Bio-Analytical Laboratories (BAL)
ADEQ#88-0630
Project X4774

Bio-Analytical Laboratories' Executive Summary

Permittee: El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731
Project #: X4774
Outfall: Outfall 007
Permit #: AR0000752/ AFIN #70-00040
Contact: Ms. Larken Pennington
Test Dates: June 12 - 15 , 2012
Test Type: 48-hour acute toxicity test using *Pimephales promelas* (EPA 2000.0).
48-hour acute toxicity test using *Daphnia pulex* (EPA 2021.0)

Results:

For *Pimephales promelas:*

1. If the NOEC for survival is less than the critical dilution (100%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM6C- 0.
2. Report the NOEC for survival, Parameter TOM6C - 100%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM6C - 16.50%.

For *Daphnia pulex:*

1. If the NOEC for survival is less than the critical dilution (100%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM3D- 1.
2. Report the NOEC for survival, Parameter TOM3D - 0%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM3D - 7.62%.

-Due to lack of available test organisms, only the control and the 100% dilution was tested.

This report contains a total of 31 pages, including this page. The results pertain only to the samples listed in the chain of custody documents in Appendix A. The information contained within meets the requirements set forth by ADEQ. The chemical data in this report is for monitoring purposes only and should not be reported on discharge monitoring reports.

Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

(318) 745-2772
1-800-259-1246
Fax: (318) 745-2773

THE RESULTS OF TWO 48-HOUR ACUTE TOXICITY TESTS FOR OUTFALL 007 AT

EL DORADO CHEMICAL COMPANY
El Dorado, Arkansas

NPDES #AR0000752
AFIN #70-00040

EPA Methods 2000.0 and 2021.0

Project X4774

Test Dates: June 12 - 15, 2012
Report Date: July 17, 2012

Prepared for:
Ms. Larken Pennington
El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731

Prepared by:
Ginger Briggs
Bio-Analytical Laboratories
P.O. Box 527
Doyline, LA 71023
ADEQ #88-0630

BAL
ADEQ #88-0630
Project X4774

TABLE OF CONTENTS

BAL
ADEQ #88-0630
Project X4774

1.0 Introduction

Bio-Analytical Laboratories (BAL), Doyline, Louisiana conducted two 48-hour acute toxicity tests for Outfall 007 at El Dorado Chemical Company, El Dorado, Arkansas. The test organisms used were the fathead minnow, *Pimephales promelas* and the cladoceran, *Daphnia pulex.* The purpose of this study is to determine if an appropriately dilute effluent sample adversely affects the survival of the test organism. Toxicity is defined as a statistically significant difference at the 95 percent confidence level between the survival of the test organisms in the critical dilution (the effluent concentration representative of the proportion of effluent in the receiving water during critical low flow or critical mixing conditions) compared to the survival of the test organisms in the control. The test endpoints are the No-Observed-Effect-Concentration (NOEC), which is defined as the highest effluent concentration that is not statistically different from the control, and the 48-hour LC_{50}, the concentration in which 50 percent of the test organisms died.

2.0 Methods and Materials

2.1 Test Methods

All methods followed were according to the latest edition of "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA-821-R-02-012).

2.2 Test Organisms

The fathead minnows were raised in-house and were approximately four days old at test initiation. The *Daphnia pulex* test organisms were raised in-house and were less than 24 hours old at test initiation. Forty-eight hour reference toxicant tests, using sodium chloride (NaCl), were conducted monthly in order to document organism sensitivity and demonstration of capability.

BAL
ADEQ #88-0630
Project X4774

2.3 Dilution Water

Soft reconstituted water made per EPA guidelines was used as the dilution water and the control for the acute tests.

2.4 Test Concentrations

The test concentrations used in the fathead minnow test were 100, 75.0, 56.0, 50.0, 42.0 and 32.0 percent effluent and a reconstituted water control. Due to lack of available test organisms, only 100 percent effluent and the control were used in the *Daphnia pulex* test. The critical dilution was defined as 100 percent effluent. The tests were conducted using five replicates of eight animals each for a total of 40 animals per concentration.

2.5 Sample Collection

One sample of Outfall 007 was collected by El Dorado Chemical personnel on June 12, 2012. Upon completion of collection, the sample was chilled to 4^0 Celsius and personally delivered to Bio-Analytical Laboratories.

2.6 Sample Preparation

Upon arrival, the sample was logged in, given an identification number and refrigerated unless needed. Prior to use, the sample was warmed to 25 ± 1^0 Celsius. The total residual chlorine level was measured with a Capital Controls^R amperometric titrator and recorded if present. The total ammonia level was measured using a HACH^R test strip. Dissolved oxygen, pH and conductivity measurements were taken on the control and each test concentration at test initiation, at each renewal and at test termination. Alkalinity and hardness levels were measured on the control and the highest effluent concentration.

2.7 Monitoring of the Tests

The tests were run in a Precision^R dual controlled illuminated incubator at a temperature of 25 ± 1^0 Celsius. An AEMC^R data logger was used to monitor diurnal temperature throughout the testing period. Light cycle and intensity were recorded twice a month.

2.8 Data Analysis

The NOEC and LC_{50} values values were obtained by approved EPA methods of analysis, using the ToxCalc statistical program.

BAL
ADEQ #88-0630
Project X4774

3.0 Results and Discussion

The results of the tests can be found in Table 1. Significant differences in survival were noted in the critical dilutions in the daphnid test, but not in the fathead minnow test (p=.05). The NOEC value in the fathead minnow test was 100 percent and the NOEC value in the *Daphnia pulex* test was zero percent effluent (p=.05).

Table 1: Results of the 48-hour Acute Definitive Toxicity Tests

Percent Effluent	Percent Survival	
Test Organism	*Pimephales promelas*	*Daphnia pulex*
Control	100.0	95.0
32.0	90.0	-----
42.0	95.0	-----
50.0	87.5	-----
56.0	85.0	-----
75.0	77.5	-----
100.0	77.5	0.0

The 48-hour reference toxicant test results indicate that the test organisms were within the respective sensitivity range. The graphs of the acute reference toxicant tests can be found in Appendix D.

BAL
ADEQ #88-0630
Project X4774

4.0 Conclusions

The sample of Outfall 007 collected from El Dorado Chemical Company, El Dorado, Arkansas, on June 12, 2012, was found to be lethally toxic to the *Daphnia pulex* test organisms in the 100 percent critical dilution after 48 hours of exposure (p=.05). The sample was not found to be lethally toxic to the fathead minnow test organisms (p=.05).

BAL
ADEQ #88-0630
Project X4774

5.0 Reference

EPA, 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. EPA-821-R-02-012, Office of Water.

APPENDIX A
CHAIN-OF-CUSTODY DOCUMENTS

Bio-Analytical Laboratories
3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023
(318) 745-2772
1-800-259-1244
Fax: (318) 745-2773

NELAP/LELAP 01975, ADEQ 88-0630, TCEQ T104704278

Laboratory Use Only:

Company: El Dorado Chemical Company	Phone: (870) 863-1484
Address: 4500 Norwest Ave., El Dorado, AR 71731	Fax: (870) 863-7499
Permit #: AR0000752/AFIN 70-00040	Purchase Order:

Sampler's Signature/Printed Name/Affiliation: Larken Pennington/Larken Pennington /EDCC

Analysis:

Project Number: X4774

Temp. upon arrival: 4.5°C [illegible] 6/12/12

Preservative: (below)

Date Start / Date End	Time Start / Time End	C	G	# and type of container	Sample Identification	Chronic Ceriodaphnia	Chronic minnow	Acute minnow (fresh/marine)	Acute Daphnia species	Acute Mysid	Acute Ceriodaphnia	Fecal Coliform	Lab Control Number:	Preservative
6/12/12	8:15		X	6 half gallon	007			X	X				CS643	

Relinquished by/Affiliation:	Date:	Time:	Received by/Affiliation:	Date:	Time:
Larken Pennington	6/12/12	11:45	Eric [illegible] Briggs BAL	6/12/12	1145
Relinquished by/Affiliation:	Date:	Time:	Received by/Affiliation:	Date:	Time:
Relinquished by/Affiliation:	Date:	Time:	Received by/Affiliation:	Date:	Time:

Method of Shipment: _____ Lab _____ Bus _____ Fed Ex _____ DHL _____ UPS _____ Client _____ Other Tracking #________________

Comments:

APPENDIX B
RAW DATA SHEETS

BIO-ANALYTICAL LABORATORIES
ACUTE TOXICITY TEST WATER QUALITY DATA

Project# X4774

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES#AR0000752 Outfall 007

Technicians: EGB/AH/LGZ/RC

			D. pulex date	D. pulex Time
Test initiated:	Date 6/12/12	Time 1655	6/13/12	1343
Test terminated:	Date 6/14/12	Time 1500	6/15/12	1350

Dissolved Oxygen Meter: Model # YSI 55D Serial #06E2089 AU
pH Meter: Model #Orion 230A+ Serial #105253
Conductivity Meter: Model # Control Co. Serial #80277924
Amperometric Titrator: Model #Fischer-Porter Serial #92W445766

Sample Information

Sample ID#	Initial D.O. (mg/L and %)	Aerate? Minutes/ Final D.O(mg/L & %)	Total Residual Chlorine (mg/L)	Dechlorinated? Amount?	Ammonia (NH3) mg/L	Salinity	Hardness	Alkalinity	Tech
C5643	8.6/ 112.5%	Y/20/7.7 96.4%	<0.01	NO	6.0	N/A	680.0	0.4	RC
↓	9.5/ 112.5%	Y/20 8.4/98.1%	↓	↓	↓	↓	↓	↓	
C5643	9.0/ 113.9%	Y/20/8.1 97.1%	↓	↓	↓	↓	↓	↓	RC

Dilution Water Information

Dilution Water	ID#	Initial D.O (mg/L & %)	Aerate? Minutes/D.O (mg/L & %)	Total Residual Chlorine (mg/L)	Ammonia (NH3) mg/L	pH	Hardness	Alkalinity	Tech
		NA	NA	NA	NA				
Soft H20	3330						48.0	36.0	RC
↓	3336						48.0	32.0	RC

Test Species Information

Test Species Info.	Species: D. pulex ID#: BAL 0408-W8	Species: P. promelas ID#: BAL 0812	Species: ID#:	Species: ID#:
Age	<24h	4 days		
Test Container Size	30ml	250ml		
Test volume	25ml	200ml		
Feeding: Type	YCT: Algae	Artemia		
Amount	-Fed 2hrs prior to test initiation			
Aeration?	NA	NA		
Amount				
Condition of survivors	Good RC 6/15/12	Good 6/14/12		

Comments:

ACUTE1 020809 Rev.

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X4774

Client El Dorado Chemical

Sample Description 007

Test started: Date 6/13/12 Time 1343

Test ended: Date 6/15/12 Time 1350

Test Species D pulex ID# BAL 48 W8

Technician: Ohour AH 24hour RC 48hour RC 72hour ____ 96hour ____

Time: Ohour 1343 24hour 1415 48hour 1350 72hour ____ 96hour ____

Temperature (°C): Ohour 24.6 24hour 24.6 48hour 24.7 72hour ____ 96hour ____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
		N/A	0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
0	A		8	8	8			8.1	8.0/8.0	8.2			7.5	7.3/7.7	7.7			176.3	216/216	189.1		
	B		8	8	8																	
	C		8	8	7																	
	D		8	8	7																	
	E		8	8	8																	
100	A		8	0				8.3	7.9/8.0				6.0	6.0/6.2				590	832/827			
	B		8	0																		
	C		8	0																		
	D		8	0																		
	E		8	0																		
Chemistry Tech prerenewal/postrenewal								AH	RC/SMW	RC			AH	RC/SMW	RC			AH	RC/SMW	RC		

ACUTE2 020809 Rev.

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X4774

Client El Dorado Chemicals

Sample Description 007

Test started: Date 6/12/12 Time 1655

Test ended: Date 6/14/12 Time 1500

Test Species P. promelas ID# BAL6812

Technician:	Ohour AH	24hour RC	48hour SDM	72hour	96hour
Time:	Ohour 1655	24hour 1450	48hour 1500	72hour	96hour
Temperature (°C):	Ohour 25.4	24hour 24.9	48hour 25.5	72hour	96hour

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	Start RC	24	48	72	96
		MA																				
0	A		8	8	8			8.0	7.7 / 8.1	7.8			7.9	7.7 / 7.5	7.5			174.0	198.9 / 196.2	200.0		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
32	A		8	8	8			7.9	7.5 / 8.0	7.6			7.0	6.9 / 7.0	6.9			196.7	196.8 / 197.4	199.6		
	B		8	7	7																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	6	5																	
Chemistry Tech prerenewal/postrenewal								RC	RC / SDM	SDM			RC	RC / SDM	SDM			RC	RC / SDM	SDM		

ACUTE2 020809 Rev.

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X4774

Client El Dorado Chemical

Sample Description 007

Test started: Date 4/12/12 Time 1655

Test ended: Date 4/14/12 Time 1500

Test Species P. promelas ID# BAL 6812

Technician:	Ohour AH	24hour RC	48hour RC	72hour	96hour
Time:	Ohour 1655	24hour 1450	48hour 1500	72hour	96hour
Temperature (°C):	Ohour 25.4	24hour 24.9	48hour 25.5	72hour	96hour

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
		NA	0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
42	A		8	8	8			7.9	1.4/8.2	7.5			6.8	6.8/6.9	6.8			2500	2490/2490	2560		
	B		8	8	8																	
	C		8	7	7																	
	D		8	7	7																	
	E		8	8	8																	
50	A		8	5	5			7.9	1.4/8.2	7.5			6.8	6.7/6.8	6.7			2900	2910/2900	3050		
	B		8	7	7																	
	C		8	7	7																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	RC/DMS	DMS			RC	RC/DMS	DMS			RC	RC/DMS	DMS		

ACUTE2 020809 Rev.

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X4774

Client El Dorado Chemical

Sample Description 007

Test started: Date 6/12/12 Time 1655

Test ended: Date 6/14/12 Time 1500

Test Species P. promelas ID# BAL6812

Technician:	Ohour AH	24hour RC	48hour dbm	72hour	96hour
Time:	Ohour 1655	24hour 1450	48hour 1500	72hour	96hour
Temperature (°C):	Ohour 25.4	24hour 24.9	48hour 25.5	72hour	96hour

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
		MA																				
56	A		8	8	8			7.8	7.4/8.3	7.5			6.7	6.7/6.7	6.6			3240	3260/3180	3300		
	B		8	8	8																	
	C		8	6	6																	
	D		8	6	6																	
	E		8	6	6																	
75	A		8	8	8			7.8	7.4/8.3	7.4			6.5	6.4/6.5	6.3			4160	4190/4190	4330		
	B		8	6	6																	
	C		8	6	5																	
	D		8	7	7																	
	E		8	5	5																	
Chemistry Tech prerenewal/postrenewal								RC	RC/dbm	dbm			RC	RC/dbm	dbm			RC	RC/dbm			

ACUTE2 020809 Rev.

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X4774

Client El Dorado Chemical

Sample Description 007

Test started: Date 6/12/12 Time 1655

Test ended: Date 6/14/12 Time 1500

Test Species P. promelas ID# BAL 6812

Technician: Ohour AH 24hour RC 48hour [illegible] 72hour ____ 96hour ____

Time: Ohour 1655 24hour 1450 48hour 1500 72hour ____ 96hour ____

Temperature (°C): Ohour 25.4 24hour 24.9 48hour 25.3 72hour ____ 96hour ____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
		NA	0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
100	A		8	6	6			7.1	7.8 / 8.3	7.5			6.0	6.0 / 6.5	8.9			5400	5440 / 5390	5390		
	B		8	8	8																	
	C		8	5	5																	
	D		8	6	6																	
	E		8	6	6																	
DMSO	A		8						/					/					/			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								RC	RC [illegible]	[illegible]			RC	RC [illegible]	[illegible]			RC	RC [illegible]	[illegible]		

AH 6/12/12

ACUTE2 020809 Rev.

