of organisms per chamber: 8
Volume of test chamber: 30 ml

Age of organisms: <24 hours
Volume of test solution: 25 ml

Effluent Concentration		Number of Survivors 24 Hours	Number of Survivors 48 Hours	% Survival	CV %
Control	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
7%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
10%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
13%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
17%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
23%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		

CV = Coefficient of variance = standard deviation X 100/mean

Appendix: A1

Pimephales promelas
Survival Data

Number of organisms per chamber: 8 | Age of organisms: 9 days
Volume of test chamber: 500 ml | Volume of test solution: 250 ml

Effluent Concentration		Number of Survivors 24 Hours	Number of Survivors 48 Hours	% Survival	CV %
Control	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
7%	rep. A	8	8	97.5	5.73
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	7	7		
10%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
13%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
17%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
23%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		

CV = Coefficient of variance = standard deviation X 100/mean

Appendix A2: Statistics

Daphnia pulex

		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	7%	1	1.00000	1.39310
2	7%	2	1.00000	1.39310
2	7%	3	1.00000	1.39310
2	7%	4	1.00000	1.39310
2	7%	5	1.00000	1.39310
3	10%	1	1.00000	1.39310
3	10%	2	1.00000	1.39310
3	10%	3	1.00000	1.39310
3	10%	4	1.00000	1.39310
3	10%	5	1.00000	1.39310
4	13%	1	1.00000	1.39310
4	13%	2	1.00000	1.39310
4	13%	3	1.00000	1.39310
4	13%	4	1.00000	1.39310
4	13%	5	1.00000	1.39310
5	17%	1	1.00000	1.39310
5	17%	2	1.00000	1.39310
5	17%	3	1.00000	1.39310
5	17%	4	1.00000	1.39310
5	17%	5	1.00000	1.39310
6	23%	1	1.00000	1.39310
6	23%	2	1.00000	1.39310
6	23%	3	1.00000	1.39310
6	23%	4	1.00000	1.39310
6	23%	5	1.00000	1.39310

Appendix A2: Statistics

Daphnia pulex

Shapiro - Wilk's Test for Normality	Transform: Arc Sin(Square Root(Y))
D = 0	
W = 0	
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	7%	27.50	16.00	5.00	
3	10%	27.50	16.00	5.00	
4	13%	27.50	16.00	5.00	
5	17%	27.50	16.00	5.00	
6	23%	27.50	16.00	5.00	
Critical values are 1 tailed (k=5)					

Appendix A2: Statistics

Pimephales promelas

		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	7%	1	1.00000	1.39310
2	7%	2	1.00000	1.39310
2	7%	3	1.00000	1.39310
2	7%	4	1.00000	1.39310
2	7%	5	0.87500	1.20940
3	10%	1	1.00000	1.39310
3	10%	2	1.00000	1.39310
3	10%	3	1.00000	1.39310
3	10%	4	1.00000	1.39310
3	10%	5	1.00000	1.39310
4	13%	1	1.00000	1.39310
4	13%	2	1.00000	1.39310
4	13%	3	1.00000	1.39310
4	13%	4	1.00000	1.39310
4	13%	5	1.00000	1.39310
5	17%	1	1.00000	1.39310
5	17%	2	1.00000	1.39310
5	17%	3	1.00000	1.39310
5	17%	4	1.00000	1.39310
5	17%	5	1.00000	1.39310
6	23%	1	1.00000	1.39310
6	23%	2	1.00000	1.39310
6	23%	3	1.00000	1.39310
6	23%	4	1.00000	1.39310
6	23%	5	1.00000	1.39310

Appendix A2: Statistics

Pimephales promelas

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).

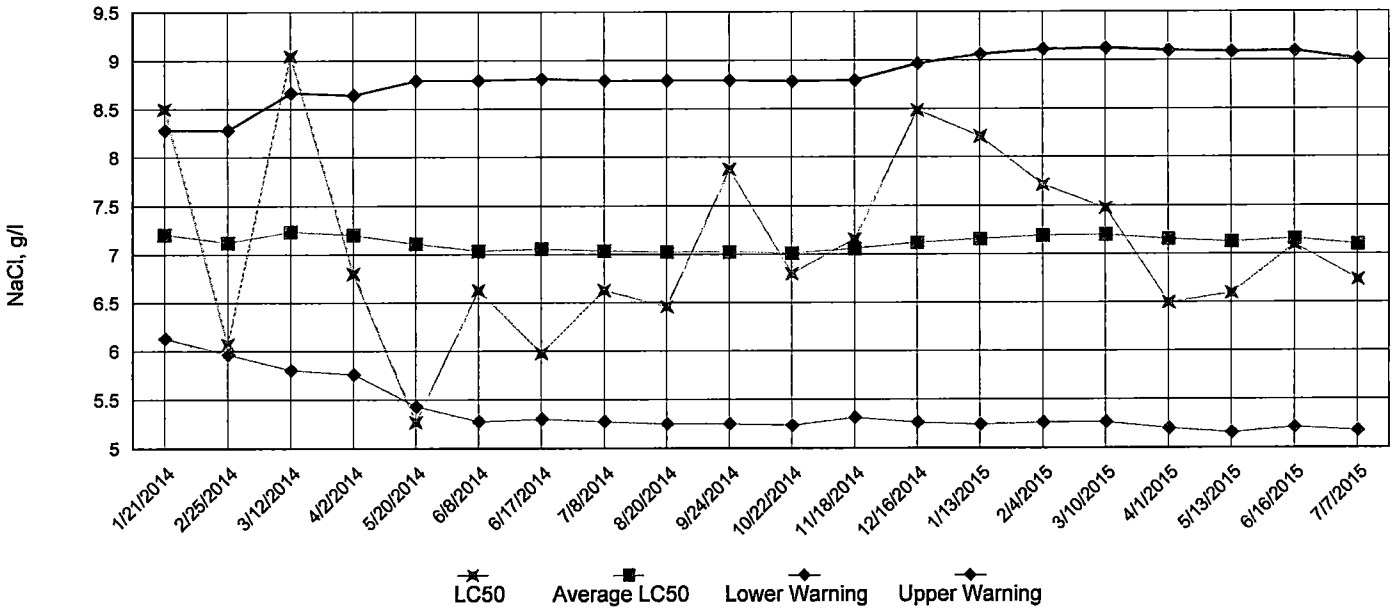
Steel's Many-One Rank Test					Transform: Arc Sin(Square Root(Y))
Ho:Control<Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	7%	25.00	16.00	5.00	
3	10%	27.50	16.00	5.00	
4	13%	27.50	16.00	5.00	
5	17%	27.50	16.00	5.00	
6	23%	27.50	16.00	5.00	

Critical values are 1 tailed (k=5)

Appendix: A3

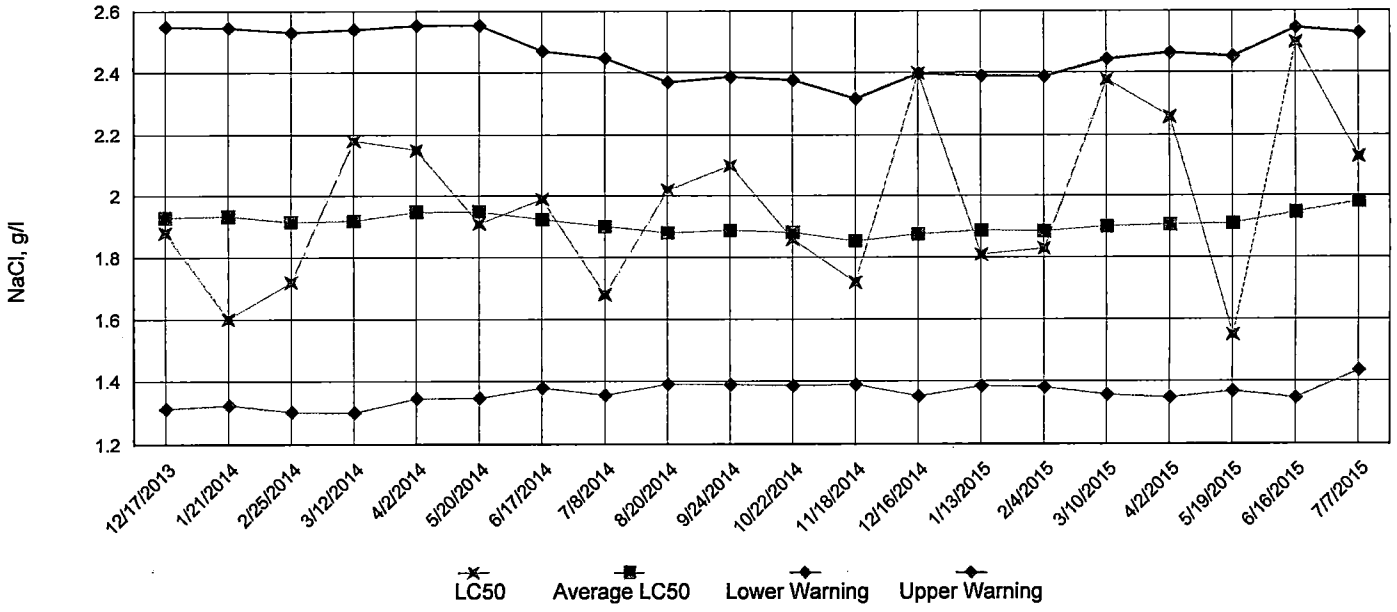
Acute Reference Toxicant, *Pimephales promelas* (Fathead Minnow)

