El Dorado Water Utilities

500 NORTH WASHINGTON • P. O. BOX 1587 • EL DORADO, AR 71731 (870) 862-6451

March 21, 2013

ADEQ Permits Branch, Water Division
5301 Northshore Drive
North Little Rock, AR 72118

Certified Mail
7008 1300 0002 4985 9266

Re: Permit No's AR0033723, AR0033936, AR0049743 & AR0050296

Dear Mrs. Bolenbaugh:

Attached are the completed Discharge Monitoring Reports and SSO Report for the above referenced permits covering the period February 1, 2013 through February 28, 2013.

If you have any questions or comments, you can contact me at 870 862-6451.

Sincerely,

T. Harold Baker

T. Harold Baker
Treatment Superintendant
El Dorado Water Utilities

Enclosures

February 13, 2013

Test Results of
First Quarter
Chronic 7-Day Renewal
Biomonitoring Testing
for
South Effluent
El Dorado, AR

Control No. 164603-1

Prepared for:

Mr. Harold Baker
El Dorado Water Utilities
Post Office Box 1587
El Dorado, AR 71731

Prepared by:

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

AMERICAN INTERPLEX CORPORATION
LABORATORIES

El Dorado Water Utilities
ATTN: Mr. Harold Baker
Post Office Box 1587
El Dorado, AR 71731

Re: Chronic 7-Day Renewal utilizing *Ceriodaphnia dubia*
South Effluent - El Dorado, AR
NPDES Permit No. AR0033723 AFIN No. 70-00341

Dear Mr. Harold Baker:

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 1002.0 Chronic *Ceriodaphnia dubia* Survival and Reproduction Test: The No Observable Effects Concentration (NOEC) for survival occurred at 100 % effluent, which is equal to the critical dilution of 100 %. The NOEC for reproduction occurred at 100 % effluent, which is equal to the critical dilution of 100 %. **The sample, therefore, PASSED both lethal and sub-lethal effects for the *Ceriodaphnia dubia* test.**

AMERICAN INTERPLEX CORPORATION

John Overbey
Laboratory Director

PDF cc: El Dorado Water Utilities
ATTN: Mr. Harold Baker
harold@eldoradowater.com

El Dorado Water Utilities
ATTN: Mr. John Peppers
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GBMc & Associates, Inc.
ATTN: Mr. Roland McDaniel
rmcdaniel@gbmcassoc.com

Table of Contents

I. Control Acceptance Criteria

Ceriodaphnia dubia Method 1002.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Reproduction > or = 15 per Surviving Female	28.0	PASS
Control CV < or = 40% per Surviving Female	14.2	PASS
Reproduction Minimum Significant Difference 13 to 47%	32.0	PASS
Critical Dilution CV < or = 40%	23.7	PASS

II. Outlined Report

A. Introduction

1. Permit Number: AR0033723 AFIN No. 70-00341
2. Test Requirements: Chronic Biomonitoring, Quarterly
   Test Method 1002.0
3. Receiving Stream: Bayou de Loutre

B. Source of Effluent/Dilution Water

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

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	7.8	6.4	6.2
pH (standard units)	7.9	7.6	7.6
Alkalinity (mg/l as CaCO3)	120	120	120
Hardness (mg/l as CaCO3)	27	27	27
Conductivity (umhos/cm)	650	640	670
Residual Chlorine (mg/l)	<0.05	0.080	0.050
Ammonia as N (mg/l)	5.1	5.1	5.2

2. Dilution Water Samples: Synthetic Soft Water #3959
   a. Dates Prepared: February 1 through February 15, 2013
   b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	7.7	7.9	8.5
pH (standard units)	7.8	7.8	7.8
Alkalinity (mg/l as CaCO3)	30	30	30
Hardness (mg/l as CaCO3)	42	40	40
Conductivity (umhos/cm)	160	150	160
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05

C. Test Methods
1. Test methods used:
Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013; test Method 1002.0, *Ceriodaphnia dubia* Survival and Reproduction.
2. Endpoint: No Observable Effects Concentration (NOEC)
3. Test Conditions:

Ceriodaphnia dubia Survival and Growth Method 1002.0

Date & Time Test Initiated:	February 5, 2013 at 1205
Date & Time Test Terminated:	February 12, 2012 at 1325
Type & Volume of Test Chamber:	30 ml disposable beaker
Volume of Sample:	15 ml
Number of Organisms per replicate:	1
Number of Replicates per dilution:	10