APPENDIX C
STATISTICAL ANALYSIS

Daphnid Acute Test-48 Hr Survival

Start Date:	6/13/2012	Test ID:	X4774DP	Sample ID:	AR0000752 NPDES 007
End Date:	6/15/2012	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/12/2012	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	DP-Daphnia pulex

Comments:

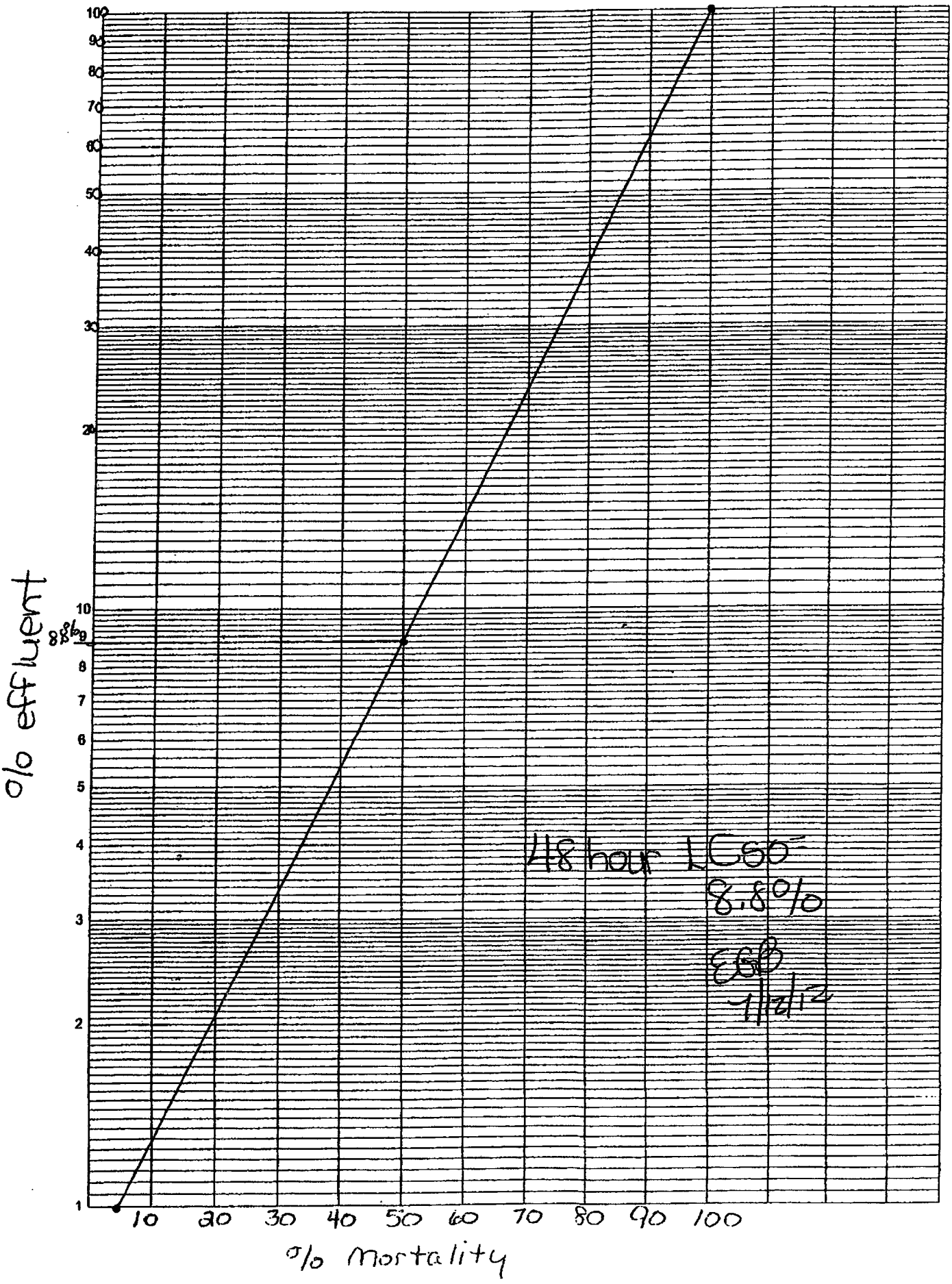
Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	0.8750	0.8750	1.0000
100	0.0000	0.0000	0.0000	0.0000	0.0000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	0.9500	1.0000	1.3196	1.2094	1.3931	7.623	5		
*100	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	19.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.81451	0.842	-0.6847	-0.2143
Equality of variance cannot be confirmed				
Hypothesis Test (1-tail, 0.05)				
Wilcoxon Two-Sample Test indicates significant differences				
Treatments vs D-Control				

Reviewed by: EQB 7/10/12

X4774 EDCC 007 vs. D. pulex



Acute Fish Test-48 Hr Survival

Start Date:	6/12/2012	Test ID:	X4774PP	Sample ID:	AR0000752 NPDES 007
End Date:	6/14/2012	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/12/2012	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas

Comments:

Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000
32	1.0000	0.8750	1.0000	1.0000	0.6250
42	1.0000	1.0000	0.8750	0.8750	1.0000
50	0.6250	0.8750	0.8750	1.0000	1.0000
56	1.0000	1.0000	0.7500	0.7500	0.7500
75	1.0000	0.7500	0.6250	0.8750	0.6250
100	0.7500	1.0000	0.6250	0.7500	0.7500

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
32	0.9000	0.9000	1.2601	0.9117	1.3931	16.693	5	22.50	16.00
42	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50	16.00
50	0.8750	0.8750	1.2234	0.9117	1.3931	16.097	5	20.00	16.00
56	0.8500	0.8500	1.1856	1.0472	1.3931	15.980	5	20.00	16.00
75	0.7750	0.7750	1.0946	0.9117	1.3931	18.911	5	17.50	16.00
100	0.7750	0.7750	1.0893	0.9117	1.3931	16.495	5	17.50	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	0.97584	0.934	-0.0789	-0.1319
Equality of variance cannot be confirmed				

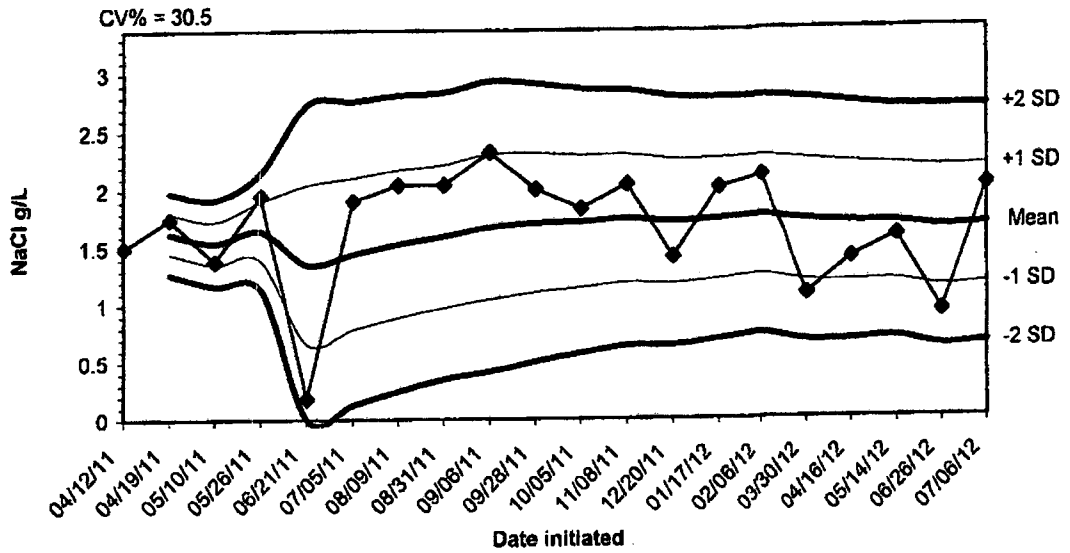
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1
Treatments vs D-Control				

ToxCalc v5.0.23

Reviewed by: ECB 7/10/12

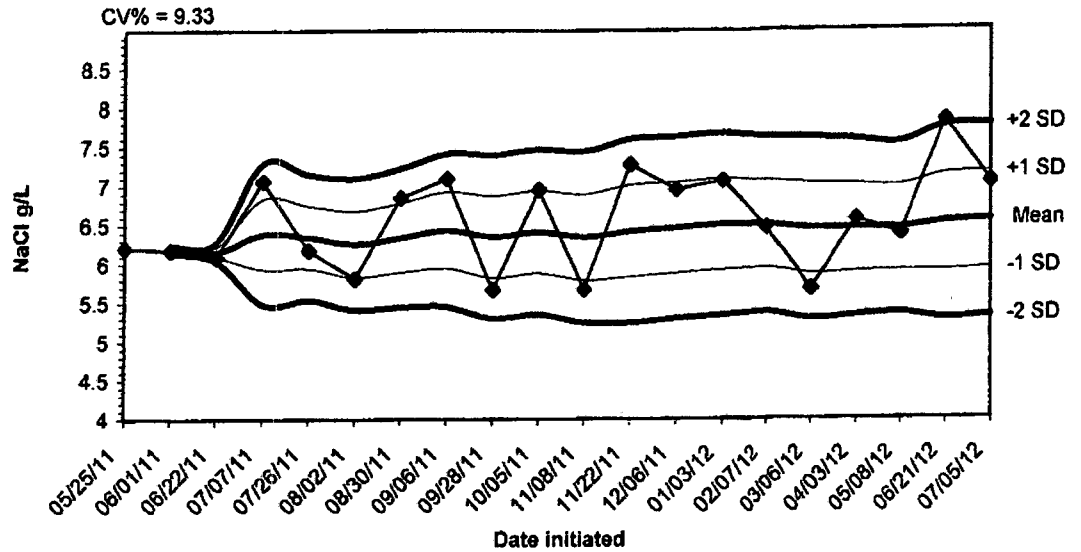
APPENDIX D
QUALITY ASSURANCE CHARTS

2012 48-hour Reference Toxicant Test Results for Daphnia pulex



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
04/12/11	1.5000					
04/19/11	1.7500	1.6250	1.4482	1.2714	1.8018	1.9786
05/10/11	1.3800	1.5433	1.3546	1.1658	1.7321	1.9209
05/26/11	1.9500	1.6450	1.3899	1.1347	1.9001	2.1553
06/21/11	0.1800	1.3520	0.6606	0.0000	2.0434	2.7349
07/05/11	1.9000	1.4433	0.7857	0.1280	2.1010	2.7586
08/09/11	2.0400	1.5286	0.8873	0.2459	2.1699	2.8112
08/31/11	2.0400	1.5925	0.9718	0.3512	2.2132	2.8338
09/06/11	2.3200	1.6733	1.0441	0.4150	2.3025	2.9317
09/28/11	2.0000	1.7060	1.1039	0.5017	2.3081	2.9103
10/05/11	1.8300	1.7173	1.1448	0.5724	2.2897	2.8622
11/08/11	2.0400	1.7442	1.1905	0.6368	2.2979	2.8516
12/20/11	1.4100	1.7185	1.1803	0.6421	2.2566	2.7948
01/17/12	2.0100	1.7393	1.2164	0.6935	2.2622	2.7851
02/06/12	2.1100	1.7640	1.2511	0.7382	2.2769	2.7898
03/30/12	1.0800	1.7213	1.1971	0.6729	2.2454	2.7696
04/16/12	1.3900	1.7018	1.1879	0.6741	2.2156	2.7295
05/14/12	1.5800	1.6950	1.1957	0.6963	2.1943	2.6937
06/26/12	0.9200	1.6542	1.1374	0.6206	2.1710	2.6878
07/06/12	2.0100	1.6720	1.1627	0.6534	2.1813	2.6906

2012 48-hour Reference Toxicant Test Results for Pimephales promelas



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
05/25/11	6.2100					
06/01/11	6.1800	6.1950	6.1738	6.1526	6.2162	6.2374
06/22/11	6.0900	6.1600	6.0976	6.0351	6.2224	6.2849
07/07/11	7.0600	6.3850	5.9321	5.4792	6.8379	7.2908
07/26/11	6.1800	6.3440	5.9412	5.5384	6.7468	7.1496
08/02/11	5.8100	6.2550	5.8339	5.4128	6.6761	7.0972
08/30/11	6.8500	6.3400	5.8947	5.4493	6.7853	7.2307
09/06/11	7.0900	6.4338	5.9435	5.4533	6.9240	7.4142
09/28/11	5.6700	6.3489	5.8244	5.2999	6.8734	7.3979
10/05/11	6.9500	6.4090	5.8792	5.3495	6.9388	7.4685
11/08/11	5.6700	6.3418	5.7921	5.2423	6.8916	7.4413
11/22/11	7.2700	6.4192	5.8305	5.2418	7.0079	7.5965
12/06/11	6.9500	6.4600	5.8775	5.2949	7.0425	7.6251
01/03/12	7.0600	6.5029	5.9207	5.3385	7.0851	7.6673
02/07/12	6.4600	6.5000	5.9389	5.3777	7.0611	7.6223
03/06/12	5.6700	6.4481	5.8677	5.2872	7.0286	7.6090
04/03/12	6.5600	6.4547	5.8920	5.3293	7.0174	7.5801
05/08/12	6.3700	6.4500	5.9038	5.3575	6.9962	7.5425
06/21/12	7.8200	6.5221	5.9052	5.2883	7.1390	7.7560
07/05/12	7.0300	6.5475	5.9364	5.3253	7.1586	7.7697

APPENDIX E
AGENCY FORMS

Acute Forms
Daphnia pulex Survival

Permittee: El Dorado Chemical - Outfall 007
NPDES Permit Number: AR0000752
Composite Collected **From: 6/12/12** **To: 6/12/12**
From: **To:**
Test Initiated: 6/13/12
Dilution Water Used: **Receiving Water** **X** **Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	100				
24-hour	A	100	0				
	B	100	0				
	C	100	0				
	D	100	0				
	E	100	0				
48-hour	A	100	0				
	B	100	0				
	C	87.5	0				
	D	87.5	0				
	E	100	0				
	Mean	95.0	0				

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:
a.) LOW FLOW OR CRITICAL DILUTION (100%) **X** **YES** **NO**
b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%) **YES** **NO**
2. Enter percent effluent corresponding to the LC_{50} below:
LC_{50} = 8.8% effluent
95 % confidence limits: N/A
Method of LC_{50} calculation: Graphical
3. If you answered NO to 1.a) enter (P) otherwise enter (F): F
4. Enter response to item 3 on DMR Form, parameter TEM3D
5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
6. Enter response to item 5 on DMR Form, parameter TFM3D

Biomonitoring
Daphnia 48 hour Acute Static Renewal
Chemical Parameters Chart*

Permittee: El Dorado Chemical - Outfall 007
NPDES Number: AR0000752
Contact: Larken Pennington
Analyst: Haughton, Callahan
Sample Collected **From:** **Date 6/12/12** **Time 0815**
To: **Date 6/12/12** **Time 0815**
Test Begin **Date 6/13/12** **Time 1343**
Test End **Date 6/15/12** **Time 1350**

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH		
Dilut./Time	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	8.1	8.0	8.2	24.6	24.6	24.7	36.0	32.0		48.0	48.0		7.5	7.7	7.7
100	8.3	7.9		24.6	24.6		0.4			680.0			6.0	6.0	

*This Form is to be submitted with each DMR.
Alkalinity and hardness to be reported as mg/l $CaCO_3$

Acute Forms
Pimephales promelas Survival

Permittee: El Dorado Chemical - Outfall 007
NPDES Permit Number: AR0000752
Composite Collected **From: 6/12/12** **To: 6/12/12**
From: **To:**
Test Initiated: 6/12/12
Dilution Water Used: **Receiving Water** **X** **Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	32	42	50	56	75	100
24-hour	A	100	100	100	62.5	100	100	75.0
	B	100	87.5	100	87.5	100	75.0	100
	C	100	100	87.5	87.5	75.0	75.0	62.5
	D	100	100	87.5	100	75.0	87.5	75.0
	E	100	75.0	100	100	75.0	62.5	75.0
48-hour	A	100	100	100	62.5	100	100	75.0
	B	100	87.5	100	87.5	100	75.0	100
	C	100	100	87.5	87.5	75.0	62.5	62.5
	D	100	100	87.5	100	75.0	87.5	75.0
	E	100	62.5	100	100	75.0	62.5	75.0
	Mean	100	90.0	95.0	87.5	85.0	77.5	77.5

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:
a.) LOW FLOW OR CRITICAL DILUTION (100%) **YES** **X** **NO**
b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%) **YES** **NO**
2. Enter percent effluent corresponding to the LC_{50} below:
LC_{50} = N/A% effluent
95 % confidence limits: N/A
Method of LC_{50} calculation: Graphical
3. If you answered NO to 1.a) enter (P) otherwise enter (F): P
4. Enter response to item 3 on DMR Form, parameter TEM3D
5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
6. Enter response to item 5 on DMR Form, parameter TFM3D

Biomonitoring
Fathead minnow 48 hour Acute Static Renewal
Chemical Parameters Chart*

Permittee: El Dorado Chemical - Outfall 007
NPDES Number: AR0000752
Contact: Larken Pennington
Analyst: Haughton, Callahan
Sample Collected **From:** **Date 6/12/12** **Time 0815**
To: **Date 6/12/12** **Time 0815**
Test Begin **Date 6/12/12** **Time 1655**
Test End **Date 6/14/12** **Time 1500**

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH		
Dilut./Time	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	8.1	8.0	8.2	25.4	24.9	25.5	36.0	32.0		48.0	48.0		7.9	7.5	7.5
32	7.9	8.2	7.6	25.4	24.9	25.5							7.0	7.0	6.9
42	7.9	8.2	7.5	25.4	24.9	25.5							6.8	6.9	6.8
50	7.9	8.2	7.5	25.4	24.9	25.5							6.8	6.8	6.7
56	7.8	8.2	7.5	25.4	24.9	25.5							6.7	6.7	6.6
75	7.8	8.3	7.4	25.4	24.9	25.5							6.5	6.5	6.3
100	7.7	8.3	7.5	25.4	24.9	25.5	0.4			680.0			6.0	6.0	5.9

*This Form is to be submitted with each DMR.
Alkalinity and hardness to be reported as mg/l $CaCO_3$

APPENDIX F
REPORT QUALITY ASSURANCE FORM

Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

(318) 745-2772
1-800-259-1246
Fax: (318) 745-2773

REPORT QUALITY ASSURANCE FORM (v. 31612)

Client: ElDorado Chemical

Project#: X4774

Chain of Custody Documents Checked by: EGB 7/10/12
Technician/Date

Raw Data Documents Checked by: EGB 7/10/12
Technician/Date

Statistical Analysis Package Checked by: EGB 7/10/12
Quality Manager/Date

Quality Control Data Checked by: EGB 7/10/12
Quality Manager/Date

Report Checked by: EGB 7/18/12
Quality Manager/Date

I certify that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information contained in this document, to the best of my knowledge, is true, accurate and complete.