LC50 Survival Data



Acute Reference Toxicant, *Daphnia pulex*

LC50 Survival Data



Appendix: A4

Chemical Data for
Pimephales promelas
and
Daphnia pulex

Day 1		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.6	7.9	7.9	7.4	7.6	7.8
DO, mg/l	Final 1*	8.5	8.4	8.4	8.3	8.4	8.3
DO, mg/l	Final 2*	7.3	7.7	7.8	7.4	7.4	7.5
pH, su	Initial	8.2	8.1	8.1	8.1	8.1	8.1
pH, su	Final 1*	7.6	7.7	7.6	7.7	7.7	7.7
pH, su	Final 2*	8.1	8.2	8.2	8.2	8.2	8.2
Alkalinity, mg/l		30	NA	NA	NA	33	NA
Hardness, mg/l		42	NA	NA	NA	41	NA
Conductivity, umho/cm		130	140	150	160	170	180
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.9	7.8	7.8	7.8	7.7	7.8
DO, mg/l	Final 1*	7.3	7.3	7.4	7.3	7.3	7.2
DO, mg/l	Final 2*	7.3	7.7	7.6	7.4	7.5	7.5
pH, su	Initial	8.2	8.1	8.0	8.0	8.1	8.1
pH, su	Final 1*	8.0	7.9	7.9	7.9	7.9	8.0
pH, su	Final 2*	8.2	8.3	8.3	8.3	8.3	8.3
Alkalinity, mg/l		30	NA	NA	NA	31	NA
Hardness, mg/l		42	NA	NA	NA	41	NA
Conductivity, umho/cm		130	150	150	160	170	180
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

*1 data from *Pimephales promelas*
*2 data from *Daphnia pulex*

Appendix: B

Daphnia pulex Survival Data

Permitee:	El Dorado Chemical Company	Critical Dilution:	17%
NPDES No:	AR0000752	Sample Source:	Outfall 010
Contact:	Mr. Eddie Pearson	Species Age:	<24 hours
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 304, 310, 314
Dilution Water:	Synthetic Soft Water #4242		
Test Initiated:	August 6, 2015 at 1710		
Test Terminated:	August 8, 2015 at 1530		

PERCENT SURVIVAL

24 hours	Control	7%	10%	13%	17%	23%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	100

48 hours	Control	7%	10%	13%	17%	23%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	100

Dunnett's Procedure or Steel's Many-One Rank Test as appropriate. Is the mean survival at 48 hours significantly different (p=0.05) than the control survival for the % effluent corresponding to:

a) Low Flow 17%: _____ Yes X No
b) 1/2 Low Flow (NA): _____ Yes _____ No

Pass/Fail #TEM3D. 0

NOEL *Daphnia pulex* lethality #TOM3D: 23%

Coefficient of variation for *Daphnia pulex* survival #TQM3D: 0

Enter percent effluent corresponding to LC-50 below.
LC-50 effluent: >23%
Method of LC-50 calculation: NA

Reference Toxicity Test Performed on July 7, 2015 at 1630 to July 9, 2015 at 1500:
LC-50 effluent: 2.13 g/l
Warning Limits: 1.44 to 2.53 g/l

Appendix: B

Daphnia pulex Chemical Parameters Chart

Permitee: El Dorado Chemical Company
NPDES No: AR0000752
Contact: Mr. Eddie Pearson
Test Type: 48-hour renewal definitive toxicity test
Dilution Water: Synthetic Soft Water #4242
Test Initiated: August 6, 2015 at 1710
Test Terminated: August 8, 2015 at 1530

Critical Dilution: 17%
Sample Source: Outfall 010
Species Age: <24 hours
Analysts: 280, 304, 310, 314

Day 1		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.6	7.9	7.9	7.4	7.6	7.8
DO, mg/l	Final	7.3	7.7	7.8	7.4	7.4	7.5
pH, su	Initial	8.2	8.1	8.1	8.1	8.1	8.1
pH, su	Final	8.1	8.2	8.2	8.2	8.2	8.2
Alkalinity, mg/l		30	NA	NA	NA	33	NA
Hardness, mg/l		42	NA	NA	NA	41	NA
Conductivity, umho/cm		130	140	150	160	170	180
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.9	7.8	7.8	7.8	7.7	7.8
DO, mg/l	Final	7.3	7.7	7.6	7.4	7.5	7.5
pH, su	Initial	8.2	8.1	8.0	8.0	8.1	8.1
pH, su	Final	8.2	8.3	8.3	8.3	8.3	8.3
Alkalinity, mg/l		30	NA	NA	NA	31	NA
Hardness, mg/l		42	NA	NA	NA	41	NA
Conductivity, umho/cm		130	150	150	160	170	180
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Appendix: B

Pimephales promelas Survival Data

Permitee: El Dorado Chemical Company
NPDES No: AR0000752
Contact: Mr. Eddie Pearson
Test Type: 48-hour renewal definitive toxicity test
Dilution Water: Synthetic Soft Water #4242
Test Initiated: August 6, 2015 at 1540
Test Terminated: August 8, 2015 at 1435

Critical Dilution: 17%
Sample Source: Outfall 010
Species Age: 9 days
Analysts: 280, 304, 310, 314

PERCENT SURVIVAL

24 hours	Control	7%	10%	13%	17%	23%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	87.5	100	100	100	100

48 hours	Control	7%	10%	13%	17%	23%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	87.5	100	100	100	100

Dunnett's Procedure or Steel's Many-One Rank Test as appropriate. Is the mean survival at 48 hours significantly different (p=0.05) than the control survival for the % effluent corresponding to:

a) Low Flow 17%: ____ Yes X No
b) 1/2 Low Flow (NA): ____ Yes ____ No

Pass/Fail #TEM6C. 0

NOEL *Pimephales promelas* lethality #TOM6C: 23%

Coefficient of variation for *Pimephales promelas* survival #TQM6C: 0

Enter percent effluent corresponding to LC-50 below.
LC-50 effluent: >23%
Method of LC-50 calculation: NA

Reference Toxicity Test Performed on July 7, 2015 at 1600 to July 9, 2015 at 1420:
LC-50 effluent: 6.74 g/l
Warning Limits: 5.18 to 9.02 g/l

Appendix: B

Pimephales promelas Chemical Parameters Chart

Permitee: El Dorado Chemical Company
NPDES No: AR0000752
Contact: Mr. Eddie Pearson
Test Type: 48-hour renewal definitive toxicity test
Dilution Water: Synthetic Soft Water #4242
Test Initiated: August 6, 2015 at 1540
Test Terminated: August 8, 2015 at 1435

Critical Dilution: 17%
Sample Source: Outfall 010
Species Age: 9 days
Analysts: 280, 304, 310, 314

Day 1		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.6	7.9	7.9	7.4	7.6	7.8
DO, mg/l	Final	8.5	8.4	8.4	8.3	8.4	8.3
pH, su	Initial	8.2	8.1	8.1	8.1	8.1	8.1
pH, su	Final	7.6	7.7	7.6	7.7	7.7	7.7
Alkalinity, mg/l		30	NA	NA	NA	33	NA
Hardness, mg/l		42	NA	NA	NA	41	NA
Conductivity, umho/cm		130	140	150	160	170	180
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.9	7.8	7.8	7.8	7.7	7.8
DO, mg/l	Final	7.3	7.3	7.4	7.3	7.3	7.2
pH, su	Initial	8.2	8.1	8.0	8.0	8.1	8.1
pH, su	Final	8.0	7.9	7.9	7.9	7.9	8.0
Alkalinity, mg/l		30	NA	NA	NA	31	NA
Hardness, mg/l		42	NA	NA	NA	41	NA
Conductivity, umho/cm		130	150	150	160	170	180
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company
Project Reference: ElDorado Chemical Co Acute AR000752 Biomonitoring
Project Manager: Mr. Eddie Pearson
Sampled By: Edward L Pearson

PO No.