4. Acclimation of test organisms: Obtained from in-house cultures
5. Test Temperature: 25 +/- 1 degree Celsius

D. Test Organisms
1. Scientific Name
a. Test 1002.0 *Ceriodaphnia dubia*

III. Data Analysis

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

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

IV. Standard Reference Toxicants

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

Ceriodaphnia dubia

Chronic reference tests are performed monthly.
A chronic reference test was performed on January 16, 2013 at 1450 to January 22, 2013 at 1545
The results were as follows: (Control No. 164121-2.)
Survival LC-50: 1825 mg/l
Growth IC-25: 1220 mg/l
Growth PMSD: 17

V. Chemical Analysis/Quality Control

Parameter	Method	% Recovery	Relative % Difference
Alkalinity	SM 2320 B	NA	0.00
Hardness	EPA 200.7	102	1.74
pH	SM 4500-H+ B	101	0.400
Conductivity	EPA 120.1	106	0.678

VI. Organism History

Ceriodaphnia dubia

Date: February 5, 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 *Ceriodaphnia dubia*, Cladoceran Survival and Reproduction Test -- Method 1002.0

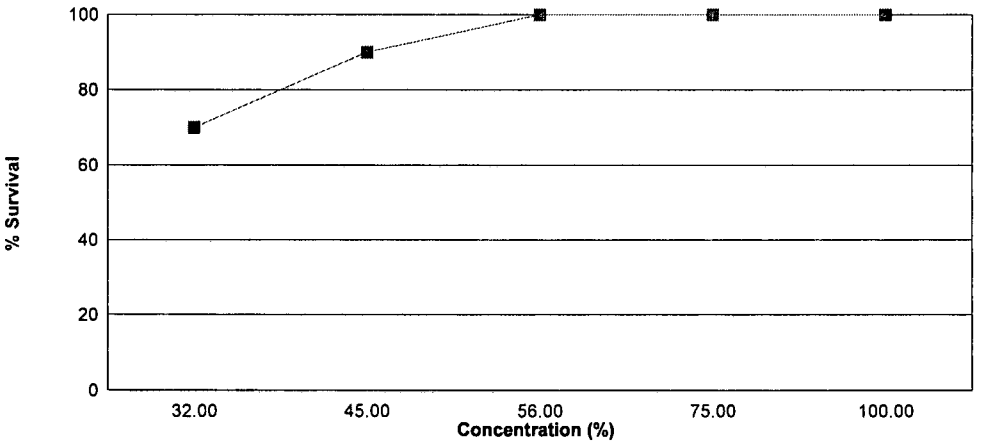
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring with an average of at least 15 young per female.

Effluent dilutions for this test were 32 %, 45 %, 56 %, 75 %, 100 % in accordance with the NPDES permit.

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

The test was initiated on February 5, 2013 at 1205 and continued through February 12, 2012 at 1325. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

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



Summary of the 7-day *Ceriodaphnia dubia* Survival and Reproduction Data		
Concentration	Percent Survival	Mean Reproduction
Control	100	28.0
32 %	70.0	19.0
45 %	90.0	25.0
56 %	100	31.8
75 %	100	31.3
100 %	100	33.5

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: February 5, 2013 at 1205
Date and Time Test Terminated: February 12, 2012 at 1325

Concentration: Control													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	6	5	0	5	6	4	5	6	4	6	47	10	4.70
5	12	10	10	10	12	10	11	13	11	11	110	10	11.0
6	0	0	0	0	0	0	0	0	0	0	0	10	0.00
7	12	12	9	12	15	13	12	13	11	14	123	10	12.3
8													
TOTAL	30	27	19	27	33	27	28	32	26	31	280	10	28.0

Concentration: 32 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	0	7	0	4	5	3	X	6	4	X	29	8	3.62
5	13	12	11	8	9	10	X	12	0	X	75	8	9.38
6	0	0	0	0	0	0	X	0	0	X	0	8	0.00
7	17	14	0	11	13	17	X	14	X	X	86	7	12.3
8													
TOTAL	30	33	11	23	27	30	0	32	4	0	190	10	19.0