Erin L. Bruggs, BS
Quality Manager

7/18/12
Date

Bio-Analytical Laboratories (BAL)
ADEQ Certificate #88-0630
Project X4771

Bio-Analytical Laboratories' Executive Summary

Permittee: El Dorado Chemical Company
4500 Northwest Avenue
El Dorado, AR 71731
Project #: X4771
Outfall: 001
Permit #: AR0000752/ AFIN #70-00040
Contact: Larken Pennington
Test Dates: June 12 - 19, 2012
Test Type: Chronic Static Renewal Survival and Reproduction Test using *Ceriodaphnia dubia* (EPA Method 1002.0).
Chronic Static Renewal Survival and Growth Test using *Pimephales promelas* (EPA Method 1000.0).

Results:

For *Ceriodaphnia dubia:*

1. If the NOEC for survival is less than the critical dilution (100%), enter a "1"; otherwise, enter a "0" for Parameter TLP3B - 0.
2. If the NOEC for reproduction is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter TGP3B - 1.
3. Report the NOEC value for survival, Parameter TOP3B - 100%.
4. Report the NOEC value for reproduction, Parameter TPP3B - 0%.
5. Report the largest % coefficient of variation between the control and the critical dilution, Parameter TQP3B - 20.34%.

Note: Treating with UV light did not reduce the non-lethal effect.

For *Pimephales promelas:*

1. If the NOEC for survival is less than the critical dilution (100%), enter a "1";otherwise, enter a "0" for Parameter TLP6C - 0.
2. If the NOEC for growth is less than the critical dilution, enter a "1";otherwise, enter a "0" for Parameter TGP6C- 0.
3. Report the NOEC value for survival, Parameter TOP6C - 100%
4. Report the NOEC value for growth, Parameter TPP6C - 100%
5. Report the largest % coefficient of variation between the control and the critical dilution, Parameter TQP6C - 10.27%

Note: The UV treated 100% dilution showed no lethal or non-lethal effects.

This report contains a total of 48 pages, including this page. The results in the report pertain only to the samples documented in the enclosed chain of custody documents, and meet the standards set forth by TNI and ADEQ. The chemical data in this report is for monitoring purposes only and should not be reported on discharge monitoring reports.

Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

(318) 745-2772
1-800-259-1246
Fax: (318) 745-2773

THE RESULTS OF TWO CHRONIC DEFINITIVE TOXICITY TESTS FOR OUTFALL 001

AT

EL DORADO CHEMICAL COMPANY
El Dorado, Arkansas

NPDES #AR0000752
AFIN #70-00040

EPA Methods 1000.0 and 1002.0

Project X4771

Test Dates: June 12 - 19, 2012

Report Date: July 17, 2012

Prepared for:
Larken Pennington
El Dorado Chemical Company
4500 Northwest Avenue
El Dorado, AR 71731

Prepared by:
Ginger Briggs
Bio-Analytical Laboratories
P.O. Box 527
Doyline, LA 71023
ADEQ #88-0630

BAL
ADEQ #88-0630
Project X4771

TABLE OF CONTENTS

BAL
ADEQ #88-0630
Project X4771

1.0 Introduction

Bio-Analytical Laboratories (BAL), Doyline, Louisiana conducted two chronic definitive toxicity tests for Outfall 001 at El Dorado Chemical Company, El Dorado, Arkansas. The test organisms used were the cladoceran, *Ceriodaphnia dubia*, and the fathead minnow, *Pimephales promelas*. The purpose of this study is to determine if appropriately dilute effluent samples adversely affect the survival, reproduction and/or growth of the test organisms. Toxicity is defined as a statistically significant difference at the 95 percent confidence level between the survival, reproduction and/or growth of the test organism in the critical dilution (the effluent concentration representative of the proportion of effluent in the receiving water during critical low flow or critical mixing conditions) compared to the survival, reproduction and/or growth of the test organism in the control. The test endpoint is the No-Observed-Effect-Concentration (NOEC), the highest effluent concentration that is not significantly different from the control.

2.0 Methods and Materials

2.1 Test Methods

All methods followed were according to the latest edition of "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" (EPA-821-R-02-013) and BAL's standard operating procedure.

2.2 Test Organisms

The *Ceriodaphnia dubia* test organisms were cultured in-house at test temperature and were less than 24 hours old at test initiation. The neonates were released within the same 8-hour period. The fathead minnow test organisms were obtained from Aquatic Biosystems, Fort Collins, Colorado, and were less than 48 hours old at test initiation. The minnows were acclimated to test temperature and dilution water hardness prior to test initiation. Monthly chronic reference toxicant tests, were conducted in order to document organism sensitivity and demonstration of capability.

2.3 Dilution Water

Soft reconstituted water, made per method guidelines, was used as the dilution water and the control for the toxicity tests.

2.4 Test Concentrations

The test concentrations used in the chronic toxicity tests were 100, 75, 56, 42 and 32 percent effluent, and a reconstituted water control. The critical dilution was 100 percent effluent. The *Ceriodaphnia* test was conducted using 10 replicates of one animal each for a total of 10 animals per concentration. The fathead minnow test was conducted using five replicates of eight animals each for a total of 40 animals per concentration.

2.5 Sample Collection

Three 24-hour composite samples of Outfall 001 were collected by El Dorado Chemical personnel on June 11, 13 and 15, 2012. Upon collection and completion of each composite, the samples were chilled to 4^0 Celsius. The samples were delivered to the laboratory by BAL personnel.

2.6 Sample Preparation

Upon arrival, the samples were logged in, given an identification number and refrigerated unless needed. Prior to use, the samples were warmed to 25 ± 1^0 Celsius. Total residual chlorine levels were measured with a Capital Controls^R amperometric titrator and recorded if present. Total ammonia levels were measured using a HACH^R test strip. Portions of the effluent were treated with an 18 watt ultraviolet light (UV) at a rate of 113 ml per minute. An extra 100 percent concentration was run in the tests to determine if any toxicity was due to a potential pathogen. Dissolved oxygen and pH measurements were measured on the control and each concentration at test initiation, at test renewal and at test termination. Conductivity measurements were also taken at test initiation and at each renewal. Alkalinity and hardness levels were measured on the control and the undiluted effluent samples.

2.7 Monitoring of the Tests

The cladoceran test was run in a Precision^R dual-programmable, illuminated incubator at a temperature of 25 ± 1^0 Celsius. The fathead minnow test was run in a circulating waterbath, using a Remcor^R heated liquid circulator to keep a constant temperature of 25 ± 1^0 Celsius. AEMC^R data-loggers were used to monitor diurnal test temperature. Test temperatures were recorded at the beginning of the day, after test renewal and at the end of the day. Light cycles and intensities were recorded twice a month.

2.8 Data Analysis

Ceriodaphnia dubia survival data was analyzed using Fisher's Exact Test, an equality test comparing concentration data to control data. Reproduction data was analyzed using Steel's Many-One Rank Test, a non-parametric test comparing concentration data to control data. Fathead minnow survival data was analyzed using Steel's Many-One Rank Test, while the growth data was analyzed using Dunnett's Test, a parametric test. The test endpoints in the reference toxicant tests and any other quality control test endpoints were obtained by approved EPA methods of analysis.

3.0 Results and Discussion

The results of the *Ceriodaphnia dubia* test can be found in Table 1. Ninety percent survival occurred in the control and 100 percent survival occurred in the critical dilution after seven days of exposure. The average number of neonates per female after three broods in the control and in the critical dilution was 23.5, while the average number of neonates in the critical dilution was 14.3. The No-Observed-Effect-Concentration (NOEC) for survival and reproduction in this test was 100 and zero percent effluent, respectively (p=.05). Treating with UV light did not reduce the non-lethal effect.

The fathead minnow test results can be found in Table 2. Ninety-five percent survival occurred in the control and 87.5 percent survival occurred in the critical dilution after seven days of exposure. The average weight gained per minnow in the control was 0.558 milligram (mg), while the average in the critical dilution was 0.538 mg. The NOEC for survival and growth in this test was 100 percent effluent.

BAL
ADEQ #88-0630
Project X4771

Table 1: Results of the Chronic Definitive *Ceriodaphnia dubia* Test

Percent Effluent	Percent Survival	Sig.*	Mean # Neonates-Surviving	Mean # Neonates -Total	Sig.*
Control	90.0		23.5	23.5	
32.0	70.0		23.7	16.6	*
42.0	90.0		19.4	17.5	*
56.0	90.0		19.4	17.5	*
75.0	90.0		17.1	15.8	*
100.0	100.0		14.3	14.3	*
100.0 UV	90.0		17.6	17.6	*

*significant when compared to the control (p=.05). Test validity based on mean number of neonates per surviving female. NOEC value based on total mean number of neonates. +accidental death.

Table 2: Results of the Chronic Definitive Fathead Minnow Test

Percent Effluent	Percent Survival	Sig.*	Mean Dry Weight (mg)	Sig.*
Control	95.0		0.558/0.598+	
32.0	82.5		0.545	
42.0	95.0		0.678	
56.0	92.5		0.648	
75.0	95.0		0.648	
100.0	87.5		0.538	
100.0 UV	97.5		0.745	

*significant when compared to the control (p=.05). +Test validity based on mean dry weight per surviving larvae in the control. NOEC value based on mean dry weight per the number of larvae at the start of the test.

The monthly chronic reference toxicant tests showed those test organisms to be within the respective sensitivity range. The graphs of the results of the chronic reference toxicant tests can be found in Appendix D- Quality Assurance Charts.

BAL
ADEQ #88-0630
Project X4771

4.0 Conclusions

The three composite samples of Outfall 001 collected from El Dorado Chemical Company, El Dorado, Arkansas, on June 11, 13 and 15, 2012, were not found to be lethally toxic to the fathead minnow test organisms nor the *Ceriodaphnia dubia* test organisms in the 100 percent critical dilution after seven days of exposure (p=.05). Nonlethal effects (i.e., lack of growth or reproduction) were not noted in the critical dilution in the minnow test, but were noted in the *Ceriodaphnia dubia* test (p=.05). Treating the sample with UV light did not reduce the toxicity in the cladoceran test (p=.05).

BAL
ADEQ #88-0630
Project X4771

5.0 References

EPA, 2002. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Fourth Edition. EPA-821-R-02-013, Office of Water.

EPA, 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System. EPA-833-R-00-003, Office of Wastewater Management.

APPENDIX A
CHAIN-OF-CUSTODY DOCUMENTS

Bio-Analytical Laboratories
3240 Spurgin Road
Doyline, LA 71023
(318) 745-2772, Fax (318) 745-2773
bioanalytical@att.net

NELAP 01975, ADEQ #88-0630, EPA LA00917

CHAIN OF CUSTODY

Laboratory Use Only:

Company: El Dorado Chemical Company	Phone: (870) 863-1484	Analysis:									Project Number: X4771
Address: 4500 Northwest Avenue, El Dorado, AR 71731	Fax: (870) 863-1499									Temperature upon arrival: 3.1 Thermometer #: 39 Tech: RC Date: 6/11/12	Temp. upon arrival:
Permit #: AR0000752	Purchase Order:										
Sampler's Signature/Printed Name/Affiliation: Larken Pennington / Larken Pennington / EDC											

Date Start / Date End	Time Start / Time End	C	G	# containers	Sample Identification	Chronic Ceriodaphnia	Chronic minnow	Acute minnow(fresh/marine)	Acute Daphnia species	Acute Mysid	Acute Ceriodaphnia	Fecal Coliform	Total Coliform	Lab Control Number:	Preservative: (below)
6/10/12 6/11/12	8:30 8:30	X		8	001	X	X							C5241	ice

Relinquished by/Affiliation:	Date:	Time:	Received by/Affiliation:	Date:	Time:
Larken Pennington	6/11/12	1120	[signature]	6/11/12	1120
Relinquished by/Affiliation:	Date:	Time:	Received by/Affiliation:	Date:	Time:
Relinquished by/Affiliation: [signature]	Date: 6/11/12	Time: 1345	Received by/Affiliation: Aaron Houghton	Date: 6/11/12	Time: 1345

Method of Shipment: __X__ Lab ____ Bus ____ Fed Ex ____ DHL ____ UPS ____ Client ____ Other Tracking #_____

Comments:

X4771

Bio-Analytical Laboratories
3240 Spurgin Road
Doyline, LA 71023
(318) 745-2772, Fax (318) 745-2773
bioanalytical@att.net

CHAIN OF CUSTODY

NELAP 01975, ADEQ #88-0630, EPA LA00917

Laboratory Use Only:

Company: El Dorado Chemical Company
Phone: (870) 863-1484

Address: 4500 Northwest Avenue, El Dorado, AR 71731
Fax: (870) 863-1499

Permit #: AR0000752
Purchase Order:

Sampler's Signature/Printed Name/Affiliation: Larken Pennington / Larken Pennington / EDCC

Analysis:

Project Number: X4771

Temp. upon arrival: -1.0°

Temperature upon arrival:
Thermometer #:
Tech:
Date: 6/13/12

Preservative: (below)

Date Start / Date End	Time Start / Time End	C	G	# containers	Sample Identification	Chronic Ceriodaphnia	Chronic minnow	Acute minnow (fresh/marine)	Acute Daphnia species	Acute Mysid	Acute Ceriodaphnia	Fecal Coliform	Total Coliform	Lab Control Number	Preservative (below)
6-12-12 - 6-13-12	8:30 - 8:30	X		8	001	X	X							C5658	ice

Relinquished by/Affiliation:	Date:	Time:	Received by/Affiliation:	Date:	Time:
Larken Pennington / EDCC	6/13/12	1140	[signature]	6/13/12	1140
[signature]	6/13/12	1345	Annie Haughton	6/13/12	1345

Method of Shipment: __X__ Lab _____ Bus _____ Fed Ex _____ DHL _____ UPS _____ Client _____ Other Tracking # ________

Comments:

Bio-Analytical Laboratories
3240 Spurgin Road
Doyline, LA 71023
(318) 745-2772, Fax (318) 745-2773
bioanalytical@att.net

CHAIN OF CUSTODY

NELAP 01975, ADEQ #88-0630, EPA LA00917

Laboratory Use Only:

Company: El Dorado Chemical Company
Phone: (870) 863-1484

Address: 4500 Northwest Avenue, El Dorado, AR 71731
Fax: (870) 863-1499

Permit #: AR0000752
Purchase Order:

Sampler's Signature/Printed Name/Affiliation: Larken Pennington | Larken Pennington | EDCC

Project Number: XU771

Temp. upon arrival:
Temperature upon arrival: 2.5°C
Thermometer #: 29
Tech: [signature]
Date: 6/15/12

Analysis:

Date Start / Date End	Time Start / Time End	C	G	# containers	Sample Identification	Chronic Ceriodaphnia	Chronic minnow	Acute minnow(fresh/marine)	Acute Daphnia species	Acute Mysid	Acute Ceriodaphnia	Fecal Coliform	Total Coliform	Lab Control Number:	Preservative: (below)
6-14-12 - 6-15-12	8:30 - 8:30	X		8	001	X	X							C5678	ice

Relinquished by/Affiliation:	Date:	Time:	Received by/Affiliation:	Date:	Time:
Larken Pennington	6/15/12	1130	[signature]	6/15/12	1130
[signature]	6/15/12	1340	Aurice Haughton	6/15/12	1340

Method of Shipment: _X_ Lab ___ Bus ___ Fed Ex ___ DHL ___ UPS ___ Client ___ Other **Tracking #**____

Comments:

XU771

APPENDIX B
RAW DATA SHEETS

BIO-ANALYTICAL LABORATORIES CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Project# X4771 Date start: 6/12/12 Date end: 6/19/12

Client/Contact: EDCC/ El Dorado Chemical
Address: 4500 Northwest Avenue El Dorado AR 71731
NPDES#: AR0000752/ AFIN 70-00040
Sample Description: 001 Dilution Water: Soft Reconstituted
Test Temperature(°C) 25+1° Technicians: EGB/AH/LGZ/RC

Adults isolated: Date 6/11/12 Time: 2345

Neonates collected: Date 6/12/12 Time: 0630 Board: U32S
Dissolved Oxygen Meter: Model YSI55D Serial #06E2089 AU
pH Meter: Model Orion 230A+ Serial #105253
Conductivity Meter: Model Control Company Serial# 80277924
Amperometric Titrator: Model Fischer-Porter Serial # 92W445766

Effluent Initial D.O. (mg/L & %)/Tech	Aerate?/Minutes /Final D.O. (mg/L & %)/Tech	Receiving Water Initial D.O. (mg/L & %)/Tech	Aerate?/Minutes /Final D.O. (mg/L & %)/Tech
0. 7.3/87.0%/RC	0. No/RC	0. NA	0. NA
1. 7.8/92.8%/RC	1. No/RC	1.	1.
2. 7.6/93.5%/RC	2. No/RC	2.	2.
3. 8.8/107.8%/RC	3. Yes/8.1/97.8%/RC	3.	3.
4. 8.1/95.2%/RC	4. No/RC	4.	4.
5. 8.5/100.8%/RC	5. No/RC	5.	5.
6. 8.6/100.4%/RC	6. No/RC	6.	6.
7.	7.	7.	7.