MATRIX

AIC CONTROL NO: 192995
AIC PROPOSAL NO:
Carrier: Rush
Received Temperature C: 0.1 (CS)

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Acute	Remarks
1	010	08-05-15 1100		X	X		2	X	
		Container Type						P	Field pH calibration
		Preservative						NO	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 A=$(NH_4)_2SO_4$, NH_4OH

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions:
Phone 870-312-1397 Fax:
Report Attention to: Mr. Eddie Pearson
Report Address to: 4500 North West Avenue
El Dorado, AR 71730
epearson@edc-ark.com

Relinquished By:	Date/Time	Received By:	Date/Time
Edward L Pearson	08-05-15 1200		
Relinquished By:	Date/Time	Received in Lab By: D. Brown	Date/Time 8-5-15 1450

Comments:

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company
Project: El Dorado Chemical Co Acute
Reference: AR000752 Bio Monitoring
Project Manager: Mr. Eddie Pearson
Sampled By: Edward L Pearson

PO No.

MATRIX

ANALYSES REQUESTED

AIC CONTROL NO: 193995
AIC PROPOSAL NO:
Carrier: Rush
Received Temperature C: 0.1

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL		NO OF BOTTLES	Acute										Remarks
2	010	08-06-15 1100		X	X			2	X										
		Container Type							P										Field pH calibration
		Preservative							NO										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 A=$(NH_4)_2SO_4$, NH_4OH

Turnaround Time Requested: (Please circle)
~~NORMAL~~ or EXPEDITED IN ___ DAYS
Expedited results requested by: _____
Who should AIC contact with questions:
Phone 870-312-1397 Fax:
Report Attention to: Mr. Eddie Pearson
Report Address to: 4500 North West Avenue
El Dorado, AR 71730
epearson@edc-ark.com

Relinquished By:	Date/Time	Received By:	Date/Time
Edward L Pearson	08-06-15 1200		
Relinquished By:	Date/Time	Received in Lab By:	Date/Time
		Cooper Hopkins	8-6-15 1440

Comments:

FORM 0060

August 13, 2015

Test Results of
Third Quarter
Chronic 7-Day Renewal
Biomonitoring Testing
for
Outfall 010
El Dorado, AR

Control No. 192911-1

Prepared for:

Mr. Eddie Pearson
El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

Prepared by:

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

AMERICAN INTERPLEX CORPORATION LABORATORIES

El Dorado Chemical Company
ATTN: Mr. Eddie Pearson
4500 North West Avenue
El Dorado, AR 71730

Re: Chronic 7-Day Renewal utilizing *Pimephales promelas* (Fathead minnow) and *Ceriodaphnia dubia*
Outfall 010 - El Dorado, AR
NPDES Permit No. AR0000752

Dear Mr. Eddie Pearson:

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 2.1 % effluent, which is above the critical dilution of 1.6 %. The NOEC for growth occurred at 2.1 % effluent, which is above the critical dilution of 1.6 %. **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 2.1 % effluent, which is above the critical dilution of 1.6 %. 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 *Ceriodaphnia dubia* test.**

AMERICAN INTERPLEX CORPORATION

John Overbey
Laboratory Director

PDF cc: El Dorado Chemical Company
ATTN: Mr. David Sartain
dsartain@edc-ark.com

El Dorado Chemical Company
ATTN: Mr. Kelly Olivier
kolivier@edc-ark.com

El Dorado Chemical Company
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epearson@edc-ark.com

Great Lakes Chemical Corporation
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El Dorado Chemical Company
ATTN: Mr. Les Morgan
lmorgan@edc-ark.com

Table of Contents

I. Control Acceptance Criteria

Pimephales promelas (Fathead minnow) Method 1000.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	97.5	PASS
Control Growth > or = 0.25 mg per Surviving minnow	0.303	PASS
Control Growth CV < or = 40%	20.3	PASS
Growth Minimum Significant Difference 12 to 30%	27.3	PASS
Critical Dilution CV < or = 40%	20.0	PASS

Ceriodaphnia dubia Method 1002.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Reproduction > or = 15 per Surviving Female	27.9	PASS
Control CV < or = 40% per Surviving Female	11.0	PASS
Reproduction Minimum Significant Difference 13 to 47%	11.9	BELOW
Critical Dilution CV < or = 40%	13.0	PASS

II. Outlined Report

A. Introduction

1. Permit Number: AR0000752
2. Test Requirements:
   Test Methods 1000.0 and 1002.0
3. Receiving Stream:

B. Source of Effluent/Dilution Water

1. Effluent Samples:
   a. Sampling Point: Outfall 010
   b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	7.2	8.4	7.9
pH (standard units)	7.4	7.6	8.0
Alkalinity (mg/l as CaCO3)	41	42	46
Hardness (mg/l as CaCO3)	39	40	40
Conductivity (umhos/cm)	350	400	410
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05
Ammonia as N (mg/l)	1.4	1.4	1.9

2. Dilution Water Samples: Synthetic Soft Water #4238
   a. Dates Prepared: July 23 through August 6, 2015
   b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	6.1	8.7	7.3
pH (standard units)	7.4	7.8	7.7
Alkalinity (mg/l as CaCO3)	30	30	30
Hardness (mg/l as CaCO3)	42	42	42
Conductivity (umhos/cm)	150	170	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:	August 4, 2015 at 1500
Date & Time Test Terminated:	August 11, 2015 at 1510
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:	August 4, 2015 at 1210
Date & Time Test Terminated:	August 11, 2015 at 1330
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.

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 7, 2015 at 1550 to July 14, 2015 at 1410
The results were as follows: (Control No. 192203-1.)
Survival LC-50: 3488 mg/l
Growth IC-25: 2351 mg/l
Growth PMSD: 21

Ceriodaphnia dubia

Chronic reference tests are performed monthly.
A chronic reference test was performed on July 7, 2015 at 1615 to July 14, 2015 at 1415
The results were as follows: (Control No. 192203-2.)
Survival LC-50: 2035 mg/l
Growth IC-25: 1481 mg/l
Growth PMSD: 19.8

V. Chemical Analysis/Quality Control

Parameter	Method	% Recovery	Relative % Difference
Alkalinity	SM 2320 B	NA	1.57
Hardness	EPA 200.7	99.0	0.200
pH	SM 4500-H+ B	102	0.133
Conductivity	EPA 120.1	91.8	0.743

VI. Organism History

Pimephales promelas (Fathead minnow)

Date: August 4, 2015
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: August 4, 2015
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

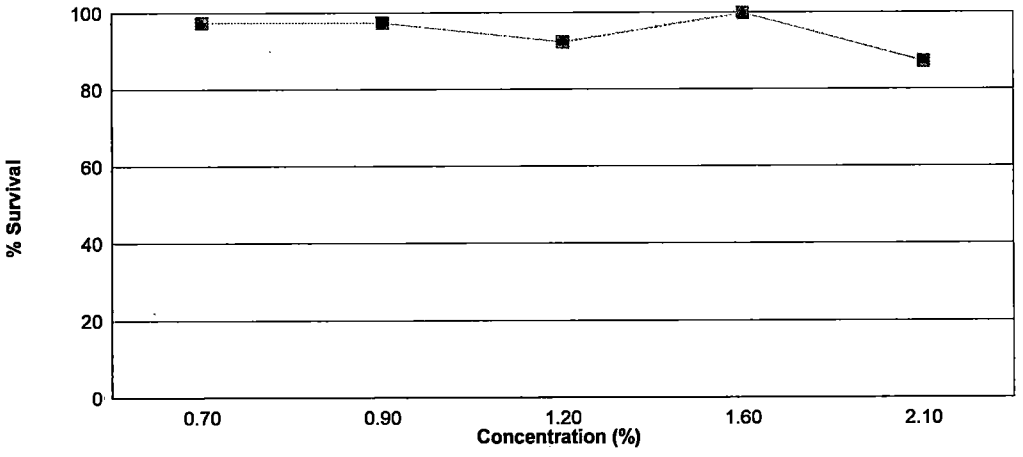
Larvae are exposed in a static renewal system for seven days to different concentrations of effluent with dilution water. Test results are based on the survival and growth (increase in weight) of the larvae.