Concentration: 45 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	0	4	X	5	4	5	2	6	4	5	35	9	3.89
5	14	10	X	0	11	11	8	11	9	12	86	9	9.56
6	0	0	X	0	0	0	0	0	0	0	0	9	0.00
7	16	17	X	8	16	17	10	17	12	16	129	9	14.3
8													
TOTAL	30	31	0	13	31	33	20	34	25	33	250	10	25.0

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: February 5, 2013 at 1205
Date and Time Test Terminated: February 12, 2012 at 1325

Concentration: 56 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	0	6	0	5	7	6	6	5	7	3	45	10	4.50
5	11	10	11	14	9	11	14	12	14	13	119	10	11.9
6	0	0	0	0	0	0	0	0	0	0	0	10	0.00
7	19	16	0	15	12	21	22	18	18	13	154	10	15.4
8													
TOTAL	30	32	11	34	28	38	42	35	39	29	318	10	31.8

Concentration: 75 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	4	2	0	7	6	5	6	5	4	0	39	10	3.90
5	13	11	16	15	15	0	14	13	9	5	111	10	11.1
6	0	0	0	0	7	0	0	0	0	0	7	10	0.700
7	21	13	23	19	19E	12	24	21	13	10	156	10	15.6
8													
TOTAL	38	26	39	41	28	17	44	39	26	15	313	10	31.3

E = Excluded fourth brood neonates

Concentration: 100 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	0	8	0	5	6	5	6	6	8	7	51	10	5.10
5	11	11	13	12	13	12	13	10	11	12	118	10	11.8
6	0	0	0	0	0	0	0	0	0	0	0	10	0.00
7	22	18	0	16	20	19	19	17	12	23	166	10	16.6
8													
TOTAL	33	37	13	33	39	36	38	33	31	42	335	10	33.5

Appendix A2: Statistics

Ceriodaphnia dubia Survival

Fisher's Exact Test

Identification	Alive	Dead	Total Animals
Control	10	0	10
32 %	7	3	10
Total	17	3	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 7. 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
45 %	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
56 %	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
75 %	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
100 %	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	32 %	10	3	
2	45 %	10	1	
3	56 %	10	0	
4	75 %	10	0	
5	100 %	10	0	

Appendix A2: Statistics

Ceriodaphnia dubia Reproduction

Kolmogorov Test for Normality		No Transformation
D = 0.1229		
D* = 0.9642		
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 = 12.11		
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	1455	291	3.062
Within (Error)	54	5132	95.04	
Total	59	6587		

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

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	28	28		
2	32 %	19	19	2.064	
3	45 %	25	25	0.6881	
4	56 %	31.8	31.8	-0.8716	
5	75 %	31.3	31.3	-0.7569	
6	100 %	33.5	33.5	-1.262	

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	32 %	10	10.07	36	9
3	45 %	10	10.07	36	3
4	56 %	10	10.07	36	-3.8
5	75 %	10	10.07	36	-3.3
6	100 %	10	10.07	36	-5.5

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	338.5	67.7	1.095
Within (Error)	50	3090	61.8	
Total	55	3428		

Critical F = 3.41 (alpha = 0.01, df = 5,50)
2.4 (alpha = 0.05, df = 5,50)

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	28	28		
2	32 %	26.571	26.571	0.3689	
3	45 %	27.778	27.778	0.06146	
4	56 %	31.8	31.8	-1.081	
5	75 %	31.3	31.3	-0.9387	
6	100 %	33.5	33.5	-1.564	

Dunnett's critical value = 2.31 (1 Tailed, alpha = 0.05, df [used] = 5,40) (Actual df = 5,50)
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	32 %	7	8.949	32	1.429
3	45 %	9	8.344	29.8	0.222
4	56 %	10	8.121	29	-3.8
5	75 %	10	8.121	29	-3.3
6	100 %	10	8.121	29	-5.5

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: February 5, 2013 at 0842
Date and Time Test Terminated: February 12, 2013 at 1325

Effluent Conc.: Control		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.7	7.7	7.9	8.0	8.5	8.3	8.4
	Final	7.7	7.8	8.2	7.9	8.0	8.6	8.3
pH, units	Initial	7.8	7.8	7.8	7.8	7.8	7.8	7.8
	Final	8.0	8.1	8.1	8.1	8.0	7.9	8.0
Alkalinity, mg CaCO3/l		30	NA	30	NA	30	NA	NA
Hardness, mg CaCO3/l		42	NA	40	NA	40	NA	NA
Conductivity, umhos/cm		160	160	150	160	160	160	160
Res. Chlorine, mg/l		<0.05	NA	<0.05	NA	<0.05	NA	NA