Total Residual Chlorine(mg/L)/ Tech	Dechlorinated? Amount?/Tech	Ammonia (NH3) (mg/L)/Tech	BAL Sample # Date in Use
1. <0.01/RC	1. No/RC	1. 1.0/RC	1. C5641 / 6/12/12
2. <0.01/RC	2. No/RC	2. 1.0/RC	2. C5658 6/14/12
3. <0.01/RC	3. No/RC	3. 3.0/RC	3. C5678 6/16/12

Comments:
6/14/12 - Filtered ~~sample~~ RC 6/14/12 effluent thru ~60u plankton net- RC

BIO-ANALYTICAL LABORATORIES
NUMBER NEONATES PER BROOD CERIODAPHNIA

Project # X4771 Test Dates 6/12-19/12

Client El Dorado Chemical

Replicate	% Concentration						
	0	32	42	56	75	100	100uv
A	24	24	20	18	16	8	19
B	26	X	23	21	18	16	14
C	22	29	22	20	19	19	19
D	24	22	16	18	17	14	17
E	24	23	19	19	19	16	17
F	17	23	17	20	15	12	X18
G	25	X	21	20	16	14	19
H	26	21	18	19	19	14	18
I	22	24	X	X	15	14	16
J	25	X	19	20	X4	16	19
Surviving Mean	23.5	23.7	19.4	19.4	17.1	14.3	17.6
Total Mean	23.5	16.6	17.5	17.5	15.8	14.3	17.6
CV%*	11.39	10.81	11.82	5.21	9.89	20.34	9.91

*coefficient of variation = standard deviation x 100/mean (calculation based on young of the surviving adults)

Key: M=male; X=dead adult

Calculated by: PH 6/19/12

Calculations checked by: [illegible] 6/19/12

BIO-ANALYTICAL LABORATORIES
CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Project# X4771 Test started: Date 6/6/12 Time 1635
Client El Dorado Chemical Test ended: Date 6/9/12 Time 1315

Technician:	Day0 [illegible]	1 RC	2 RC	3 [illegible]	4 AH	5 AH	6 [illegible]	7 AH	8	
Time:	Day0 1635	1 1445	2 1400	3 1310	4 1040	5 1115	6 1135	7 1315	8	
Temperature:	Day0 24.4	1 24.6	2 24.2	3 24.6	4 24.5	5 24.6	6 24.6	7 24.6	8	

% Conc.	Day	A	B	C	D	E	F	G	H	I	J	#Live Adults	Total Live Neonates
0	1	0										10	
	2	0										10	
	3	0										10	
	4	3	4	3	3	4	4	4	4	3	4	10	
	5	8	0	7	8	8	6	8	9	0	8	10	
	6	1	7	0	1	0	0	0	0	7	1	10	
	7	12	15	12	12	12	7	13	13	12	X10	9	
	8												
32	1	0										10	
	2	0	X	0							X	8	
	3	0		0								8	
	4	4		3	4	4	4	X0	4	4		7	
	5	7		8	8	8	8		7	8		7	
	6	0		7	0	0	0		10	0		7	
	7	13		11	10	11	11		0	12		7	
	8												
42	1	0										10	
	2	0								X	0	9	
	3	0									0	9	
	4	3	4	2	2	3	4	4	3		4	9	
	5	0	7	8	7	7	7	8	7		6	9	
	6	7	0	0	0	0	6	0	0		0	9	
	7	10	12	12	7	9	0	9	8		9	9	
	8												
56	1	0										10	
	2	0								X	0	9	
	3	0									0	9	
	4	3	4	3	3	4	4	3	4		4	9	
	5	6	0	8	7	7	7	8	7		8	9	
	6	8	8	0	0	0	0	0	0		0	9	
	7	9	9	9	8	8	9	9	8		8	9	
	8												
75	1	0										10	
	2	0										10	
	3	0										10	
	4	3	3	4	2	3	2	1	4	4	4	10	
	5	6	—	6	7	7	7	10	10	6	—	10	
	6	5	6	0	0	0	6	1	0	3	X	9	
	7	8	9	9	8	9	0	8	9	8		9	
	8												
100	1	0										10	
	2	0										10	
	3	0										10	
	4	3	3	4	2	3	1	3	2	2	2	10	
	5	6	—	6	6	6	6	5	5	0	5	10	
	6	3	5	6	8	8	5	0	0	4	1	10	
	7	4	8	9	6	7	0	7	7	8	7	10	
	8												

Key: X=dead adult; X^n=adult had n neonates before death; M=male

File:Cerio2

BIO-ANALYTICAL LABORATORIES
CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Project# X4771 Test started: Date 6/12/12 Time 1535
Client El Dorado Chemical Test ended: Date 6/19/12 Time 1315

	Day 0	1	2	3	4	5	6	7	8
Technician:	[illegible]	RC	RC	[illegible]	AH	AH	[illegible]	AH	
Time:	1535	1405	1400	1210	1040	1115	1135	1315	
Temperature:	24.4	24.6	24.2	24.6	24.5	24.6	24.6	24.6	

% Conc.	Day	A	B	C	D	E	F	G	H	I	J	#Live Adults	Total Live Neonates
100 UV trt'd												10	
	1	0										10	
	2	0										10	
	3	0										10	
	4	4	0	3	3	3	3	4	2	3	3	10	
	5	6	0	0	5	6	8	8	7	0	8	10	
	6	0	5	7	1	0	0	0	8	5	0	10	
	7	9	9	9	8	8	X7	7	9	8	8	9	
	8												
	1												
	2												
	3												
	4												
	5												
	6												
	7												
	8												
	1												
	2												
	3												
	4												
	5												
	6												
	7												
	8												
	1												
	2												
	3												
	4												
	5												
	6												
	7												
	8												
	1												
	2												
	3												
	4												
	5												
	6												
	7												
	8												
	1												
	2												
	3												
	4												
	5												
	6												
	7												
	8												

Void AH 6/19/12

Key: X=dead adult; X^n=adult had n neonates before death; M=male

File:Cerio2

BIO-ANALYTICAL LABORATORIES 7-DAY WATER QUALITY DATA

Project# X4771 Test started: Date 6/12/2 Time 1535
Client El Dorado Chemical Test ended: Date 6/19/2 Time 1315
Organism Cdubia

Day/# water used	0330	1	3336	3	4	5	6	7	8
Concentration: Control 30%									
pH	7.8	7.7 / 7.7	7.6 / 7.7	7.7 / 7.9	7.8 / 8.1	7.9 / 8.0	8.0 / 7.9	7.7	
DO (mg/l)	8.0	8.1 / 8.1	8.6 / 8.1	8.2 / 8.1	8.1 / 8.1	8.2 / 8.2	7.9 / 8.0	8.3	
Cond (umhos/cm)	173.8	171.3	173.6	172.3	174.3	171.1	167.8		
Alkalinity (mg/L)	36.0		32.0						
Hardness (mg/L)	<48.0		<48.0						
Concentration: 32%									
pH	7.9	7.9 / 7.7	7.8 / 8.0	7.7 / 8.0	7.9 / 8.1	8.0 / 8.1	8.0 / 8.0	7.8	
DO (mg/l)	7.8	8.1 / 8.0	8.1 / 8.0	8.1 / 8.2	8.1 / 8.1	8.1 / 8.2	7.8 / 8.2	8.3	
Cond (umhos/cm)	239	237	235 / 248½	240	236	237	232		
Concentration: 42%									
pH	8.0	8.0 / 7.8	7.9 / 8.0	7.8 / 8.1	7.9 / 8.2	8.1 / 8.1	8.0 / 8.0	7.9	
DO (mg/l)	7.7	8.1 / 8.0	8.1 / 7.9	8.1 / 8.2	8.1 / 8.1	8.1 / 8.2	7.7 / 8.3	8.3	
Cond (umhos/cm)	259	256	259	257	253	256	252		
Concentration: 56%									
pH	8.0	8.0 / 7.9	8.0 / 8.1	7.9 / 8.2	8.0 / 8.3	8.1 / 8.2	7.9 / 8.0	7.9	
DO (mg/l)	7.7	8.1 / 8.0	8.0 / 7.8	8.1 / 8.2	8.1 / 8.1	8.1 / 8.3	7.7 / 8.3	8.3	
Cond (umhos/cm)	287	286	289	287	283	283	279		
Concentration: 75%									
pH	8.0	8.1 / 7.9	8.1 / 8.2	7.9 / 8.3	8.0 / 8.3	8.2 / 8.2	8.0 / 8.1	7.9	
DO (mg/l)	7.4	8.1 / 7.8	8.0 / 7.8	8.1 / 8.2	8.1 / 8.2	8.1 / 8.3	7.7 / 8.4	8.3	
Cond (umhos/cm)	325	326	326	324	320	322	317		
Concentration: 100%									
pH	8.0	8.1 / 7.9	8.1 / 8.2	8.0 / 8.3	8.1 / 8.4	8.2 / 8.3	8.1 / 8.1	8.0	
DO (mg/l)	7.2	8.1 / 7.6	7.9 / 7.7	8.0 / 8.2	8.1 / 8.2	8.1 / 8.4	7.7 / 8.4	8.3	
Cond (umhos/cm)	375	378	376	374	369	372	368		
Tech-prerenewal	RC	RC	RC	YM	AH	AH	YM		
Tech-postrenewal	—	YM	RC	YM	AH	RC	YM	AH	
Hardness (mg/l)	40.0		44.0		40.0				
Alkalinity (mg/l)	96.0		96.0		104.0				

Key: prerenewal/postrenewal

BIO-ANALYTICAL LABORATORIES 7-DAY WATER QUALITY DATA

Project# X4771 Test started: Date 6/12/12 Time 1535
Client El Dorado Chemical Test ended: Date 6/19/12 Time 1315
Organism C. dubia

Day/# water used	0	1	2	3	4	5	6	7	8
Concentration: ~~Control~~ 100% un-trt'd (AH 6/11/12)									
pH	7.9	8.1/8.0	8.2/8.1	8.0/8.1	8.1/8.2	8.1/8.2	8.2/8.1	8.1/	
DO (mg/l)	7.2	8.0/7.4	7.8/7.5	7.9/7.9	8.0/7.8	8.0/8.5	7.5/8.1	8.1/	
Cond (umhos/cm)	374	482	378	376	367	371	365		
Alkalinity (mg/L)									
Hardness (mg/L)									
Concentration:									
pH									
DO (mg/l)									
Cond (umhos/cm)									
Concentration:									
pH									
DO (mg/l)									
Cond (umhos/cm)									
Concentration:									
pH									
DO (mg/l)									
Cond (umhos/cm)									
Concentration:									
pH									
DO (mg/l)									
Cond (umhos/cm)									
Concentration:									
pH									
DO (mg/l)									
Cond (umhos/cm)									
Tech-prerenewal	RC	RC	RC	[illegible]	AH	AH	[illegible]		—
Tech-postrenewal	—	[illegible]	RC	[illegible]	AH	RC	[illegible]	AH	
Hardness (mg/l)									
Alkalinity (mg/l)									

(Unused concentration sections crossed out: "Omit AH 6/11/12")

Key: prerenewal/postrenewal

BIO-ANALYTICAL LABORATORIES
PIMEPHALES PROMELAS SURVIVAL AND GROWTH DATA SHEET

Project# X4771 Date started: 6/12/12 Date ended 6/19/12

Client/Contact EDCC/El Dorado Chemical
Address 4500 Northwest Avenue El Dorado AR 71731
NPDES# AR0000752/ AFIN 70-00040
Sample Description 001 Dilution Water Soft Reconstituted
Test Temperature (°C) 25+1° Celsius Technicians EGB/AH/LGZ/RC
Test organism age <48h Vendor/ID# ABS/718

Feeding Times

Day	Technician/Time/Amount (per replicate) AM	NOON	PM
0			RC 6/12/12 RC/EGB/1905/0.20ml
1	dkm/0825/0.10ml	RC/1145/0.10ml	RC/1630/0.010ml
2	RC/0820/0.10ml	RC/1140/0.10ml	dkm/1600/0.10ml
3	dkm/1283s/0.10ml	RC/1110/0.10ml	dkm/1350/0.10ml
4	RC/0850/0.20ml		AH/1320/0.20ml
5	RC/0900/0.20ml		RC/1240/0.20ml
6	dkm/0825/0.10ml		RC/1555/0.20ml

Dissolved Oxygen Meter: Model YSI55D Serial #06E2089 AU
pH Meter: Model Orion 230A+ Serial #105253
Conductivity Meter: Model Control Company Serial #80277924
Amperometric Titrator: Model Fischer-Porter Serial #92W445766

Effluent Initial DO(mg/L&%)/Tech	Aerate?/Minutes /Final DO (mg/L & %)/Tech	Receiving Water Initial DO (mg/L & %)/Tech	Aerate?/Minutes /Final DO (mg/L & %)/Tech
0. 7.3/87.0%/RC	0. No/RC	0. N/A	0. N/A
1. 7.8/92.8%/dkm	1. No/dkm	1.	1.
2. 7.6/93.5%/dkm	2. No/dkm	2.	2.
3. 8.8/107.8%/dkm	3. Y/2018.1/97.8%/dkm	3.	3.
4. 8.1/95.2%/AH	4. No/AH	4.	4.
5. 8.5/100.8%/RC	5. No/RC	5.	5.
6. 8.6/100.4%/dkm	6. No/dkm	6.	6.