Effluent dilutions for this test were 0.7 %, 0.9 %, 1.2 %, 1.6 %, 2.1 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 1.6 % effluent.

The test was initiated on August 4, 2015 at 1500 and continued through August 11, 2015 at 1510. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

a.) NOEC survival = 2.1 % effluent
b.) NOEC growth = 2.1 % effluent



Summary of the 7-day Fathead Minnow Survival and Growth		
Concentration	Percent Survival	Mean Growth (mg)
Control	97.5	0.295
0.7 %	97.5	0.313
0.9 %	97.5	0.309
1.2 %	92.5	0.306
1.6 %	100	0.379
2.1 %	87.5	0.319

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

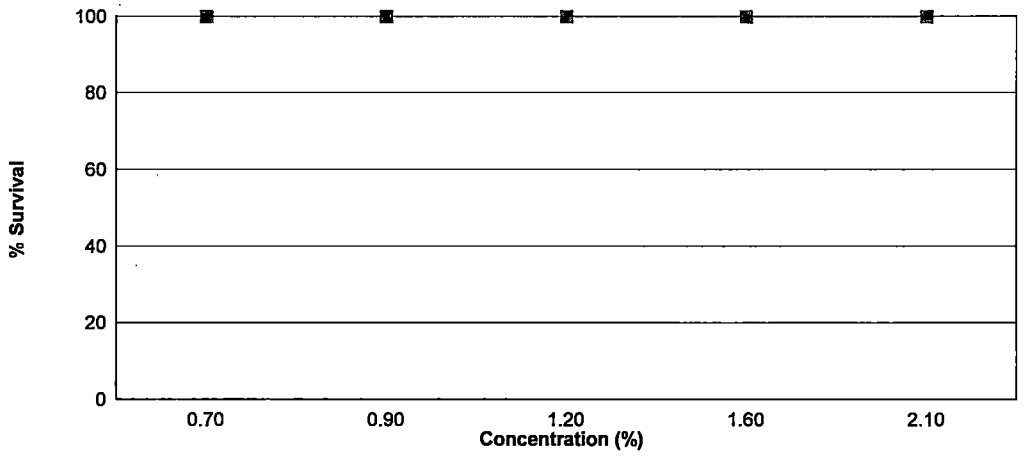
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring with an average of at least 15 young per female.

Effluent dilutions for this test were 0.7 %, 0.9 %, 1.2 %, 1.6 %, 2.1 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 1.6 % effluent.

The test was initiated on August 4, 2015 at 1210 and continued through August 11, 2015 at 1330. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

a.) NOEC survival = 2.1 % effluent
b.) NOEC reproduction = 2.1 % effluent



Summary of the 7-day *Ceriodaphnia dubia* Survival and Reproduction Data		
Concentration	Percent Survival	Mean Reproduction
Control	100	27.9
0.7 %	100	27.6
0.9 %	100	27.5
1.2 %	100	25.1
1.6 %	100	26.6
2.1 %	100	28.2

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Survival

Date and Time Test Initiated: August 4, 2015 at 1500
Date and Time Test Terminated: August 11, 2015 at 1510

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	7	7	7
	E	8	8	8	8	8	8	8
0.7 %	A	8	8	7	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	8	8	8	8	8
0.9 %	A	8	8	7	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	8	8	8	8	8
1.2 %	A	8	8	8	8	8	8	7
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	7	7	7
	E	8	8	8	8	7	7	7
1.6 %	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
2.1 %	A	8	8	8	8	8	7	7
	B	8	8	8	8	8	8	7
	C	8	8	8	8	7	7	7
	D	8	8	8	8	8	7	7
	E	8	8	8	8	8	7	7

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Growth

Test Initiated: August 4, 2015 at 1500
Test Terminated: August 11, 2015 at 1510

Drying Started: August 10, 2015 at 1700
Drying Ended: August 12, 2015 at 1200

Concentration	Replicate	Weight of pan	Weight of pan + fish	Total weight of fish (g)	Original # of fish	Mean dry weight (mg)
Control	A	.94156	.94461	0.00305	8	0.381
	B	.93992	.94226	0.00234	8	0.292
	C	.94025	.94269	0.00244	8	0.305
	D	.93985	.94156	0.00171	8	0.214
	E	.94252	.94477	0.00225	8	0.281
0.7 %	A	.94367	.94592	0.00225	8	0.281
	B	.94425	.94649	0.00224	8	0.280
	C	.94141	.94391	0.00250	8	0.312
	D	.93794	.94091	0.00297	8	0.371
	E	.93975	.94230	0.00255	8	0.319
0.9 %	A	.93322	.93561	0.00239	8	0.299
	B	.93924	.94177	0.00253	8	0.316
	C	.93971	.94244	0.00273	8	0.341
	D	.94005	.94222	0.00217	8	0.271
	E	.94193	.94447	0.00254	8	0.318
1.2 %	A	.93938	.94163	0.00225	8	0.281
	B	.94377	.94668	0.00291	8	0.364
	C	.94637	.94923	0.00286	8	0.358
	D	.95008	.95239	0.00231	8	0.289
	E	.95010	.95199	0.00189	8	0.236
1.6 %	A	.93371	.93626	0.00255	8	0.319
	B	.93604	.93975	0.00371	8	0.464
	C	.93497	.93853	0.00356	8	0.445
	D	.93782	.94015	0.00233	8	0.291
	E	.93736	.94035	0.00299	8	0.374
2.1 %	A	.93668	.93951	0.00283	8	0.354
	B	.93569	.93881	0.00312	8	0.390
	C	.93514	.93734	0.00220	8	0.275
	D	.93795	.93998	0.00203	8	0.254
	E	.93849	.94107	0.00258	8	0.322

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: August 4, 2015 at 1210
Date and Time Test Terminated: August 11, 2015 at 1330

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	6	4	3	6	4	5	4	5	7	49	10	4.90
5	0	5	0	9	0	0	0	0	0	0	14	10	1.40
6	11	0	8	0	8	11	12	11	10	8	79	10	7.90
7	13	12	13	15	14	13	17	13	11	16	137	10	13.7
8													
TOTAL	29	23	25	27	28	28	34	28	26	31	279	10	27.9

Concentration: 0.7 %													
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	5	2	4	4	4	6	6	6	5	45	10	4.50
5	0	5	0	0	10	0	0	0	0	0	15	10	1.50
6	11	2	9	13	0	11	12	10	11	10	89	10	8.90
7	12	13	12	16	14	15	14	13	8	10	127	10	12.7
8													
TOTAL	26	25	23	33	28	30	32	29	25	25	276	10	27.6

Concentration: 0.9 %													
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	4	4	5	6	2	3	4	39	10	3.90
5	0	9	0	0	0	0	9	10	0	0	28	10	2.80
6	11	0	9	13	11	11	0	0	10	11	76	10	7.60
7	12	13	11	15	15	10	13	14	15	14	132	10	13.2
8													
TOTAL	26	26	24	32	30	26	28	26	28	29	275	10	27.5

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: August 4, 2015 at 1210
Date and Time Test Terminated: August 11, 2015 at 1330