Effluent Conc.: 32 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.9	8.0	7.5	7.4	7.8	8.0	8.2
	Final	7.4	7.6	7.9	7.9	8.1	8.2	8.2
pH, units	Initial	7.9	7.9	7.6	7.6	7.6	7.8	7.8
	Final	8.1	8.2	8.2	8.2	8.1	8.1	8.1

Effluent Conc.: 45 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.1	7.3	7.0	7.2	7.3	7.8	7.7
	Final	7.3	7.6	8.1	7.9	8.1	8.4	8.4
pH, units	Initial	7.9	7.9	7.5	7.6	7.5	7.7	7.6
	Final	8.1	8.3	8.2	8.2	8.1	8.1	8.2

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: February 5, 2013 at 0842
Date and Time Test Terminated: February 12, 2013 at 1325

Effluent Conc.: 56 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.6	7.1	6.9	6.8	6.8	7.5	7.3
	Final	7.1	7.6	8.0	8.0	7.9	8.6	7.9
pH, units	Initial	7.9	8.0	7.6	7.6	7.5	7.7	7.6
	Final	8.1	8.3	8.3	8.2	8.1	8.2	8.2

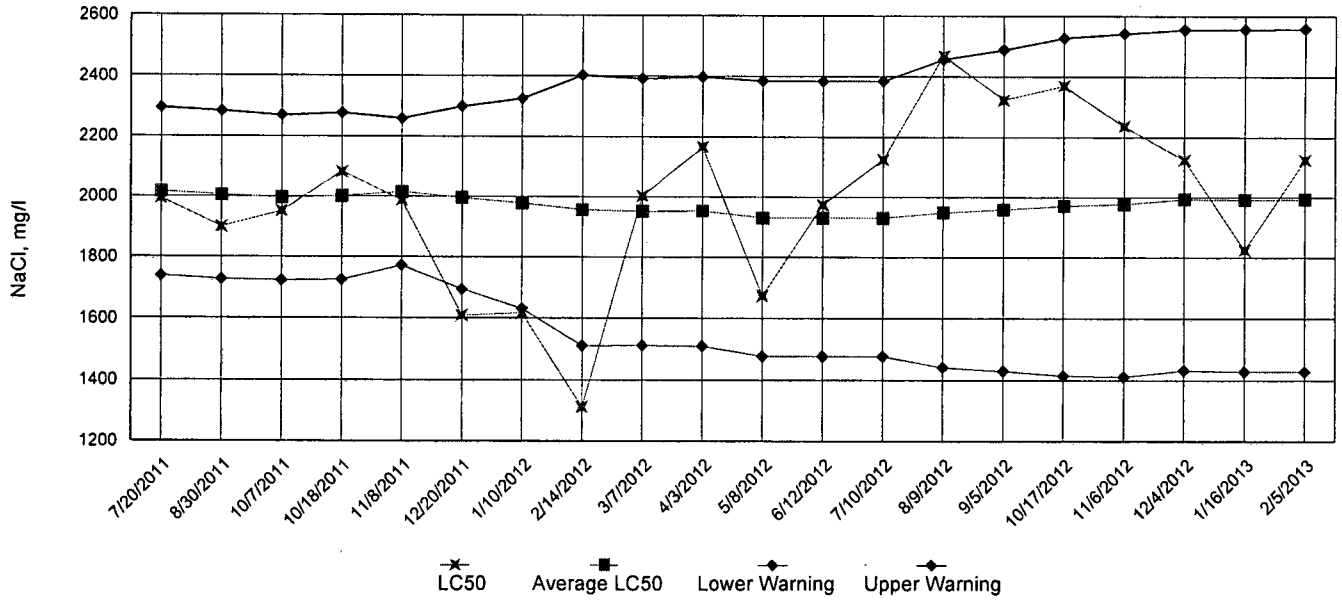
Effluent Conc.: 75 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.8	7.3	6.6	6.5	6.3	7.4	7.2
	Final	7.3	7.4	8.0	7.6	7.9	8.5	8.2
pH, units	Initial	7.9	8.0	7.5	7.6	7.5	7.7	7.5
	Final	8.2	8.4	8.4	8.3	8.1	8.2	8.3