Total Residual Chlorine(mg/L)/ Tech	Dechlorinated? Amount?/Tech	Ammonia(NH3) (mg/L)/Tech	BAL Sample # Date in use
1. <0.01/RC	1. No/RC	1. 1.0/RC	1 CS641 / 6/12/12
2. <0.01/dkm	2. No/dkm	2. 1.0/dkm	2 CS658 6/14/12
3. <0.01/AH	3. No/AH	3. 3.0/AH	3 CS678 6/16/12

Comments:

Filtered effluent thru 60 um plankton net

BIO-ANALYTICAL LABORATORIES 7-DAY CHRONIC MINNOW SURVIVAL DATA

Project# X4771
Client El Dorado Chemical

Test started: Date 6/12/12 Time 1900
Test ended: Date 6/19/12 Time 1130

Technician:	Day 0 RNB	1 RC	2 RC	3 RC	4 RC	5 RC	6 RC	7 LBM
Time:	Day 0 1900	1 1230	2 1100	3 1105	4 1055	5 1135	6 1050	7 1130
Temperature	Day 0 25	1 24.6	2 24.9	3 24.8	4 24.9	5 25.1	6 25.0	7 25.3

Conc.	Rep.	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
0	A	8	8	8	8	8	8	8	~~7~~ 8 LBM 6/19/12
	B	8	7	7	7	7	7	7	7
	C	8	7	7	7	7	7	7	7
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
32	A	8	8	8	8	8	8	8	8
	B	8	7	7	6	6	6	6	6
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	5	5	4	4	4	3	3
42	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	7
	E	8	8	8	8	7	7	7	7
56	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	7
	C	8	8	7	7	6	6	6	6
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
75	A	8	8	8	8	8	8	7	7
	B	8	7	7	7	7	7	7	~~6~~ 7 LBM 6/19/12
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
100	A	8	6	6	6	6	6	6	6
	B	8	8	8	7	7	7	7	7
	C	8	8	8	8	7	7	7	7
	D	8	7	7	7	7	7	7	7
	E	8	8	8	8	8	8	8	8

File: Minnow2

BIO-ANALYTICAL LABORATORIES 7-DAY CHRONIC MINNOW SURVIVAL DATA

Project# X4771 Test started: Date 6/12/12 Time 1900
Client El Dorado Chemical Test ended: Date 6/19/12 Time 1130

Technician: Day0 [illegible] 1 RC 2 RC 3 RC 4 RC 5 RC 6 RC 7 [illegible]
Time: Day0 1900 1 1230 2 1100 3 1105 4 1055 5 1135 6 1050 7 1130
Temperature Day0 25 1 24.6 2 24.5 3 24.8 4 24.9 5 25.1 6 25.6 7 25.3

Conc. %	Rep.	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
100 UV-trtd	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	7	7	7	7
	A								
	B								
	C								
	D								
	E								
	A								
	B								
	C								
	D								
	E								
	A								
	B								
	C								
	D								
	E								
	A								
	B								
	C								
	D								
	E								
	A								
	B								
	C								
	D								
	E								

Omit AU 6/11/12

File: Minnow2

BIO-ANALYTICAL LABORATORIES MINNOW LARVAL GROWTH DATA SHEET

Project#/Client X4771/ El Dorado Chem Test Dates 6/12/12 - 6/19/12
Oven Temperature (° Celsius) 96°C 6/18 6/20/12

Conc. %	Replicate/ Pan number	Wt. of pan(g)/ Date weighed: 6/15/12 Tech:	Wt. of pan + larvae(g)/ Date weighed: 6/20/12 Tech:	Total wt. of larvae (g)	Original # of larvae at test initiation	Mean Dry wt. of larvae (mg)	Mean Dry wt. - surviving larvae (mg) Control Only*
0	A 126	0.9320	0.9362	0.0042	8	0.525	
	B 127	0.9305	0.9347	0.0042	8	0.525	1) 0.600
	C 128	0.9297	0.9348	0.0051	8	0.638	2) 0.729
	D 129	0.9283	0.9325	0.0042	8	0.525	
	E 130	0.9269	0.9315	0.0046	8	0.575	
32	A 131	0.9265	0.9326	0.0061	8	0.763	
	B 132	0.9273	0.9311	0.0038	8	0.475	
	C 133	0.9286	0.9334	0.0048	8	0.600	
	D 134	0.9274	0.9325	0.0051	8	0.638	
	E 135	0.9279	0.9299	0.0020	8	0.250	
42	A 136	0.9296	0.9346	0.0050	8	0.625	
	B 137	0.9294	0.9360	0.0066	8	0.825	
	C 138	0.9331	0.9389	0.0058	8	0.725	
	D 139	0.9352	0.9405	0.0053	8	0.663	
	E 140	0.9360	0.9404	0.0044	8	0.550	
56	A 141	0.9355	0.9410	0.0055	8	0.688	
	B 142	0.9371	0.9426	0.0055	8	0.688	
	C 143	0.9384	0.9422	0.0038	8	0.475	
	D 144	0.9403	0.9460	0.0057	8	0.713	
	E 145	0.9402	0.9456	0.0054	8	0.675	
75	A 146	0.9406	0.9460	0.0054	8	0.675	
	B 147	0.9418	0.9474	0.0056	8	0.700	
	C 148	0.9435	0.9482	0.0047	8	0.588	
	D 149	0.9419	0.9467	0.0048	8	0.600	
	E 150	0.9421	0.9475	0.0054	8	0.675	
100	A 151	0.9403	0.9443	0.0040	8	0.500	
	B 152	0.9406	0.9451	0.0045	8	0.563	
	C 153	0.9408	0.9453	0.0045	8	0.563	
	D 154	0.9399	0.9436	0.0037	8	0.463	
	E 155	0.9397	0.9445	0.0048	8	0.600	

* Test acceptance of control weight based on surviving larvae at end of test.

Calculated by: RH 6/27/12 Calculations checked by: [illegible] 6/27/12

BIO-ANALYTICAL LABORATORIES MINNOW LARVAL GROWTH DATA SHEET

Project#/Client X4771/El Dorado Chem Test Dates 6/12/12 - 6/19/12

Oven Temperature (° Celsius)

Conc. %	Replicate/ Pan number	Wt. of pan(g)/ Date weighed: 6/15/12 Tech AH	Wt. of pan + larvae(g)/ Date weighed: 6/29/12 Tech: JBM	Total wt. of larvae (g)	Original # of larvae at test initiation	Mean Dry wt. of larvae (mg)	Mean Dry wt. - surviving larvae (mg) Control Only*
100 UV-THM	A 156	0.9413	0.9475	0.0062	8	0.775	
	B 157	0.9417	0.9478	0.0061	8	0.763	
	C 158	0.9396	0.9458	0.0062	8	0.775	
	D 159	0.9370	0.9432	0.0062	8	0.775	
	E 160	0.9351	0.9402	0.0051	8	0.638	
	A						
	B						
	C						
	D						
	E						
	A						
	B						
	C						
	D						
	E						
	A						
	B						
	C						
	D						
	E						
	A						
	B						
	C						
	D						
	E						
	A						
	B						
	C						
	D						
	E						

DMA DM 6/14/12

* Test acceptance of control weight based on surviving larvae at end of test.

Calculated by: AH 6/27/12 Calculations checked by: JBM 6/27/12

BIO-ANALYTICAL LABORATORIES 7-DAY WATER QUALITY DATA

Project# X4771 Test started: Date 6/7/12 Time 900
Client El Dorado Chemical Test ended: Date 6/19/12 Time 1130
Organism P. promelas

Day/# water used	0 3336	1	2 3336	3	4	5	6	7	8
Concentration: Control soft									
pH	7.8	7.5 / 7.7	7.3 / 7.7	7.4 / 7.9	7.7 / 8.1	7.7 / 8.0	7.6 / 7.9	7.4	
DO (mg/l)	8.0	6.8 / 8.1	6.7 / 8.1	6.8 / 8.1	6.9 / 8.1	7.3 / 8.2	6.7 / 8.0	5.5	
Cond (umhos/cm)	173.8	171.3	173.6	172.3	171.3	171.1	167.8		
Alkalinity (mg/L)	36.0		32.0						
Hardness (mg/L)	48.0		48.0						
Concentration: 32%									
pH	7.9	7.5 / 7.7	7.5 / 8.0	7.5 / 8.0	7.7 / 8.1	7.6 / 8.1	7.6 / 8.0	7.4	
DO (mg/l)	7.8	6.9 / 8.0	6.7 / 8.0	6.9 / 8.2	6.9 / 8.1	7.1 / 8.2	6.4 / 8.2	5.7	
Cond (umhos/cm)	239	237	242	240	236	237	232		
Concentration: 42%									
pH	8.0	7.6 / 7.8	7.5 / 8.0	7.6 / 8.1	7.7 / 8.2	7.7 / 8.1	7.6 / 8.0	7.4	
DO (mg/l)	7.7	7.9 / 8.0	6.8 / 7.9	7.1 / 8.2	6.7 / 8.1	7.0 / 8.2	6.3 / 8.3	5.7	
Cond (umhos/cm)	259	256	259	257	253	256	252		
Concentration: 56%									
pH	8.0	7.6 / 7.9	7.6 / 8.1	7.7 / 8.2	7.7 / 8.3	7.9 / 8.2	7.6 / 8.0	7.4	
DO (mg/l)	7.7	7.1 / 8.0	6.5 / 7.8	7.1 / 8.2	6.6 / 8.1	7.8 / 8.3	6.3 / 8.3	5.7	
Cond (umhos/cm)	287	286	289	287	283	283	279		
Concentration: 75%									
pH	8.0	7.7 / 7.9	7.7 / 8.2	7.8 / 8.3	7.8 / 8.3	7.8 / 8.2	7.7 / 8.1	7.4	
DO (mg/l)	7.4	7.0 / 7.8	6.8 / 7.8	7.0 / 8.2	6.8 / 8.2	6.9 / 8.3	5.9 / 8.4	5.6	
Cond (umhos/cm)	325	326	326	324	320	322	317		
Concentration: 100%									
pH	8.0	7.8 / 7.9	7.7 / 8.2	7.8 / 8.3	7.8 / 8.4	7.8 / 8.3	7.7 / 8.1	7.4	
DO (mg/l)	7.2	6.9 / 7.6	6.6 / 7.7	6.7 / 8.2	6.7 / 8.2	6.8 / 8.4	6.1 / 8.4	5.2	
Cond (umhos/cm)	375	378	376	374	369	372	368		
Tech-prerenewal	RC	RC	RC	RC	RC	RC	RC		
Tech-postrenewal					AH	RC			
Hardness (mg/l)	40.0		44.0		40.0				
Alkalinity (mg/l)	96.0		96.0		104.0				

RC 6/17/12

Key: prerenewal/postrenewal

BIO-ANALYTICAL LABORATORIES 7-DAY WATER QUALITY DATA

Project# X4771 Test started: Date 6/12/12 Time 1900
Client El Dorado Chemical Test ended: Date 6/19/12 Time 1130
Organism P. promelas

Day/# water used	0	1	2	3	4	5	6	7	8
Concentration: ~~Control~~ 100% UV-trt'd (AH 6/11/12)									
pH	7.9	7.7/8.0	7.7/8.1	7.8/8.1	7.8/8.2	7.8/8.2	7.7/8.1	7.5/	
DO(mg/l)	7.2	6.5/7.4	6.3/7.5	6.8/7.9	6.3/7.8	6.6/8.5	5.8/8.1	5.1/	
Cond(umhos/cm)	374	482	378	376	367	371	365		
Alkalinity(mg/L)									
Hardness (mg/L)									
Concentration:									
pH									
DO(mg/l)									
Cond(umhos/cm)									
Concentration:									
pH									
DO(mg/l)									
Cond(umhos/cm)									
Concentration:									
pH									
DO(mg/l)									
Cond(umhos/cm)									
Concentration:									
pH									
DO(mg/l)									
Cond(umhos/cm)									
Concentration:									
pH									
DO(mg/l)									
Cond(umhos/cm)									
Tech-prerenewal	RC	RC	RC	RC	RC	RC	RC		
Tech-postrenewal		[illegible]	[illegible]	[illegible]	AH	RC	RC	[illegible]	
Hardness(mg/l)									
Alkalinity(mg/l)									

Key: prerenewal/postrenewal

(Unused sections crossed out: AH 6/11/12)

RC 6/17/12

APPENDIX C
STATISTICAL ANALYSIS

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

Start Date:	6/12/2012	Test ID:	X4771CD	Sample ID:	AR0000752 NPDES 001
End Date:	6/19/2012	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/11/2012	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000
32	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000
42	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000
56	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100 UV	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical
D-Control	0.9000	1.0000	1	9	10	10		
32	0.7000	0.7778	3	7	10	10	0.2910	0.0500
42	0.9000	1.0000	1	9	10	10	0.7632	0.0500
56	0.9000	1.0000	1	9	10	10	0.7632	0.0500
75	0.9000	1.0000	1	9	10	10	0.7632	0.0500
100	1.0000	1.1111	0	10	10	10	0.5000	0.0500
100 UV	0.9000	1.0000	1	9	10	10	0.7632	0.0500

Hypothesis Test (1-tail, 0.05)

Fisher's Exact Test indicates no significant differences
Treatments vs D-Control

ToxCalc v5.0.23

Reviewed by: EBB 7/3/12

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	6/12/2012	Test ID:	X4771CD	Sample ID:	AR0000752 NPDES 001
End Date:	6/19/2012	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/11/2012	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	24.000	26.000	22.000	24.000	24.000	17.000	25.000	26.000	22.000	25.000
32	24.000	29.000	22.000	23.000	23.000	21.000	24.000			
42	20.000	23.000	22.000	16.000	19.000	17.000	21.000	18.000	19.000	
56	18.000	21.000	20.000	18.000	19.000	20.000	20.000	19.000	20.000	
75	16.000	18.000	19.000	17.000	19.000	15.000	16.000	19.000	15.000	
100	8.000	16.000	19.000	14.000	16.000	12.000	14.000	14.000	14.000	16.000
100 UV	19.000	14.000	19.000	17.000	17.000	19.000	18.000	16.000	19.000	

			Transform: Untransformed					1-Tailed		
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
D-Control	23.500	1.0000	23.500	17.000	26.000	11.392	10			
32	23.714	1.0091	23.714	21.000	29.000	10.810	7	-0.195	2.468	2.708
*42	19.444	0.8274	19.444	16.000	23.000	11.815	9	3.965	2.468	2.525
*56	19.444	0.8274	19.444	18.000	21.000	5.214	9	3.965	2.468	2.525
*75	17.111	0.7281	17.111	15.000	19.000	9.885	9	6.245	2.468	2.525
*100	14.300	0.6085	14.300	8.000	19.000	20.335	10	9.240	2.468	2.457
*100 UV	17.556	0.7470	17.556	14.000	19.000	9.912	9	5.811	2.468	2.525

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.05)	0.72929	0.895	-0.5226	1.73624
Bartlett's Test indicates equal variances (p = 0.12)	10.1193	16.8119		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Bonferroni t Test indicates significant differences Treatments vs D-Control	2.52469	0.10743	105.355	4.95686	8.0E-13	6, 56

Reviewed by: 4/3/12

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	6/12/2012	Test ID:	X4771CD	Sample ID:	AR0000752 NPDES 001
End Date:	6/19/2012	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/11/2012	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	24.000	26.000	22.000	24.000	24.000	17.000	25.000	26.000	22.000	25.000
32	24.000	0.000	29.000	22.000	23.000	23.000	0.000	21.000	24.000	0.000
42	20.000	23.000	22.000	16.000	19.000	17.000	21.000	18.000	0.000	19.000
56	18.000	21.000	20.000	18.000	19.000	20.000	20.000	19.000	0.000	20.000
75	16.000	18.000	19.000	17.000	19.000	15.000	16.000	19.000	15.000	4.000
100	8.000	16.000	19.000	14.000	16.000	12.000	14.000	14.000	14.000	16.000
100 UV	19.000	14.000	19.000	17.000	17.000	18.000	19.000	18.000	16.000	19.000

			Transform: Untransformed					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	23.500	1.0000	23.500	17.000	26.000	11.392	10		
*32	16.600	0.7064	16.600	0.000	29.000	70.149	10	83.00	74.00
*42	17.500	0.7447	17.500	0.000	23.000	37.253	10	65.50	74.00
*56	17.500	0.7447	17.500	0.000	21.000	35.558	10	64.00	74.00
*75	15.800	0.6723	15.800	4.000	19.000	28.115	10	59.50	74.00
*100	14.300	0.6085	14.300	8.000	19.000	20.335	10	56.00	74.00
*100 UV	17.600	0.7489	17.600	14.000	19.000	9.355	10	62.00	74.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.05)	2.09632	0.895	-1.75	3.66425
Bartlett's Test indicates unequal variances (p = 2.71E-07)	41.1423	16.8119		
Hypothesis Test (1-tail, 0.05)				
Steel's Many-One Rank Test indicates significant differences				
Treatments vs D-Control				

Reviewed by: EGB 7/3/12

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	6/12/2012	Test ID:	X4771CD	Sample ID:	AR0000752 NPDES 001
End Date:	6/19/2012	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/11/2012	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	24.000	26.000	22.000	24.000	24.000	17.000	25.000	26.000	22.000	25.000
32	24.000	0.000	29.000	22.000	23.000	23.000	0.000	21.000	24.000	0.000
42	20.000	23.000	22.000	16.000	19.000	17.000	21.000	18.000	0.000	19.000
56	18.000	21.000	20.000	18.000	19.000	20.000	20.000	19.000	0.000	20.000
75	16.000	18.000	19.000	17.000	19.000	15.000	16.000	19.000	15.000	4.000
100	8.000	16.000	19.000	14.000	16.000	12.000	14.000	14.000	14.000	16.000
100 UV	19.000	14.000	19.000	17.000	17.000	18.000	19.000	18.000	16.000	19.000