Concentration: 1.2 %													
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	5	6	5	4	4	6	3	2	2	39	10	3.90
5	0	2	0	8	7	0	0	8	0	0	25	10	2.50
6	7	10	8	0	0	9	10	2	10	7	63	10	6.30
7	12	13	12	17	14	5	14	9	14	14	124	10	12.4
8													
TOTAL	21	30	26	30	25	18	30	22	26	23	251	10	25.1

Concentration: 1.6 %													
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	5	3	4	6	4	4	3	6	4	42	10	4.20
5	0	9	1	0	0	0	10	0	0	0	20	10	2.00
6	6	2	11	11	9	10	0	9	11	12	81	10	8.10
7	9	13	14	13	13	14	10	13	11	13	123	10	12.3
8													
TOTAL	18	29	29	28	28	28	24	25	28	29	266	10	26.6

Concentration: 2.1 %													
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	3	4	5	4	4	6	4	4	3	41	10	4.10
5	0	1	0	1	0	12	7	1	0	0	22	10	2.20
6	11	11	9	10	11	0	4	11	11	11	89	10	8.90
7	14	15	11	14	14	14	14	13	10	11	130	10	13.0
8													
TOTAL	29	30	24	30	29	30	31	29	25	25	282	10	28.2

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	0.87500	1.20940
1	Control	5	1.00000	1.39310
2	0.7 %	1	0.87500	1.20940
2	0.7 %	2	1.00000	1.39310
2	0.7 %	3	1.00000	1.39310
2	0.7 %	4	1.00000	1.39310
2	0.7 %	5	1.00000	1.39310
3	0.9 %	1	0.87500	1.20940
3	0.9 %	2	1.00000	1.39310
3	0.9 %	3	1.00000	1.39310
3	0.9 %	4	1.00000	1.39310
3	0.9 %	5	1.00000	1.39310
4	1.2 %	1	0.87500	1.20940
4	1.2 %	2	1.00000	1.39310
4	1.2 %	3	1.00000	1.39310
4	1.2 %	4	0.87500	1.20940
4	1.2 %	5	0.87500	1.20940
5	1.6 %	1	1.00000	1.39310
5	1.6 %	2	1.00000	1.39310
5	1.6 %	3	1.00000	1.39310
5	1.6 %	4	1.00000	1.39310
5	1.6 %	5	1.00000	1.39310
6	2.1 %	1	0.87500	1.20940
6	2.1 %	2	0.87500	1.20940
6	2.1 %	3	0.87500	1.20940
6	2.1 %	4	0.87500	1.20940
6	2.1 %	5	0.87500	1.20940

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Survival

Shapiro - Wilk's Test for Normality		Transform: Arc Sin(Square Root(Y))
D = 0.1215		
W = 0.8244		
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	0.7 %	27.50	16.00	5.00	
3	0.9 %	27.50	16.00	5.00	
4	1.2 %	22.50	16.00	5.00	
5	1.6 %	30.00	16.00	5.00	
6	2.1 %	17.50	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 = 0.06974		
W = 0.9632		
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 = 4.491		
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	0.02232	0.004464	1.537
Within (Error)	24	0.06973	0.002905	
Total	29	0.09205		

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	0.2946	0.2946		
2	0.7 %	0.3126	0.3126	-0.528	
3	0.9 %	0.309	0.309	-0.4224	
4	1.2 %	0.3056	0.3056	-0.3227	
5	1.6 %	0.3786	0.3786	-2.464	
6	2.1 %	0.319	0.319	-0.7158	

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	0.7 %	5	0.08045	27.3	-0.018
3	0.9 %	5	0.08045	27.3	-0.0144
4	1.2 %	5	0.08045	27.3	-0.011
5	1.6 %	5	0.08045	27.3	-0.084
6	2.1 %	5	0.08045	27.3	-0.0244

Appendix A2: Statistics

Ceriodaphnia dubia Survival

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
0.7 %	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
0.9 %	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
1.2 %	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
1.6 %	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
2.1 %	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	0.7 %	10	0	
2	0.9 %	10	0	
3	1.2 %	10	0	
4	1.6 %	10	0	
5	2.1 %	10	0	

Appendix A2: Statistics

Ceriodaphnia dubia Reproduction

Kolmogorov Test for Normality	No Transformation
D = 0.0953 D* = 0.7477 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 = 3.683 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	64.95	12.99	1.26
Within (Error)	54	556.8	10.31	
Total	59	621.7		

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	27.9	27.9		
2	0.7 %	27.6	27.6	0.2089	
3	0.9 %	27.5	27.5	0.2786	
4	1.2 %	25.1	25.1	1.95	
5	1.6 %	26.6	26.6	0.9053	
6	2.1 %	28.2	28.2	-0.2089	

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	0.7 %	10	3.317	11.9	0.3
3	0.9 %	10	3.317	11.9	0.4
4	1.2 %	10	3.317	11.9	2.8
5	1.6 %	10	3.317	11.9	1.3
6	2.1 %	10	3.317	11.9	-0.3

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: August 4, 2015 at 1449
Date and Time Test Terminated: August 11, 2015 at 1510

Effluent Conc.: Control		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	6.1	7.6	8.7	7.4	7.3	7.8	8.4
	Final *1	8.4	7.1	8.0	7.3	7.0	7.5	7.4
	Final *2	8.0	8.0	7.3	7.4	7.2	7.9	8.0
pH, units	Initial	7.4	7.8	7.8	8.1	7.7	8.3	7.6
	Final *1	7.7	7.8	7.4	7.7	7.7	7.3	7.8
	Final *2	8.3	7.8	7.8	8.3	7.9	8.6	8.5
Alkalinity, mg CaCO3/l		30	NA	30	NA	30	NA	NA
Hardness, mg CaCO3/l		42	NA	42	NA	42	NA	NA
Conductivity, umhos/cm		150	150	170	130	180	150	170
Res. Chlorine, mg/l		<0.05	NA	<0.05	NA	<0.05	NA	NA

Effluent Conc.: 0.7 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.8	8.6	7.4	7.5	7.5	7.3	8.4
	Final *1	8.6	6.9	8.0	7.4	7.0	7.5	7.3
	Final *2	7.8	8.1	7.4	7.2	7.0	7.6	8.0
pH, units	Initial	7.6	7.8	7.8	8.1	7.7	8.2	7.6
	Final *1	7.7	7.8	7.5	7.7	7.7	7.3	7.8
	Final *2	8.4	7.8	7.9	8.3	7.9	8.5	8.4

Effluent Conc.: 0.9 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.6	8.6	8.6	7.8	7.8	7.6	8.3
	Final *1	7.1	7.0	8.0	7.1	6.7	7.7	7.3
	Final *2	7.8	8.1	7.5	7.3	7.1	7.6	8.0
pH, units	Initial	7.6	7.8	7.8	8.1	7.7	8.3	7.6
	Final *1	7.6	7.8	7.5	7.7	7.7	7.4	7.8
	Final *2	8.3	7.8	7.8	8.3	7.9	8.6	8.5

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: August 4, 2015 at 1449
Date and Time Test Terminated: August 11, 2015 at 1510

Effluent Conc.: 1.2 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.9	7.8	8.7	7.6	7.5	7.7	8.4
	Final *1	7.1	7.1	7.9	7.1	7.0	7.8	7.6
	Final *2	8.0	8.1	7.6	7.4	7.1	7.7	8.1
pH, units	Initial	7.6	7.8	7.8	8.1	7.7	8.3	7.6
	Final *1	7.6	7.8	7.6	7.7	7.7	7.5	8.0
	Final *2	8.4	7.8	7.8	8.3	7.9	8.6	8.5

Effluent Conc.: 1.6 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.5	7.5	8.7	7.6	7.3	7.6	8.4
	Final *1	7.2	6.7	8.1	7.5	7.1	7.8	7.5
	Final *2	8.2	8.2	7.6	7.6	7.1	7.9	8.1
pH, units	Initial	7.5	7.5	7.8	8.1	7.7	8.2	7.6
	Final *1	7.6	8.4	7.7	7.8	7.7	7.5	8.0
	Final *2	8.3	7.9	7.8	8.3	7.9	8.6	8.6
Alkalinity, mg CaCO3/l		32	NA	32	NA	31	NA	NA
Hardness, mg CaCO3/l		43	NA	43	NA	40	NA	NA
Conductivity, umhos/cm		150	NA	170	140	180	140	170
Res. Chlorine, mg/l		<0.05	NA	<0.05	NA	<0.05	NA	NA