Effluent Conc.: 100 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.8	7.3	6.4	7.1	6.2	7.7	6.6
	Final	7.2	7.7	8.2	8.2	8.0	8.5	8.2
pH, units	Initial	7.9	8.0	7.6	7.6	7.6	7.8	7.5
	Final	8.2	8.4	8.4	8.1	8.2	8.4	8.5
Alkalinity, mg CaCO3/l		120	NA	120	NA	120	NA	NA
Hardness, mg CaCO3/l		27	NA	27	NA	27	NA	NA
Conductivity, umhos/cm		650	660	640	680	670	680	670
Res. Chlorine, mg/l		<0.05	NA	0.080	NA	0.050	NA	NA

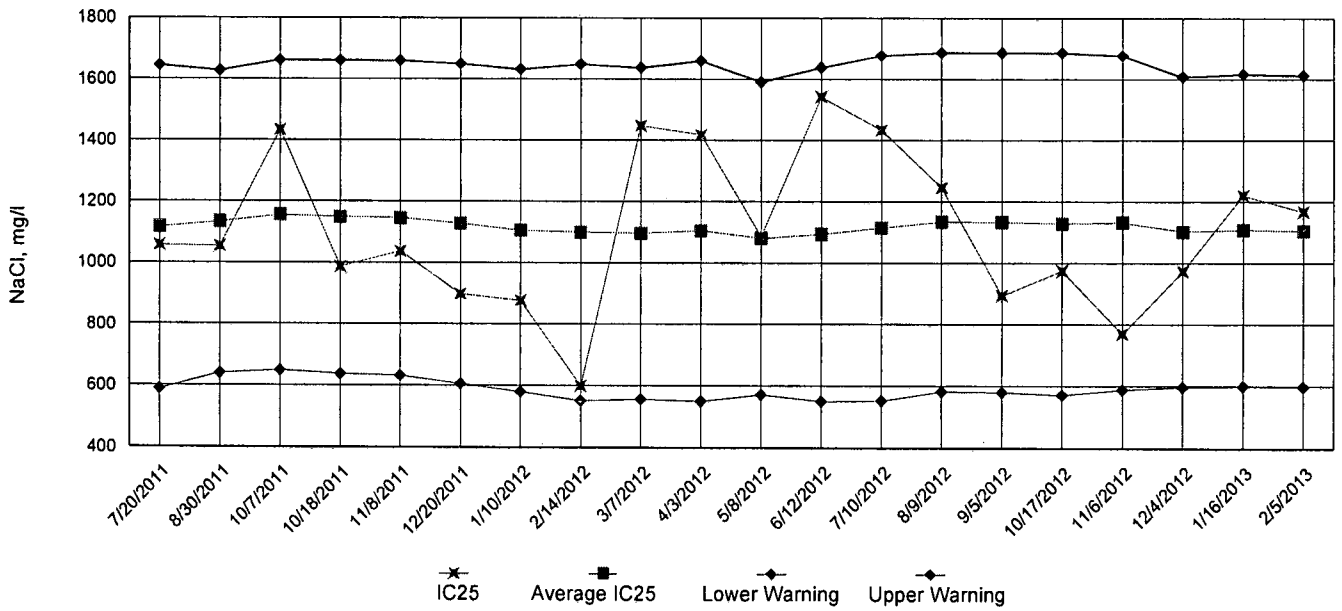
Appendix A4: Test 1002.0

Chronic Reference Toxicant, *Ceriodaphnia dubia*

LC50 Survival Data



IC25 Reproduction Data



Appendix B: Test 1002.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

Permittee: El Dorado Water Utilities

NPDES No.: AR0033723 AFIN No. 70-00341

Date and Time Test Initiated: February 5, 2013 at 1205
Date and Time Test Terminated: February 12, 2012 at 1325
Dilution water used: Synthetic Soft Water #3959

PERCENT SURVIVAL

		Percent Effluent				
Time of Reading	Control	32 %	45 %	56 %	75 %	100 %
24 hour	100	100	100	100	100	100
48 hour	100	100	100	100	100	100
7 day	100	70.0	90.0	100	100	100