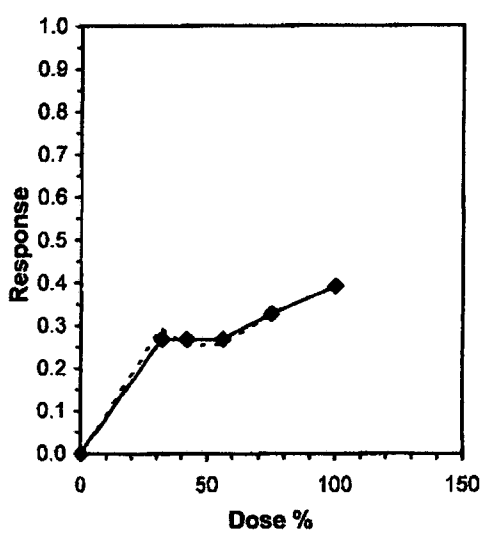
			Transform: Untransformed					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	23.500	1.0000	23.500	17.000	26.000	11.392	10	23.500	1.0000
32	16.600	0.7064	16.600	0.000	29.000	70.149	10	17.200	0.7319
42	17.500	0.7447	17.500	0.000	23.000	37.253	10	17.200	0.7319
56	17.500	0.7447	17.500	0.000	21.000	35.558	10	17.200	0.7319
75	15.800	0.6723	15.800	4.000	19.000	28.115	10	15.800	0.6723
100	14.300	0.6085	14.300	8.000	19.000	20.335	10	14.300	0.6085
100 UV	17.600	0.7489	17.600	14.000	19.000	9.355	10		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.05)	2.09632	0.895	-1.75	3.66425
Bartlett's Test indicates unequal variances (p = 2.71E-07)	41.1423	16.8119		

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL		Skew
IC05*	5.968	6.747	4.207	33.314	2.5980
IC10*	11.937	7.852	8.415	36.592	1.4488
IC15*	17.905	8.452	12.622	41.288	1.0122
IC20*	23.873	11.425	16.829	59.330	1.1623
IC25*	29.841	17.263	21.037	79.274	0.7581
IC40	>100				
IC50	>100				

* indicates IC estimate less than the lowest concentration



ToxCalc v5.0.23

Reviewed by: EVB 7/13/12

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	6/12/2012	Test ID:	X4771PP	Sample ID:	AR0000752 NPDES 001
End Date:	6/19/2012	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/11/2012	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas

Comments:

Conc-%	1	2	3	4	5
D-Control	1.0000	0.8750	0.8750	1.0000	1.0000
32	1.0000	0.7500	1.0000	1.0000	0.3750
42	1.0000	1.0000	1.0000	0.8750	0.8750
56	1.0000	0.8750	0.7500	1.0000	1.0000
75	0.8750	0.8750	1.0000	1.0000	1.0000
100	0.7500	0.8750	0.8750	0.8750	1.0000
100 UV	1.0000	1.0000	1.0000	1.0000	0.8750

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	0.9500	1.0000	1.3196	1.2094	1.3931	7.623	5		
32	0.8250	0.8684	1.1771	0.6591	1.3931	27.698	5	25.50	16.00
42	0.9500	1.0000	1.3196	1.2094	1.3931	7.623	5	27.50	16.00
56	0.9250	0.9737	1.2872	1.0472	1.3931	12.116	5	26.50	16.00
75	0.9500	1.0000	1.3196	1.2094	1.3931	7.623	5	27.50	16.00
100	0.8750	0.9211	1.2137	1.0472	1.3931	10.087	5	21.50	16.00
100 UV	0.9750	1.0263	1.3564	1.2094	1.3931	6.055	5	30.00	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.89396	0.934	-1.267	3.24699
Bartlett's Test indicates equal variances (p = 0.05)	12.479	16.8119		

Hypothesis Test (1-tail, 0.05)

Steel's Many-One Rank Test indicates no significant differences
Treatments vs D-Control

 Reviewed by: ESB 4/9/12

Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	6/12/2012	Test ID:	X4771PP	Sample ID:	AR0000752 NPDES 001
End Date:	6/19/2012	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/11/2012	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas

Comments:

Conc-%	1	2	3	4	5
D-Control	0.5250	0.5250	0.6375	0.5250	0.5750
32	0.7625	0.4750	0.6000	0.6375	0.2500
42	0.6250	0.8250	0.7250	0.6625	0.5500
56	0.6875	0.6875	0.4750	0.7125	0.6750
75	0.6750	0.7000	0.5875	0.6000	0.6750
100	0.5000	0.5625	0.5625	0.4625	0.6000
100 UV	0.7750	0.7625	0.7750	0.7750	0.6375
0SN	0.5250	0.6000	0.7286	0.5625	0.5750

			Transform: Untransformed					1-Tailed		
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
D-Control	0.5575	1.0000	0.5575	0.5250	0.6375	8.912	5			
32	0.5450	0.9776	0.5450	0.2500	0.7625	35.628	5	0.203	2.443	0.1503
42	0.6775	1.2152	0.6775	0.5500	0.8250	15.348	5	-1.950	2.443	0.1503
56	0.6475	1.1614	0.6475	0.4750	0.7125	15.041	5	-1.463	2.443	0.1503
75	0.6475	1.1614	0.6475	0.5875	0.7000	7.770	5	-1.463	2.443	0.1503
100	0.5375	0.9641	0.5375	0.4625	0.6000	10.269	5	0.325	2.443	0.1503
100 UV	0.7450	1.3363	0.7450	0.6375	0.7750	8.099	5	-3.047	2.443	0.1503
0SN	0.5982	1.0730	0.5982	0.5250	0.7286	12.995	5	-0.662	2.443	0.1503

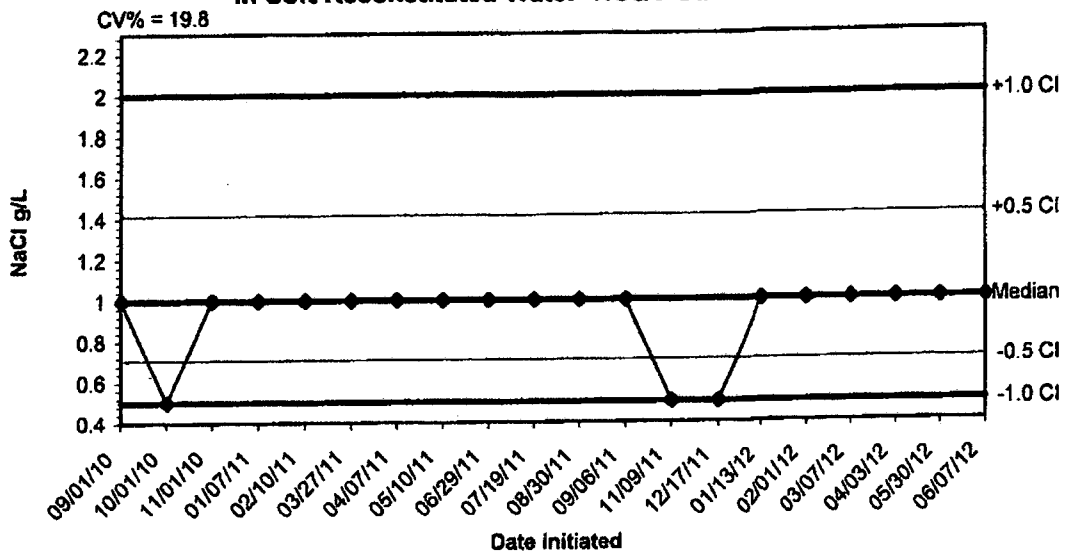
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	0.95102	0.94	-0.6977	2.77962
Bartlett's Test indicates equal variances (p = 0.06)	13.4738	18.4753		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test indicates no significant differences Treatments vs D-Control	0.1503	0.26959	0.02661	0.00947	0.02122	7, 32

Reviewed by: EVB 7/9/12

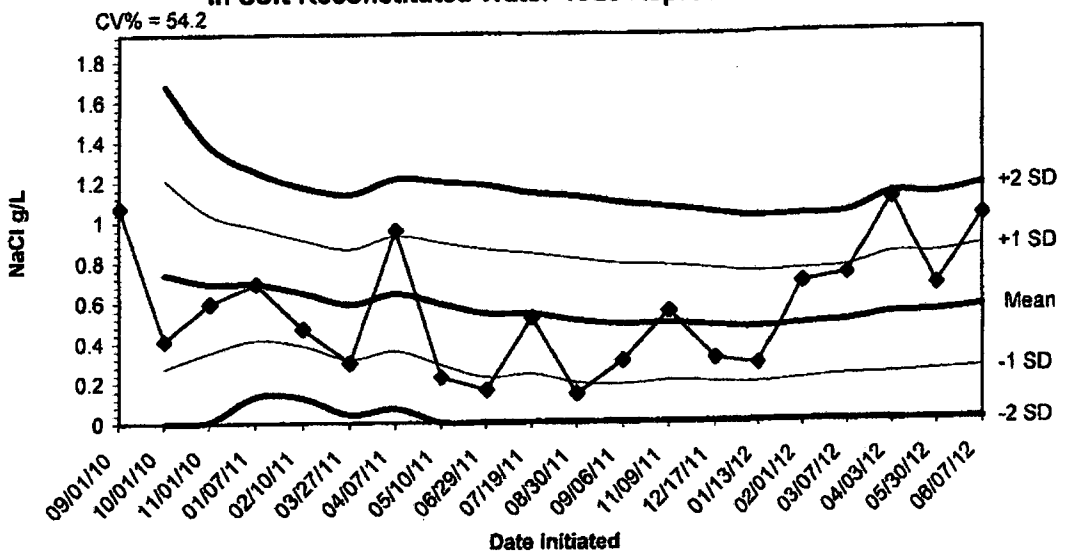
APPENDIX D
QUALITY ASSURANCE CHARTS

2012 Chronic Reference Toxicant Test Results for Ceriodaphnia dubia in Soft Reconstituted Water- NOEC Survival



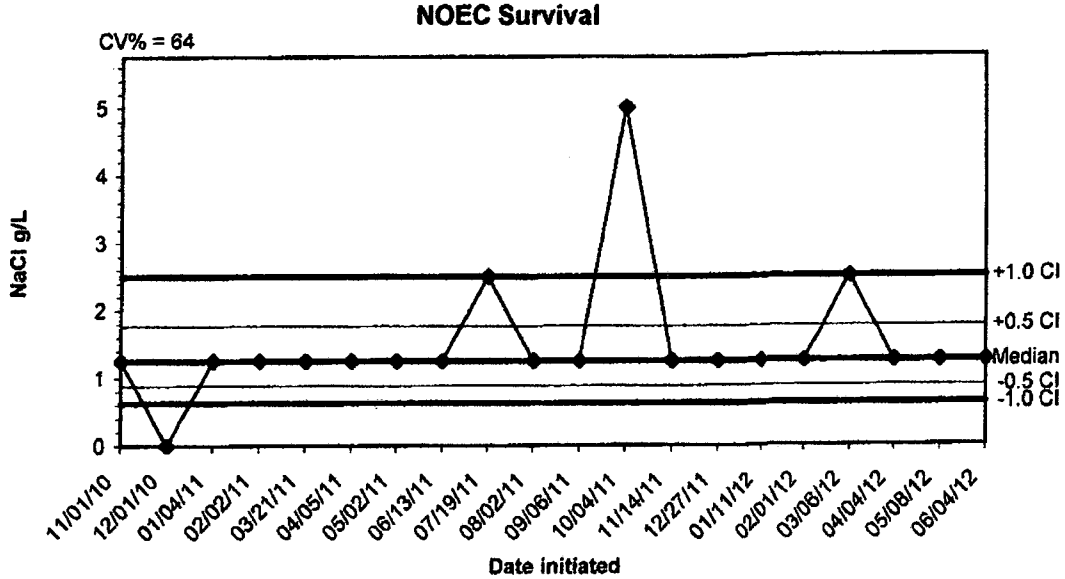
Dates	Values	Median	-0.5 CI	-1.0 CI	+0.5 CI	+1.0 CI
09/01/10	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
10/01/10	0.5000	1.0000	0.7071	0.5000	1.4142	2.0000
11/01/10	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
01/07/11	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
02/10/11	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
03/27/11	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
04/07/11	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
05/10/11	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
06/29/11	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
07/19/11	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
08/30/11	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
09/06/11	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
11/09/11	0.5000	1.0000	0.7071	0.5000	1.4142	2.0000
12/17/11	0.5000	1.0000	0.7071	0.5000	1.4142	2.0000
01/13/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
02/01/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
03/07/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
04/03/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
05/30/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
06/07/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000

2012 Chronic Reference Toxicant Test Results for Ceriodaphnia dubia in Soft Reconstituted Water- IC25 Reproduction



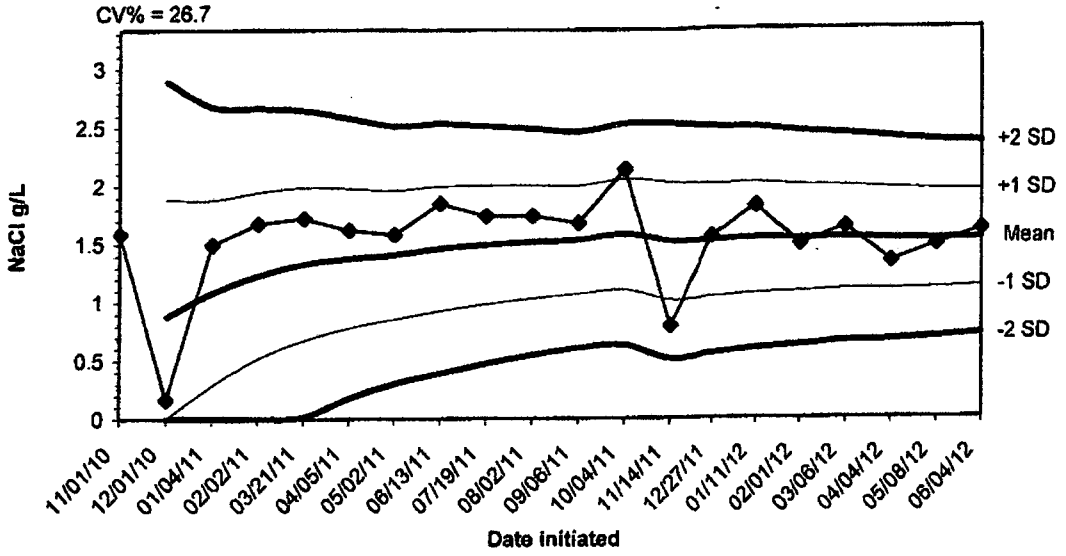
Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
09/01/10	1.0725					
10/01/10	0.4111	0.7418	0.2741	0.0000	1.2095	1.6772
11/01/10	0.5939	0.6925	0.3510	0.0094	1.0340	1.3756
01/07/11	0.6913	0.6922	0.4133	0.1345	0.9711	1.2499
02/10/11	0.4674	0.6472	0.3856	0.1240	0.9088	1.1704
03/27/11	0.2984	0.5891	0.3152	0.0413	0.8630	1.1369
04/07/11	0.9552	0.6414	0.3556	0.0698	0.9272	1.2130
05/10/11	0.2227	0.5891	0.2859	0.0000	0.8922	1.1954
06/29/11	0.1608	0.5415	0.2240	0.0000	0.8590	1.1765
07/19/11	0.5187	0.5392	0.2398	0.0000	0.8386	1.1381
08/30/11	0.1390	0.5028	0.1942	0.0000	0.8114	1.1201
09/06/11	0.3034	0.4862	0.1864	0.0000	0.7860	1.0859
11/09/11	0.5489	0.4910	0.2034	0.0000	0.7786	1.0662
12/17/11	0.3138	0.4784	0.1980	0.0000	0.7587	1.0391
01/13/12	0.2835	0.4654	0.1906	0.0000	0.7402	1.0150
02/01/12	0.6864	0.4792	0.2080	0.0000	0.7504	1.0215
03/07/12	0.7233	0.4935	0.2244	0.0000	0.7627	1.0319
04/03/12	1.1000	0.5272	0.2296	0.0000	0.8249	1.1226
05/30/12	0.6660	0.5345	0.2435	0.0000	0.8256	1.1166
06/07/12	1.0102	0.5583	0.2557	0.0000	0.8609	1.1635