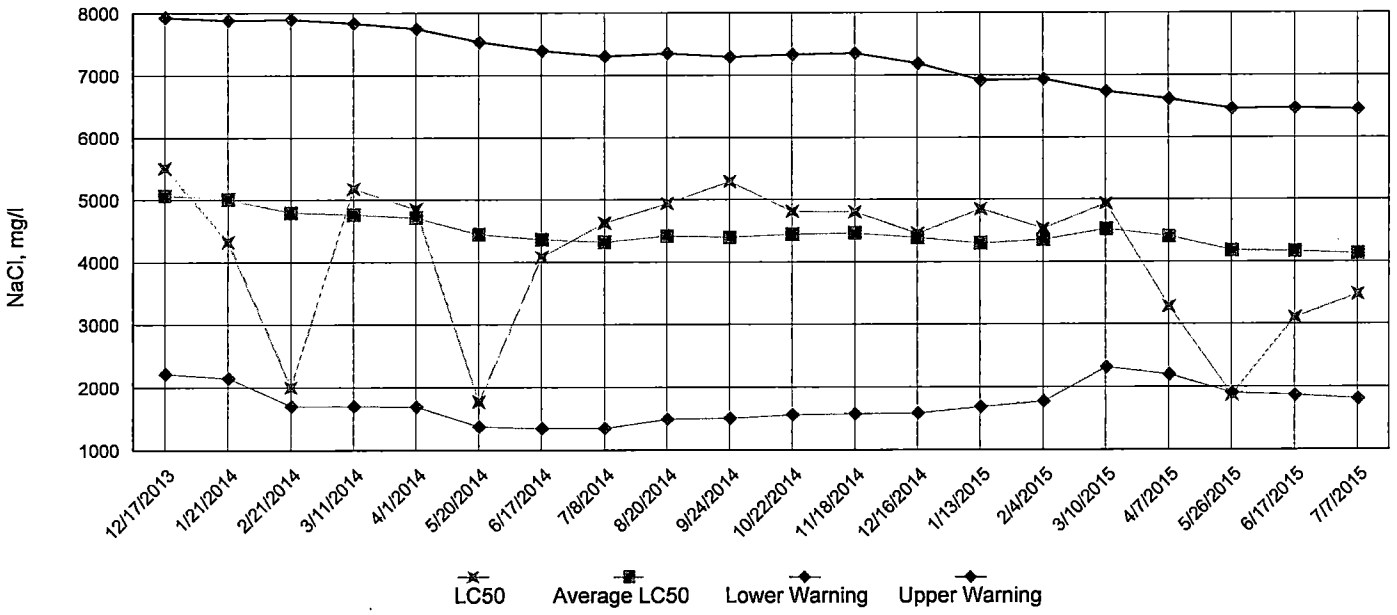
Effluent Conc.: 2.1 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.3	7.4	7.7	7.6	7.4	7.3	8.3
	Final *1	7.3	7.3	8.0	7.4	6.9	7.6	7.4
	Final *2	8.0	8.1	7.7	7.4	6.9	7.8	8.1
pH, units	Initial	7.7	7.8	7.8	8.1	7.7	8.2	7.6
	Final *1	7.6	7.9	7.6	7.8	7.7	7.4	7.9
	Final *2	8.3	7.9	7.9	8.4	7.8	8.6	8.6