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

		Percent Effluent				
Replicates	Control	32 %	45 %	56 %	75 %	100 %
A	30	30	30	30	38	33
B	27	33	31	32	26	37
C	19	11	0	11	39	13
D	27	23	13	34	41	33
E	33	27	31	28	28	39
F	27	30	33	38	17	36
G	28	0	20	42	44	38
H	32	32	34	35	39	33
I	26	4	25	39	26	31
J	31	0	33	29	15	42
Mean per Adult	28.0	19.0	25.0	31.8	31.3	33.5
Mean per Surviving Adult	28.0	26.6	27.8	31.8	31.3	33.5
CV %	14.2	28.7	25.6	27.1	32.9	23.7

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

Appendix B: Test 1002.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

1. Fisher's Exact Test:

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

   a.) LOW FLOW OR CRITICAL DILUTION (100 %) _____YES ___X___ NO
   b.) 1/2 LOW FLOW DILUTION (NA) _____YES _____ NO

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

3. If you answered NO to 1.a) enter [0] otherwise enter [1]: 0 (TLP3B)

4. If you answered NO to 2.a) enter [0] otherwise enter [1]: 0 (TGP3B)

5. NOEC Ceriodaphnia Lethality: 100 % (TOP3B)

6. LOEC Ceriodaphnia Lethality: 100 % (TXP3B)

7. NOEC Ceriodaphnia Sublethality: 100 % (TPP3B)

8. LOEC Ceriodaphnia Sublethality: 100 % (TYP3B)

9. Coefficient of variation for Ceriodaphnia Reproduction: 23.7 (TQP3B)

Appendix B: Test 1002.0

CHRONIC TOXICITY SUMMARY FORM
Ceriodaphnia dubia
CHEMICAL PARAMETERS CHART

PERMITTEE: El Dorado Water Utilities
NPDES NO.: AR0033723 AFIN No. 70-00341
CONTACT: Mr. Harold Baker
ANALYST: 280, 298, 304, 307

Test Initiated: DATE: February 5, 2013 TIME: 1205
Test Terminated: DATE: February 12, 2012 TIME: 1325

DILUTION Control	DAY 1	2	3	4	5	6	7
D.O. Initial	7.7	7.7	7.9	8.0	8.5	8.3	8.4
Final	7.7	7.8	8.2	7.9	8.0	8.6	8.3
pH Initial	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Final	8.0	8.1	8.1	8.1	8.0	7.9	8.0
Alkalinity	30	NA	30	NA	30	NA	NA
Hardness	42	NA	40	NA	40	NA	NA
Conductivity	160	160	150	160	160	160	160
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 32 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.9	8.0	7.5	7.4	7.8	8.0	8.2
Final	7.4	7.6	7.9	7.9	8.1	8.2	8.2
pH Initial	7.9	7.9	7.6	7.6	7.6	7.8	7.8
Final	8.1	8.2	8.2	8.2	8.1	8.1	8.1
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	320	320	310	330	330	320	330
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 45 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.1	7.3	7.0	7.2	7.3	7.8	7.7
Final	7.3	7.6	8.1	7.9	8.1	8.4	8.4
pH Initial	7.9	7.9	7.5	7.6	7.5	7.7	7.6
Final	8.1	8.3	8.2	8.2	8.1	8.1	8.2
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	380	380	370	390	390	390	380
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 56 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.6	7.1	6.9	6.8	6.8	7.5	7.3
Final	7.1	7.6	8.0	8.0	7.9	8.6	7.9
pH Initial	7.9	8.0	7.6	7.6	7.5	7.7	7.6
Final	8.1	8.3	8.3	8.2	8.1	8.2	8.2
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	440	440	420	460	450	450	440
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 75 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.8	7.3	6.6	6.5	6.3	7.4	7.2
Final	7.3	7.4	8.0	7.6	7.9	8.5	8.2
pH Initial	7.9	8.0	7.5	7.6	7.5	7.7	7.5
Final	8.2	8.4	8.4	8.3	8.1	8.2	8.3
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	520	530	510	540	540	550	530
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 100 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.8	7.3	6.4	7.1	6.2	7.7	6.6
Final	7.2	7.7	8.2	8.2	8.0	8.5	8.2
pH Initial	7.9	8.0	7.6	7.6	7.6	7.8	7.5
Final	8.2	8.4	8.4	8.1	8.2	8.4	8.5
Alkalinity	120	NA	120	NA	120	NA	NA
Hardness	27	NA	27	NA	27	NA	NA
Conductivity	650	660	640	680	670	680	670
Chlorine	<0.05	NA	0.080	NA	0.050	NA	NA

AMERICAN INTERPLEX CORPORATION LABORATORIES

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

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: EL DORADO WATER UTILITIES
Project Reference: South EFFLUENT
Project Manager: HAROLD BAKER
Sampled By: JOHN M. PEPPERS

PO No.