2012 Chronic Reference Toxicant Test Results for Pimephales promelas
NOEC Survival



Dates	Values	Median	-0.5 CI	-1.0 CI	+0.5 CI	+1.0 CI
11/01/10	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
12/01/10	0.0000	1.2500	0.8839	0.6250	1.7678	2.5000
01/04/11	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
02/02/11	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
03/21/11	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
04/05/11	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
05/02/11	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
06/13/11	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
07/19/11	2.5000	1.2500	0.8839	0.6250	1.7678	2.5000
08/02/11	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
09/06/11	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
10/04/11	5.0000	1.2500	0.8839	0.6250	1.7678	2.5000
11/14/11	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
12/27/11	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
01/11/12	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
02/01/12	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
03/06/12	2.5000	1.2500	0.8839	0.6250	1.7678	2.5000
04/04/12	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
05/08/12	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
06/04/12	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000

2012 Chronic Reference Toxicant Test Results for Pimephales promelas
IC25 Growth



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
11/01/10	1.5900					
12/01/10	0.1645	0.8773	0.0000	0.0000	1.8852	2.8932
01/04/11	1.4953	1.0833	0.2862	0.0000	1.8803	2.6774
02/02/11	1.6800	1.2325	0.5165	0.0000	1.9484	2.6643
03/21/11	1.7200	1.3300	0.6727	0.0155	1.9872	2.6445
04/05/11	1.6200	1.3783	0.7786	0.1790	1.9780	2.5776
05/02/11	1.5800	1.4071	0.8544	0.3017	1.9598	2.5125
06/13/11	1.8500	1.4625	0.9273	0.3922	1.9976	2.5327
07/19/11	1.7400	1.4933	0.9843	0.4752	2.0024	2.5114
08/02/11	1.7400	1.5180	1.0318	0.5455	2.0042	2.4904
09/06/11	1.6800	1.5327	1.0689	0.6050	1.9966	2.4604
10/04/11	2.1400	1.5833	1.1076	0.6318	2.0591	2.5348
11/14/11	0.7959	1.5227	1.0176	0.5125	2.0279	2.5330
12/27/11	1.5600	1.5254	1.0400	0.5546	2.0108	2.4963
01/11/12	1.8182	1.5449	1.0711	0.5973	2.0188	2.4926
02/01/12	1.4900	1.5415	1.0835	0.6255	1.9995	2.4574
03/06/12	1.6400	1.5473	1.1032	0.6591	1.9914	2.4354
04/04/12	1.3400	1.5358	1.1022	0.6686	1.9694	2.4029
05/08/12	1.4800	1.5328	1.1113	0.6897	1.9544	2.3760
06/04/12	1.6119	1.5368	1.1261	0.7154	1.9475	2.3582

APPENDIX E
AGENCY FORMS

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING

Ceriodaphnia dubia Survival and Reproduction

Permittee: El Dorado Chemical **NPDES No.: AR0000752**
Outfall 001 **AFIN: 70-00040**

	Time	Date	Time	Date
Composite 1 Collected From	**0830**	**6/10/12 To**	**0830**	**6/11/12**
Composite 2 Collected From	**0830**	**6/12/12 To**	**0830**	**6/13/12**
Composite 3 Collected From	**0830**	**6/14/12 To**	**0830**	**6/15/12**
Test initiated:	1535 **am/pm**		6/12/12	**date**
Test terminated:	1315 **am/pm**		6/19/12	**date**
Dilution water used:	**Receiving**		**Reconstituted**	

PERCENT SURVIVAL

Time of Reading	Percent Effluent					
	0	32	42	56	75	100
24h	100	100	100	100	100	100
48h	100	80	90	90	100	100
End of test	90	70	90	90	90	100

NUMBER OF YOUNG PRODUCED PER FEMALE @ END OF TEST

Rep	0	32	42	56	75	100
A	24	24	20	18	16	8
B	26	D	23	21	18	16
C	22	29	22	20	19	19
D	24	22	16	18	17	14
E	24	23	19	19	19	16
F	17	23	17	20	15	12
G	25	D	21	20	16	14
H	26	21	18	19	19	14
I	22	24	D	D	15	14
J	25	D	19	20	D4	16
Surv. Mean	23.5	23.7	19.4	19.4	17.1	14.3
Total Mean	23.5	16.6	17.5	17.5	15.8	14.3
CV%*	11.39	10.81	11.82	5.21	9.89	20.34

*coefficient of variation = standard deviation x 100/mean. D=dead adult

PMSD = 39.1%

Ceriodaphnia dubia
Survival and Reproduction (cont)

1. Fisher's Exact Test:

Is the mean survival at the end of the test significantly different (p=.05) than the control survival for the % effluent corresponding to (lethality):

a) LOW FLOW OR CRITICAL DILUTION	**(100%):**	**YES**	**X**	**NO**
b) ½ LOW FLOW DILUTION	**(N/A%):**	**YES**		**NO**

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

Is the mean number of young produced per female significantly different (p=.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%):**	**X**	**YES**	**NO**
b)½ LOW FLOW DILUTION	**(N/A%):**		**YES**	**NO**

3. If you answered NO to 1. a) and 2. a) enter (0) otherwise enter (1): 1
4. If you answered NO to 1. b) and 2. b) enter (0) otherwise enter (1): N/A
5. Enter response to item 3 on DMR Form, parameter #TEP3B.
6. Enter response to item 4 on DMR Form, parameter #TFP3B.
7. Enter percent effluent corresponding to each NOEC below and circle lowest number:

a) NOEC survival:	**100% effluent**
b) NOEC reproduction:	**0% effluent**
c) LOEC survival:	**N/A% effluent**
d) LOEC reproduction:	**32% effluent**

Biomonitoring Form
Chronic Toxicity Summary Form
Ceriodaphnia dubia
Chemical Parameters Chart

Permittee: El Dorado Chemical
NPDES No.: AR0000752
Contact: Larken Pennington
Analyst: Houghton, Zeagler, Callahan

Sample No. 1 Collected: Date: 6/11/12 Time: 0830
Sample No. 2 Collected: Date: 6/13/12 Time: 0830
Sample No. 3 Collected: Date: 6/15/12 Time: 0830
Test Begin: Date: 6/12/12 Time: 1535
Test End: Date: 6/19/12 Time: 1315

Dilution: 0

Day:	1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.2	24.6	24.5	24.6	24.6	24.6	
DO Initial	8.1	8.1	8.2	8.1	8.2	7.9	8.3	
DO Final	8.1	8.1	8.1	8.1	8.2	8.0		
pH Initial	7.7	7.6	7.7	7.8	7.9	8.0	7.7	
pH Final	7.7	7.7	7.9	8.1	8.0	7.9		
Alkalinity	36.0	32.0						
Hardness	48.0	48.0						
Conductivity	171.3	173.6	172.3	171.3	171.1	167.8		
Chlorine	<.01	<.01						

Dilution: 32

Day	1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.2	24.6	24.5	24.6	24.6	24.6	
DO Initial	8.1	8.1	8.1	8.1	8.1	7.8	8.3	
DO Final	8.0	8.0	8.2	8.1	8.2	8.2		
pH Initial	7.9	7.8	7.7	7.9	8.0	8.0	7.8	
pH Final	7.7	8.0	8.0	8.1	8.1	8.0		
Alkalinity								
Hardness								
Conductivity	237	242	240	236	237	232		
Chlorine								

Dilution: 42

Day	1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.2	24.6	24.5	24.6	24.6	24.6	
DO Initial	8.1	8.1	8.1	8.1	8.1	7.7	8.3	
DO Final	8.0	7.9	8.2	8.1	8.2	8.3		
pH Initial	8.0	7.9	7.8	7.9	8.1	8.0	7.9	
pH Final	7.8	8.0	8.1	8.2	8.1	8.0		
Alkalinity								
Hardness								
Conductivity	256	259	257	253	256	252		
Chlorine								

Dilution: 56

Day:	1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.2	24.6	24.5	24.6	24.6	24.6	
DO Initial	8.1	8.0	8.1	8.1	8.1	7.7	8.3	
DO Final	8.0	7.8	8.2	8.1	8.3	8.3		
pH Initial	8.0	8.0	7.9	8.0	8.1	7.9	7.9	
pH Final	7.9	8.1	8.2	8.3	8.2	8.0		
Alkalinity								
Hardness								
Conductivity	286	289	287	283	283	279		
Chlorine								

Dilution: 75

Day	1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.2	24.6	24.5	24.6	24.6	24.6	
DO Initial	8.1	8.0	8.1	8.1	8.1	7.7	8.3	
DO Final	7.8	7.8	8.2	8.2	8.3	8.4		
pH Initial	8.1	8.1	7.9	8.0	8.2	8.0	7.9	
pH Final	7.9	8.2	8.3	8.3	8.2	8.1		
Alkalinity								
Hardness								
Conductivity	326	326	324	320	322	317		
Chlorine								

Dilution: 100

Day	1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.2	24.6	24.5	24.6	24.6	24.6	
DO Initial	8.1	7.9	8.0	8.1	8.1	7.7	8.3	
DO Final	7.6	7.7	8.2	8.2	8.4	8.4		
pH Initial	8.1	8.1	8.0	8.1	8.2	8.1	8.0	
pH Final	7.9	8.2	8.3	8.4	8.3	8.1		
Alkalinity	96.0	96.0		104.0				
Hardness	40.0	44.0		40.0				
Conductivity	378	376	374	369	372	368		
Chlorine	<.01	<.01		<.01				

SUMMARY REPORTING FORMS CHRONIC BIOMONITORING FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL

(Pimephales promelas)

Permittee: El Dorado Chemical **NPDES No.: AR0000752**
AFIN: 70-00040

	Time	Date	Time	Date
Composite 1 Collected from:	**0830**	**6/10/12 To**	**0830**	**6/11/12**
Composite 2 Collected from:	**0830**	**6/12/12 To**	**0830**	**6/13/12**
Composite 3 Collected from:	**0830**	**6/14/12 To**	**0830**	**6/15/12**

Test initiated:	1900	**am/pm**	6/12/12	**date**
Test terminated:	1130	**am/pm**	6/19/12	**date**
Dilution water used:		**Receiving**	**X**	**Reconstituted**

DATA TABLE FOR SURVIVAL

Effluent Conc. %	Percent Survival in Replicate Chambers					Mean Percent Survival			CV%*
	A	B	C	D	E	24h	48h	7 days	
0	100	87.5	87.5	100	100	95.0	95.0	95.0	7.62
32	100	75.0	100	100	37.5	90.0	90.0	82.5	27.70
42	100	100	100	87.5	87.5	100	100	95.0	7.62
56	100	87.5	75.0	100	100	100	97.5	92.5	12.12
75	87.5	87.5	100	100	100	97.5	97.5	95.0	7.62
100	75.0	87.5	87.5	87.5	100	92.5	92.5	87.5	10.09

DATA TABLE FOR GROWTH

Effluent Conc. %	Average Dry Weight in milligrams in replicate chambers					Mean Dry Weight mg	CV*
	A	B	C	D	E		
0	0.525	0.525	0.638	0.525	0.575	0.558	8.91
32	0.763	0.475	0.600	0.638	0.250	0.545	35.63
42	0.625	0.825	0.725	0.663	0.550	0.678	15.35
56	0.688	0.688	0.475	0.713	0.675	0.648	15.04
75	0.675	0.700	0.588	0.600	0.675	0.648	7.77
100	0.500	0.563	0.563	0.463	0.600	0.538	10.27
0SN	0.525	0.600	0.729	0.525	0.575	0.598	13.00

*coefficient of variation = standard deviation x 100/mean.

PMSD = 27.0%

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL (cont)
(Pimephales promelas)

1. Dunnett's Procedure or Steels Many-One Rank Test as appropriate:

Is the mean survival at 7 days significantly different (p=.05) than the control survival for the % effluent corresponding to:

a) LOW FLOW OR CRITICAL DILUTION	**(100%)**	**YES**	**X**	**NO**
b) ½ LOW FLOW DILUTION	**(N/A%)**	**YES**		**NO**

2. Dunnett's Procedure (or appropriate test):

Is the mean dry weight (growth) at 7 days significantly different (p=.05) than the control's dry weight for the % effluent corresponding to (significant non-lethal effects):

a) LOW FLOW OR CRITICAL DILUTION	**(100%)**	**YES**	**X**	**NO**
b) ½ LOW FLOW DILUTION	**(N/A%)**	**YES**		**NO**

3. If you answered NO to 1. a) and 2. a) enter (0) otherwise enter (1): 0
4. If you answered NO to 1. b) and 2. b) enter (0) otherwise enter (1): N/A
5. Enter response to item 3 on DMR Form, parameter #TEP6C.
6. Enter response to item 4 on DMR Form, parameter #TFP6C.
7. Enter percent effluent corresponding to each NOEC below and circle lowest number:

a.) NOEC survival	**100% effluent.**
b.) NOEC growth	**100% effluent.**
c.) LOEC survival	**N/A% effluent**
d.) LOEC growth	**N/A% effluent**

Biomonitoring Form
Chronic Toxicity Summary Form
Pimephales promelas
Chemical Parameters Chart

Permittee: El Dorado Chemical
NPDES No.: AR0000752/ AFIN 70-00040
Contact: Larken Pennington
Analyst: Briggs, Zeagler, Callahan

Sample No. 1 Collected: Date: 6/11/12 Time: 0830
Sample No. 2 Collected: Date: 6/13/12 Time: 0830
Sample No. 3 Collected: Date: 6/15/12 Time: 0830
Test Begin: Date: 6/12/12 Time: 1900
Test End: Date: 6/19/12 Time: 1130

Dilution: 0

	Day: 1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.9	24.8	24.9	25.1	25.0	25.3	
DO Initial	6.8	6.7	6.8	6.9	7.3	6.7	5.5	
DO Final	8.1	8.1	8.1	8.1	8.2	8.0		
pH Initial	7.5	7.3	7.4	7.7	7.7	7.6	7.4	
pH Final	7.7	7.7	7.9	8.1	8.0	7.9		
Alkalinity	36.0	32.0						
Hardness	48.0	48.0						
Conductivity	171.3	173.6	172.3	171.3	171.1	167.8		
Chlorine	<.01	<.01						

Dilution: 56

	Day: 1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.9	24.8	24.9	25.1	25.0	25.3	
DO Initial	7.1	6.5	7.1	6.6	7.1	6.3	5.7	
DO Final	8.0	7.8	8.2	8.1	8.3	8.3		
pH Initial	7.6	7.6	7.7	7.7	7.7	7.6	7.4	
pH Final	7.9	8.1	8.2	8.3	8.2	8.0		
Alkalinity								
Hardness								
Conductivity	286	289	287	283	283	279		
Chlorine								

Dilution: 32

	Day 1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.9	24.8	24.9	25.1	25.0	25.3	
DO Initial	6.9	6.7	6.9	6.9	7.1	6.4	5.7	
DO Final	8.0	8.0	8.2	8.1	8.2	8.2		
pH Initial	7.5	7.5	7.5	7.7	7.6	7.6	7.4	
pH Final	7.7	8.0	8.0	8.1	8.1	8.0		
Alkalinity								
Hardness								
Conductivity	237	242	240	236	237	232		
Chlorine								

Dilution: 75

	Day 1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.9	24.8	24.9	25.1	25.0	25.3	
DO Initial	7.0	6.8	7.0	6.8	6.9	5.9	5.6	
DO Final	7.8	7.8	8.2	8.2	8.3	8.4		
pH Initial	7.7	7.7	7.8	7.8	7.8	7.7	7.4	
pH Final	7.9	8.2	8.3	8.3	8.2	8.1		
Alkalinity								
Hardness								
Conductivity	326	326	324	320	322	317		
Chlorine								

Dilution: 42

	Day 1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.9	24.8	24.9	25.1	25.0	25.3	
DO Initial	7.0	6.8	7.1	6.7	7.0	6.3	5.7	
DO Final	8.0	7.9	8.2	8.1	8.2	8.3		
pH Initial	7.6	7.5	7.6	7.7	7.7	7.6	7.4	
pH Final	7.8	8.0	8.1	8.2	8.1	8.0		
Alkalinity								
Hardness								
Conductivity	256	259	257	253	256	252		
Chlorine								

Dilution: 100

	Day 1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.9	24.8	24.9	25.1	25.0	25.3	
DO Initial	6.9	6.6	6.7	6.7	6.8	6.1	5.2	
DO Final	7.6	7.7	8.2	8.2	8.4	8.4		
pH Initial	7.8	7.7	7.8	7.8	7.8	7.7	7.4	
pH Final	7.9	8.2	8.3	8.4	8.3	8.1		
Alkalinity	96.0	96.0		104.0				
Hardness	40.0	44.0		40.0				
Conductivity	378	376	374	369	372	368		
Chlorine	<.01	<.01		<.01				

APPENDIX F
REPORT QUALITY ASSURANCE FORM

Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

(318) 745-2772
1-800-259-1246
Fax: (318) 745-2773

REPORT QUALITY ASSURANCE FORM (v. 31612)

Client: El Dorado Chemical

Project#: X4771

Chain of Custody Documents Checked by: EGB 7/3/12
Technician/Date

Raw Data Documents Checked by: EGB 7/3/12
Technician/Date

Statistical Analysis Package Checked by: EGB 7/9/12
Quality Manager/Date

Quality Control Data Checked by: EGB 7/18/12
Quality Manager/Date

Report Checked by: EGB 7/18/12
Quality Manager/Date

I certify that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information contained in this document, to the best of my knowledge, is true, accurate and complete.