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

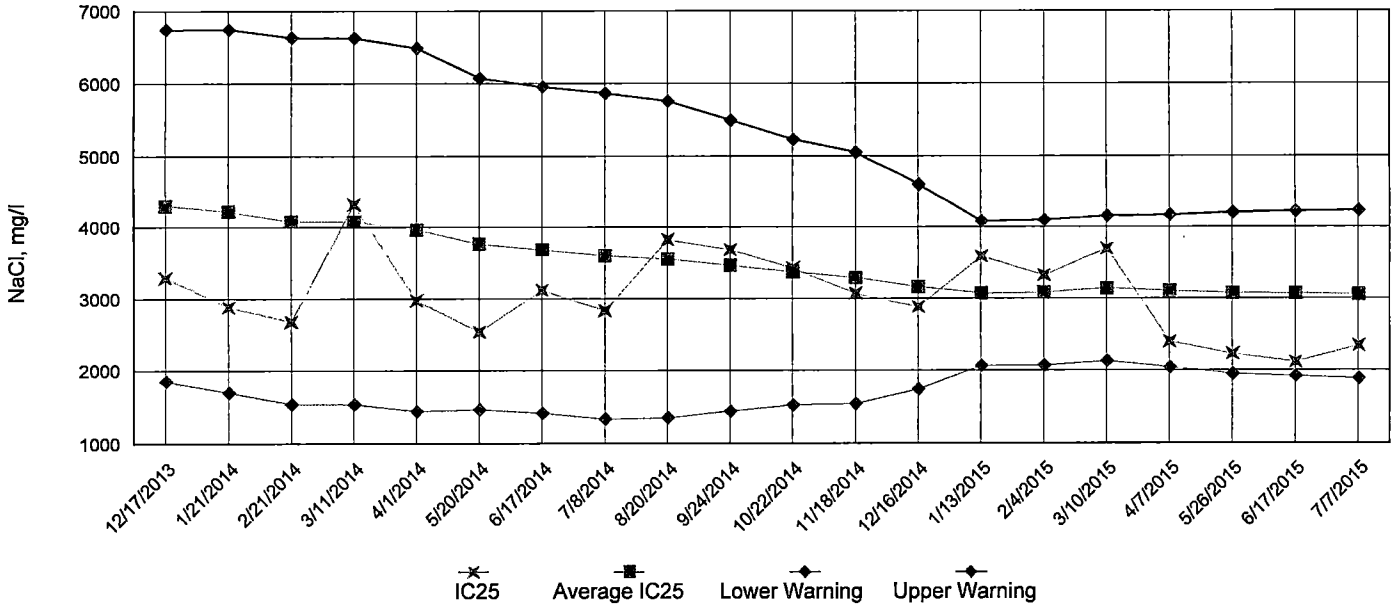
Appendix A4: Test 1000.0

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

LC50 Survival Data



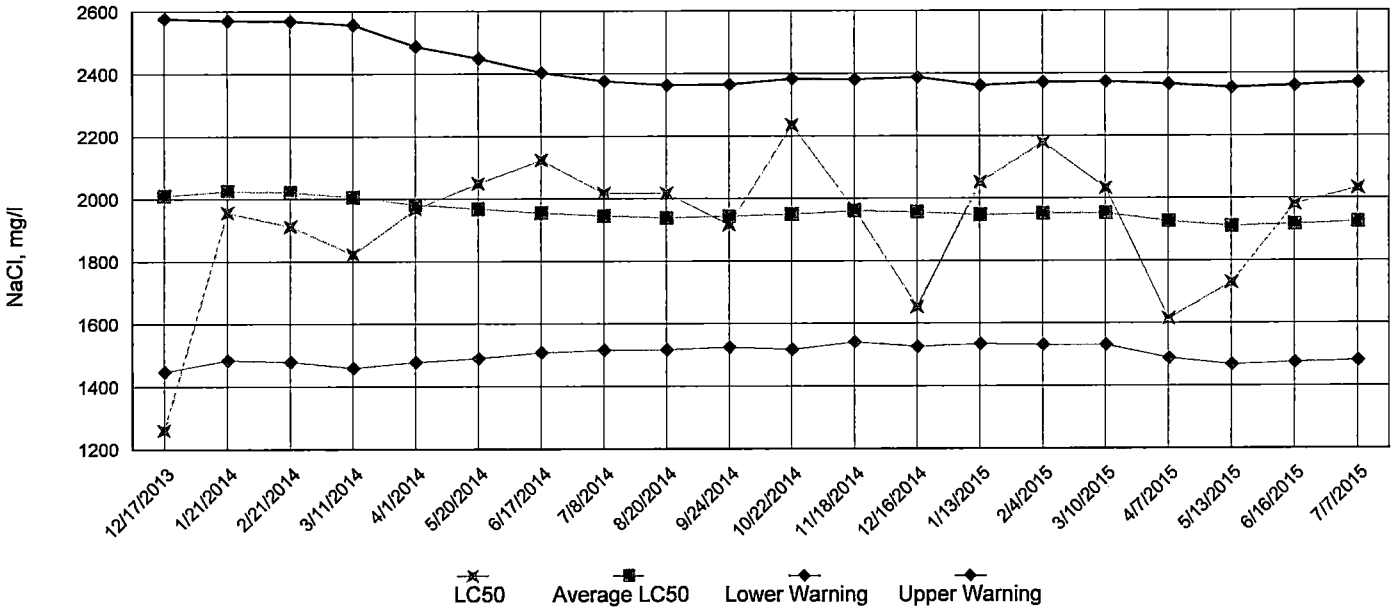
IC25 Growth Data



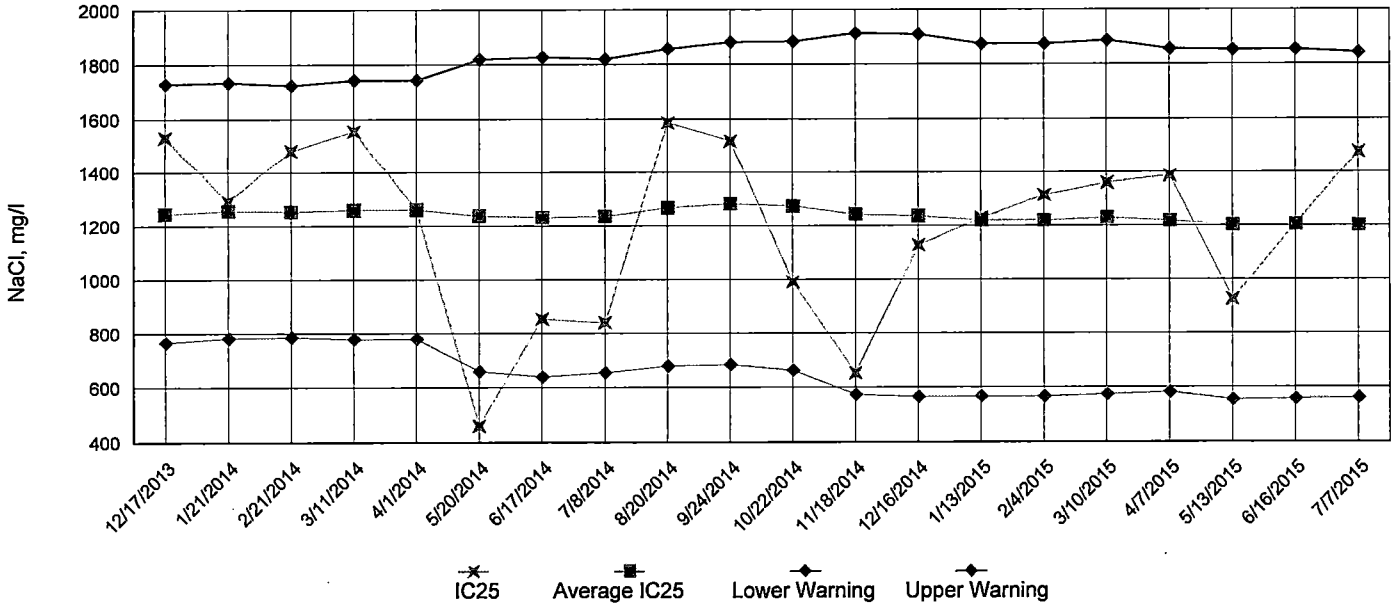
Appendix A4: Test 1002.0

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: El Dorado Chemical Company

NPDES No.: AR0000752

Date and Time Test Initiated: August 4, 2015 at 1500
Date and Time Test Terminated: August 11, 2015 at 1510
Dilution water used: Synthetic Soft Water #4238

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	87.5	100	100	100	97.5	5.73
0.7 %	87.5	100	100	100	100	100	100	97.5	5.73
0.9 %	87.5	100	100	100	100	100	100	97.5	5.73
1.2 %	87.5	100	100	87.5	87.5	100	100	92.5	7.40
1.6 %	100	100	100	100	100	100	100	100	0.00
2.1 %	87.5	87.5	87.5	87.5	87.5	100	100	87.5	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	0.381	0.292	0.305	0.214	0.281	0.295	20.3
0.7 %	0.281	0.280	0.312	0.371	0.319	0.313	11.9
0.9 %	0.299	0.316	0.341	0.271	0.318	0.309	8.40
1.2 %	0.281	0.364	0.358	0.289	0.236	0.306	17.8
1.6 %	0.319	0.464	0.445	0.291	0.374	0.379	20.0
2.1 %	0.354	0.390	0.275	0.254	0.322	0.319	17.5

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	(1.6 %)	____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	(1.6 %)	____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: 2.1 % (TOP6C)

6. LOEC Pimephales Lethality: 2.1 % (TXP6C)

7. NOEC Pimephales Sublethality: 2.1 % (TPP6C)

8. LOEC Pimephales Sublethality: 2.1 % (TYP6C)

9. Coefficient of variation for Pimephales growth: 20.3 (TQP6C)

AMERICAN INTERPLEX CORPORATION LABORATORIES

Appendix B: Test 1000.0

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

PERMITTEE: El Dorado Chemical Company
NPDES NO.: AR0000752
CONTACT: Mr. Eddie Pearson
ANALYST: 280, 304, 310, 314

Test Initiated: DATE: August 4, 2015 TIME: 1500
Test Terminated: DATE: August 11, 2015 TIME: 1510

DILUTION Control	DAY 1	2	3	4	5	6	7
D.O. Initial	6.1	7.6	8.7	7.4	7.3	7.8	8.4
Final	8.4	7.1	8.0	7.3	7.0	7.5	7.4
pH Initial	7.4	7.8	7.8	8.1	7.7	8.3	7.6
Final	7.7	7.8	7.4	7.7	7.7	7.3	7.8
Alkalinity	30	NA	30	NA	30	NA	NA
Hardness	42	NA	42	NA	42	NA	NA
Conductivity	150	150	170	130	180	150	170
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 0.7 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.8	8.6	7.4	7.5	7.5	7.3	8.4
Final	8.6	6.9	8.0	7.4	7.0	7.5	7.3
pH Initial	7.6	7.8	7.8	8.1	7.7	8.2	7.6
Final	7.7	7.8	7.5	7.7	7.7	7.3	7.8
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	130	150	170	130	170	140	170
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 0.9 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.6	8.6	8.6	7.8	7.8	7.6	8.3
Final	7.1	7.0	8.0	7.1	6.7	7.7	7.3
pH Initial	7.6	7.8	7.8	8.1	7.7	8.3	7.6
Final	7.6	7.8	7.5	7.7	7.7	7.4	7.8
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	130	160	170	130	170	140	170
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 1.2 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.9	7.8	8.7	7.6	7.5	7.7	8.4
Final	7.1	7.1	7.9	7.1	7.0	7.8	7.6
pH Initial	7.6	7.8	7.8	8.1	7.7	8.3	7.6
Final	7.6	7.8	7.6	7.7	7.7	7.5	8.0
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	130	170	170	140	170	140	170
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 1.6 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.5	7.5	8.7	7.6	7.3	7.6	8.4
Final	7.2	6.7	8.1	7.5	7.1	7.8	7.5
pH Initial	7.5	7.5	7.8	8.1	7.7	8.2	7.6
Final	7.6	8.4	7.7	7.8	7.7	7.5	8.0
Alkalinity	32	NA	32	NA	31	NA	NA
Hardness	43	NA	43	NA	40	NA	NA
Conductivity	150	NA	170	140	180	140	170
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 2.1 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.3	7.4	7.7	7.6	7.4	7.3	8.3
Final	7.3	7.3	8.0	7.4	6.9	7.6	7.4
pH Initial	7.7	7.8	7.8	8.1	7.7	8.2	7.6
Final	7.6	7.9	7.6	7.8	7.7	7.4	7.9
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	130	NA	170	140	180	150	170
Chlorine	NA	NA	NA	NA	NA	NA	NA