SAMPLE MATRIX: WATER, SOIL

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL	NO OF BOTTLES	BIOEXPERTOX 96 CA ONLY	ANALYSES REQUESTED
1	SE-1632	2-4-13 0930		X	X		3	3	
		Container Type						P	
		Preservative						ND	

AIC CONTROL NO: 164603
AIC PROPOSAL NO:
Carrier: Fed-X
Received Temperature C: 2.1
Remarks

Field pH calibration
on _____ @ _____
Buffer:

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

Turnaround Time Requested: (Please circle)
(NORMAL) or EXPEDITED IN ___ DAYS
Expedited results requested by: _____
Who should AIC contact with questions: JOHN M. PEPPERS
Phone: 870-814-1764 Fax: LAB # 870-862-0421
Report Attention to: HAROLD BAKER
Report Address to: P.O. BOX 1587
EL DORADO, AR 71731

Relinquished By	Date/Time	Received By	Date/Time
DWAYNE MATHEWS	2-4-13 1620		
Relinquished By:	Date/Time	Received in Lab By:	Date/Time
			2-5-13

Comments:
8017 1179 8654

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

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

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: EL DORADO WATER UTILITIES
Project Reference: SOUTH EFFLUENT
Project Manager: HAROLD BAKER
Sampled By: JOHN M. PEPPERS

PO No.

SAMPLE MATRIX

AIC CONTROL NO: 164603
AIC PROPOSAL NO:
Carrier:
Received Temperature C: 8 °C

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL	NO OF BOTTLES	BIOMONITORING	Remarks
2	SE-1633	0930 2-6-13		24h	✓		3	3	
		Container Type					P		
		Preservative					NO		

Field pH calibration on _____ @ _____
Buffer:

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

Turnaround Time Requested: (Please circle)
(NORMAL) or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions: JOHN M. PEPPERS
Phone: 870-814-1764 Fax: LAB # 870-862-0421
Report Attention to: HAROLD BAKER
Report Address to: P.O. BOX 1587
EL DORADO, AR 71731

Relinquished By	Date/Time	Received By	Date/Time
JOHN M. PEPPERS	1615 2-6-13	FED EX	1630
	2-7-13 8:00		2-7-13 8:00

Comments:
8017 1179 8632

2-Aug

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

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

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

PAGE 1 OF 1

Client: EL DORADO WATER UTILITIES
Project Reference: SOUTH EFFLUENT
Project Manager: HAROLD BAKER
Sampled By: JOHN M. PEPPERS
PO No.
AIC CONTROL NO: 164603
AIC PROPOSAL NO:
Carrier: Fed Ex
Received Temperature C: 2°

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	SAMPLE MATRIX: WATER	SOIL	NO OF BOTTLES	ANALYSES REQUESTED: BROMOMETHANE
3	SE-1634	0930 2-8-13		COMP	✓		3	3
		Container Type					P	
		Preservative					NO	

Remarks

Field pH calibration on _____ @ _____
Buffer:

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

Turnaround Time Requested: (Please circle)
(NORMAL) or EXPEDITED IN ___ DAYS
Expedited results requested by: _____
Who should AIC contact with questions: JOHN M. PEPPERS
Phone: 870-814-1764 ~~Fax~~ LAB # 870-862-0421
Report Attention to: HAROLD BAKER
Report Address to: P.O. BOX 1587
EL DORADO, AR 71731

Relinquished By:	Date/Time	Received By:	Date/Time
JOHN M. PEPPERS	1640 2-8-13	FED EX	1650 2-8-13
Relinquished By:	Date/Time	Received in Lab By:	Date/Time
		Shawn Worin	2-9-13 0825

Comments: 8764 3753 5415

2-Aug

FORM 0060