Appendix B: Test 1002.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

Permittee: El Dorado Chemical Company

NPDES No.: AR0000752

Date and Time Test Initiated: August 4, 2015 at 1210
Date and Time Test Terminated: August 11, 2015 at 1330
Dilution water used: Synthetic Soft Water #4238

PERCENT SURVIVAL

		Percent Effluent				
Time of Reading	Control	0.7 %	0.9 %	1.2 %	1.6 %	2.1 %
24 hour	100	100	100	100	100	100
48 hour	100	100	100	100	100	100
7 day	100	100	100	100	100	100

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

		Percent Effluent				
Replicates	Control	0.7 %	0.9 %	1.2 %	1.6 %	2.1 %
A	29	26	26	21	18	29
B	23	25	26	30	29	30
C	25	23	24	26	29	24
D	27	33	32	30	28	30
E	28	28	30	25	28	29
F	28	30	26	18	28	30
G	34	32	28	30	24	31
H	28	29	26	22	25	29
I	26	25	28	26	28	25
J	31	25	29	23	29	25
Mean per Adult	27.9	27.6	27.5	25.1	26.6	28.2
Mean per Surviving Adult	27.9	27.6	27.5	25.1	26.6	28.2
CV %	11.0	12.1	8.61	16.5	13.0	8.97

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	(1.6 %)	____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	(1.6 %)	____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: 2.1 % (TOP3B)

6. LOEC Ceriodaphnia Lethality: 2.1 % (TXP3B)

7. NOEC Ceriodaphnia Sublethality: 2.1 % (TPP3B)

8. LOEC Ceriodaphnia Sublethality: 2.1 % (TYP3B)

9. Coefficient of variation for Ceriodaphnia Reproduction: 13 (TQP3B)

AMERICAN INTERPLEX CORPORATION LABORATORIES

Appendix B: Test 1002.0

CHRONIC TOXICITY SUMMARY FORM
Ceriodaphnia dubia
CHEMICAL PARAMETERS CHART

PERMITTEE: El Dorado Chemical Company
NPDES NO.: AR0000752
CONTACT: Mr. Eddie Pearson
ANALYST: 280, 304, 310, 314

Test Initiated: DATE: August 4, 2015 TIME: 1210
Test Terminated: DATE: August 11, 2015 TIME: 1330

DILUTION Control	DAY 1	2	3	4	5	6	7
D.O. Initial	6.1	7.6	8.7	7.4	7.3	7.8	8.4
Final	8.0	8.0	7.3	7.4	7.2	7.9	8.0
pH Initial	7.4	7.8	7.8	8.1	7.7	8.3	7.6
Final	8.3	7.8	7.8	8.3	7.9	8.6	8.5
Alkalinity	30	NA	30	NA	30	NA	NA
Hardness	42	NA	42	NA	42	NA	NA
Conductivity	150	150	170	130	180	150	170
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 0.7 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.8	8.6	7.4	7.5	7.5	7.3	8.4
Final	7.8	8.1	7.4	7.2	7.0	7.6	8.0
pH Initial	7.6	7.8	7.8	8.1	7.7	8.2	7.6
Final	8.4	7.8	7.9	8.3	7.9	8.5	8.4
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	130	150	170	130	170	140	170
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 0.9 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.6	8.6	8.6	7.8	7.8	7.6	8.3
Final	7.8	8.1	7.5	7.3	7.1	7.6	8.0
pH Initial	7.6	7.8	7.8	8.1	7.7	8.3	7.6
Final	8.3	7.8	7.8	8.3	7.9	8.6	8.5
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	130	160	170	130	170	140	170
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 1.2 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.9	7.8	8.7	7.6	7.5	7.7	8.4
Final	8.0	8.1	7.6	7.4	7.1	7.7	8.1
pH Initial	7.6	7.8	7.8	8.1	7.7	8.3	7.6
Final	8.4	7.8	7.8	8.3	7.9	8.6	8.5
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	130	170	170	140	170	140	170
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 1.6 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.5	7.5	8.7	7.6	7.3	7.6	8.4
Final	8.2	8.2	7.6	7.6	7.1	7.9	8.1
pH Initial	7.5	7.5	7.8	8.1	7.7	8.2	7.6
Final	8.3	7.9	7.8	8.3	7.9	8.6	8.6
Alkalinity	32	NA	32	NA	31	NA	NA
Hardness	43	NA	43	NA	40	NA	NA
Conductivity	150	NA	170	140	180	140	170
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 2.1 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.3	7.4	7.7	7.6	7.4	7.3	8.3
Final	8.0	8.1	7.7	7.4	6.9	7.8	8.1
pH Initial	7.7	7.8	7.8	8.1	7.7	8.2	7.6
Final	8.3	7.9	7.9	8.4	7.8	8.6	8.6
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	130	NA	170	140	180	150	170
Chlorine	NA	NA	NA	NA	NA	NA	NA

AMERICAN INTERPLEX CORPORATION LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company
Project Reference: Quarterly - Permit AR0000752
Project Manager: Mr. Eddie Pearson
Sampled By: Edward L Pearson

PO No.

MATRIX

AIC CONTROL NO: 19291
AIC PROPOSAL NO:
Carrier: Rush
Received Temperature C: 0.1

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL		NO OF BOTTLES	ANALYSES REQUESTED: Chronic - CD, FH	Remarks
1	010	08-03-15 1100		X	X			1	X	
		Container Type							P	Field pH calibration on _____ @ _____
		Preservative							NO	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 A=$(NH_4)_2SO_4$, NH_4OH

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions:
Phone 870-312-1397 Fax:
Report Attention to: Mr. Eddie Pearson
Report Address to: 4500 North West Avenue
El Dorado, AR 71730
epearson@edc-ark.com

Relinquished By:	Date/Time	Received By:	Date/Time
Edward L Pearson	08-03-15 1200		
Relinquished By:	Date/Time	Received in Lab By:	Date/Time
		D. Bell	8-3-15 15:25

Comments:

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company
Project Reference: Quarterly - Permit AR0000752
Project Manager: Mr. Eddie Pearson
Sampled By: Edward L Pearson

PO No.

AIC CONTROL NO: 19291
AIC PROPOSAL NO:
Carrier: Rush
Received Temperature C: 0.1 (CS)

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	MATRIX WATER	MATRIX SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Chronic - CD, FH	Remarks
2	010	08-05-15 1030		X	X		1	X	
		Container Type						P	Field pH calibration on _____ @ _____
		Preservative						NO	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 A=$(NH_4)_2SO_4$, NH_4OH

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions:
Phone 870-312-1397 Fax:
Report Attention to: Mr. Eddie Pearson
Report Address to: 4500 North West Avenue
El Dorado, AR 71730
epearson@edc-ark.com

Relinquished By:	Date/Time	Received By:	Date/Time
Edward L Pearson	08-05-15 1200		
Relinquished By:	Date/Time	Received in Lab By: D. BROWN	Date/Time 8-5-14 1450

Comments:

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company
Project Reference: Quarterly - Permit AR0000752
Project Manager: Mr. Eddie Pearson
Sampled By: Edward L. Pearson

PO No.

AIC CONTROL NO: 192911
AIC PROPOSAL NO:
Carrier: Rush
Received Temperature C: 0.1

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	MATRIX WATER	MATRIX SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Chronic - CD, FH	Remarks
3	010	08-07-15 1100		X	X		1	X	
		Container Type						P	Field pH calibration
		Preservative						NO	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 A=$(NH_4)_2SO_4$, NH_4OH

Turnaround Time Requested: (Please circle)
(NORMAL) or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions:
Phone 870-312-1397 Fax:
Report Attention to: Mr. Eddie Pearson
Report Address to: 4500 North West Avenue
El Dorado, AR 71730
epearson@edc-ark.com

Relinquished By:	Date/Time	Received By:	Date/Time
Edward L. Pearson	08-07-15 1202		
Relinquished By:	Date/Time	Received in Lab By:	Date/Time
			8/7/15 1445

Comments:

FORM 0060

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3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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