Erin L. Beaupp, BS
Quality Manager

7/18/12
Date

Bio-Analytical Laboratories (BAL)
ADEQ#88-0630
Project X4773

Bio-Analytical Laboratories' Executive Summary

Permittee: El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731
Project #: X4773
Outfall: Outfall 006
Permit #: AR0000752/ AFIN #70-00040
Contact: Ms. Larken Pennington
Test Dates: June 12 - 15 , 2012
Test Type: 48-hour acute toxicity test using *Pimephales promelas* (EPA 2000.0).
48-hour acute toxicity test using *Daphnia pulex* (EPA 2021.0)

Results:

For *Pimephales promelas:*

1. If the NOEC for survival is less than the critical dilution (100%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM6C- 1.
2. Report the NOEC for survival, Parameter TOM6C - 75%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM6C - 10.02%.

For *Daphnia pulex:*

1. If the NOEC for survival is less than the critical dilution (100%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM3D- 1.
2. Report the NOEC for survival, Parameter TOM3D - 0%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM3D - 7.62%.

-Due to lack of available test organisms, only the control and the 100% dilution was tested.

This report contains a total of 31 pages, including this page. The results pertain only to the samples listed in the chain of custody documents in Appendix A. The information contained within meets the requirements set forth by ADEQ. The chemical data in this report is for monitoring purposes only and should not be reported on discharge monitoring reports.

Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

(318) 745-2772
1-800-259-1246
Fax: (318) 745-2773

THE RESULTS OF TWO 48-HOUR ACUTE TOXICITY TESTS FOR OUTFALL 006 AT

EL DORADO CHEMICAL COMPANY
El Dorado, Arkansas

NPDES #AR0000752
AFIN #70-00040

EPA Methods 2000.0 and 2021.0

Project X4773

Test Dates: June 12 - 15, 2012
Report Date: July 17, 2012

Prepared for:
Ms. Larken Pennington
El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731

Prepared by:
Ginger Briggs
Bio-Analytical Laboratories
P.O. Box 527
Doyline, LA 71023
ADEQ #88-0630

BAL
ADEQ #88-0630
Project X4773

TABLE OF CONTENTS

BAL
ADEQ #88-0630
Project X4773

1.0 Introduction

Bio-Analytical Laboratories (BAL), Doyline, Louisiana conducted two 48-hour acute toxicity tests for Outfall 006 at El Dorado Chemical Company, El Dorado, Arkansas. The test organisms used were the fathead minnow, *Pimephales promelas* and the cladoceran, *Daphnia pulex*. The purpose of this study is to determine if an appropriately dilute effluent sample adversely affects the survival of the test organism. Toxicity is defined as a statistically significant difference at the 95 percent confidence level between the survival of the test organisms in the critical dilution (the effluent concentration representative of the proportion of effluent in the receiving water during critical low flow or critical mixing conditions) compared to the survival of the test organisms in the control. The test endpoints are the No-Observed-Effect-Concentration (NOEC), which is defined as the highest effluent concentration that is not statistically different from the control, and the 48-hour LC_{50}, the concentration in which 50 percent of the test organisms died.

2.0 Methods and Materials

2.1 Test Methods

All methods followed were according to the latest edition of "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA-821-R-02-012).

2.2 Test Organisms

The fathead minnows were raised in-house and were approximately four days old at test initiation. The *Daphnia pulex* test organisms were raised in-house and were less than 24 hours old at test initiation. Forty-eight hour reference toxicant tests, using sodium chloride (NaCl), were conducted monthly in order to document organism sensitivity and demonstration of capability.

BAL
ADEQ #88-0630
Project X4773

2.3 Dilution Water

Soft reconstituted water made per EPA guidelines was used as the dilution water and the control for the acute tests.

2.4 Test Concentrations

The test concentrations used in the fathead minnow test were 100, 75.0, 56.0, 42.0, 32.0 and 22.0 percent effluent and a reconstituted water control. Due to lack of available test organisms, only 100 percent effluent and the control were used in the *Daphnia pulex* test. The critical dilution was defined as 100 percent effluent. The tests were conducted using five replicates of eight animals each for a total of 40 animals per concentration.

2.5 Sample Collection

One sample of Outfall 006 was collected by El Dorado Chemical personnel on June 12, 2012. Upon completion of collection, the sample was chilled to 4^0 Celsius and personally delivered to Bio-Analytical Laboratories.

2.6 Sample Preparation

Upon arrival, the sample was logged in, given an identification number and refrigerated unless needed. Prior to use, the sample was warmed to 25 ± 1^0 Celsius. The total residual chlorine level was measured with a Capital Controls^R amperometric titrator and recorded if present. The total ammonia level was measured using a HACH^R test strip. Dissolved oxygen, pH and conductivity measurements were taken on the control and each test concentration at test initiation, at each renewal and at test termination. Alkalinity and hardness levels were measured on the control and the highest effluent concentration.

2.7 Monitoring of the Tests

The tests were run in a Precision^R dual controlled illuminated incubator at a temperature of 25 ± 1^0 Celsius. An AEMC^R data logger was used to monitor diurnal temperature throughout the testing period. Light cycle and intensity were recorded twice a month.

2.8 Data Analysis

The NOEC and LC_{50} values values were obtained by approved EPA methods of analysis, using the ToxCalc statistical program.

BAL
ADEQ #88-0630
Project X4773

3.0 Results and Discussion

The results of the tests can be found in Table 1. Significant differences in survival were noted in the critical dilutions in both tests (p=.05). The NOEC value in the fathead minnow test was 75 percent and the NOEC value in the *Daphnia pulex* test was zero percent effluent (p=.05).

Table 1: Results of the 48-hour Acute Definitive Toxicity Tests

Percent Effluent	Percent Survival	
Test Organism	*Pimephales promelas*	*Daphnia pulex*
Control	100.0	95.0
22.0	95.0	-----
32.0	95.0	-----
42.0	95.0	-----
56.0	90.0	-----
75.0	90.0	-----
100.0	75.0	0.0

The 48-hour reference toxicant test results indicate that the test organisms were within the respective sensitivity range. The graphs of the acute reference toxicant tests can be found in Appendix D.

BAL
ADEQ #88-0630
Project X4773

4.0 Conclusions

The sample of Outfall 006 collected from El Dorado Chemical Company, El Dorado, Arkansas, on June 12, 2012, was found to be lethally toxic to the *Daphnia pulex* test organisms and the fathead minnow test organisms in the 100 percent critical dilution after 48 hours of exposure (p=.05).

BAL
ADEQ #88-0630
Project X4773

5.0 Reference

EPA, 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. EPA-821-R-02-012, Office of Water.

APPENDIX A
CHAIN-OF-CUSTODY DOCUMENTS

Bio-Analytical Laboratories
3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023
(318) 745-2772
1-800-259-1546
Fax: (318) 745-2773

NELAP/LELAP 01975, ADEQ 88-0630, TCEQ T104704278

Laboratory Use Only:

Company: El Dorado Chemical Company	Phone: (870) 863-1484	Analysis:								
Address: 4500 Norwest Ave., El Dorado, AR 71731	Fax: (870) 863-7499									
Permit #: AR0000752/AFIN 70-00040	Purchase Order:									
Sampler's Signature/Printed Name/Affiliation: Karen Pennington / Karen Pennington / EDCC										

Date Start / Date End	Time Start / Time End	C	G	# and type of container	Sample Identification	Chronic Ceriodaphnia	Chronic minnow	Acute minnow (fresh/marine)	Acute Daphnia species	Acute Mysid	Acute Ceriodaphnia	Fecal Coliform	Lab Control Number:	Project Number: X4773 / Temp. upon arrival: 5.8°C #29 6/12/12 / Preservative: (below)
6/12/12	8:00am		X	6 half gallon	0016			x	x				CS644	

	Date:	Time:		Date:	Time:
Relinquished by/Affiliation: Karen Pennington	6/12/12	1145	Received by/Affiliation: BAL Erin L Bruggs	6/12/12	1145
Relinquished by/Affiliation:	Date:	Time:	Received by/Affiliation:	Date:	Time:
Relinquished by/Affiliation:	Date:	Time:	Received by/Affiliation:	Date:	Time:

Method of Shipment: ____ Lab ____ Bus ____ Fed Ex ____ DHL ____ UPS ____ Client ____ Other Tracking #_____
Comments:

APPENDIX B
RAW DATA SHEETS

BIO-ANALYTICAL LABORATORIES
ACUTE TOXICITY TEST WATER QUALITY DATA

RC 6/12/12

Project# ~~X4774~~ X4773

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES#AR0000752 Outfall 006

Technicians: EGB/AH/LGZ/RC

	D. Pulex Date	Time
Test initiated: Date 6/12/12 Time 1625	6/13/12	1340
Test terminated: Date 6/14/12 Time 1440	6/15/12	1345

Dissolved Oxygen Meter: Model # YSI 55D Serial #06E2089 AU
pH Meter: Model #Orion 230A+ Serial #105253
Conductivity Meter: Model # Control Co. Serial #80277924
Amperometric Titrator: Model #Fischer-Porter Serial #92W445766

Sample Information

Sample ID#	Initial D.O. (mg/L and %)	Aerate? Minutes/ Final D.O(mg/L & %)	Total Residual Chlorine (mg/L)	Dechlorinated? Amount?	Ammonia (NH3) mg/L	Salinity	Hardness	Alkalinity	Tech
CS644	8.6/ 111.6%	Y/7.8/ 97.3%	<0.01	NO	6.0	N/A	800.0	8.0	RC
↓	9.2/ 108.6%	Y/20 8.4/98.8%	↓	↓	↓	↓	↓	↓	
CS644	8.8/ 111.3%	Y/26/8.1 97.3%	↓	↓	↓	↓	↓	↓	RC

Dilution Water Information

Dilution Water	ID#	Initial D.O (mg/L & %)	Aerate? Minutes/D.O (mg/L & %)	Total Residual Chlorine (mg/L)	Ammonia (NH3) mg/L	pH	Hardness	Alkalinity	Tech
		NA	NA	NA	NA				
Soft H20	~~3330~~						48.0	36.0	RC
↓	3336						48.0	32.0	↓

Test Species Information

Test Species Info.	Species: D.pulex ID#: BA1408-W8	Species: P.promelas ID#: BA16812	Species: ID#:	Species: ID#:
Age	<24h	~4d		
Test Container Size	30ml	250ml		
Test volume	25ml	200ml		
Feeding: Type	YCT: Algae	Artemia		
Amount	Fed 2hrs prior to test initation			
Aeration?	NA	NA		
Amount				
Condition of survivors	GOOD RC 6/15/12	Good KBM 6/14/12		

Comments:

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X4773

Client El Dorado Chemical

Sample Description 006

Test started: Date 6/13/12 Time 1340

Test ended: Date 6/15/12 Time 1345

Test Species D pulex ID# BAL/48-W8

Technician: Ohour AH 24hour RC 48hour RC 72hour ____ 96hour ____

Time: Ohour 1340 24hour 1316 48hour 1345 72hour ____ 96hour ____

Temperature (°C): Ohour 24.6 24hour 24.6 48hour 24.7 72hour ____ 96hour ____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
		NA	0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
0	A		8	8	8			8.0	8.2/7.9	8.2			7.4	7.9/8.4	7.1			173.5	204/201	196.0		
	B		8	8	7																	
	C		8	8	8																	
	D		8	8	7																	
	E		8	8	8																	
100	A		8	0				8.3	8.0/8.0				6.0	5.9/6.2				347	349/347			
	B		8	0																		
	C		8	0																		
	D		8	0																		
	E		8	0																		
Chemistry Tech prerenewal/postrenewal								AH	RC/RC	RC			AH	RC/RC	RC			AH	RC/RC	RC		

ACUTE2 020809 Rev.

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X4773

Client El Dorado Chemical

Sample Description 006

Test started: Date 6/12/12 Time 1625

Test ended: Date 6/14/12 Time 1440

Test Species P. promelas ID# BAL 6012

Technician: Ohour AH 24hour RC 48hour dbm 72hour ____ 96hour ____

Time: Ohour 1625 24hour 1345 48hour 1440 72hour ____ 96hour ____

Temperature (°C): Ohour 25.4 24hour 24.9 & 48hour 25.5 72hour ____ 96hour ____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
		NA																				
0	A		8	8	8			7.9	7.8 / 8.0	7.7			7.8	7.5 / 7.4	7.6			173.2	199.5 / 173.5	202		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
22	A		8	7	7			7.9	7.6 / 8	7.6			7.1	7.1 / 7.1	7.1			1465	1456 / 1427	1444		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	7	7																	
Chemistry Tech prerenewal/postrenewal								RC	RC / dbm	dbm			RC	RC / dbm	dbm			RC	RC / dbm	dbm		

ACUTE2 020809 Rev.

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X4773

Client El Dorado Chemical

Sample Description 006

Technician: Ohour AH 24hour RC 6/14/12 48hour DMM 72hour ____ 96hour ____

Time: Ohour 1625 24hour 1445 48hour 1440 72hour ____ 96hour ____

Temperature (°C): Ohour 25.4 24hour 24.9 48hour 25.5 72hour ____ 96hour ____

Test started: Date 6/13/12 Time 1625

Test ended: Date 6/14/12 Time 1440

Test Species P. promelas ID# BAL 6812

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
		NA																				
32	A		8	8	7			7.9	7.6 / 8.2	7.5			6.9	6.9 / 7.0	6.9			2050	2050 / 2020	2070		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	7	7																	
42	A		8	6	6			7.8	7.5 / 8.2	7.5			6.8	6.8 / 6.8	6.8			2610	2570 / 2560	2610		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	RC / DMM	DMM			RC	RC / DMM	DMM			RC	RC / DMM	DMM		

ACUTE2 020809 Rev.

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X4773

Client El Dorado Chemicals

Test started: Date 6/12/12 Time 1625

Test ended: Date 6/14/12 Time 1440

Sample Description 006

Test Species P. promelas ID# BAL6812

Technician:	Ohour AH	24hour RC 6/13/12	48hour SDM	72hour	96hour
Time:	Ohour 1625	24hour 1415	48hour 1440	72hour	96hour
Temperature (°C):	Ohour 25.4	24hour 24.9	48hour 25.5	72hour	96hour

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
		NA																				
56	A		8	5	5			7.8	7.4/8.2	7.4			6.7	6.6/6.7	6.6			5320	3370/5320	3420		
	B		8	8	8																	
	C		8	7	7																	
	D		8	8	8																	
	E		8	8	8																	
75	A		8	7	7			7.8	7.5/8.3	7.3			6.5	6.4/6.5	6.3			4290	4330/4230	4430		
	B		8	7	7																	
	C		8	8	8																	
	D		8	7	7																	
	E		8	7	7																	
Chemistry Tech prerenewal/postrenewal								RC	RC SDM	SDM			RC	RC SDM	SDM			RC	RC SDM	SDM		

ACUTE2 020809 Rev.

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X4773

Client El Dorado Chemical

Sample Description 006

Test started: Date 6/12/12 Time 1625

Test ended: Date 6/14/12 Time 1440

Test Species P. promelas ID# BAL 6812

Technician: Ohour AH 24hour RC 6/13/12 48hour dbm 72hour ____ 96hour ____

Time: Ohour 1625 24hour ~~1515~~ 1515 48hour 1460 72hour ____ 96hour ____

Temperature (°C): Ohour 25.4 24hour 24.9 48hour 25.5 72hour ____ 96hour ____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
		NA	0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
100	A		8	7	7			7.7	7.6 8.3	7.9			5.9	6.0 6.0	6.0			5520	5460 5470	5150		
	B		8	6	6																	
	C		8	6	6																	
	D		8	6	6																	
	E		8	5	5																	
	A		8						/					/					/			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								RC	RC dbm	dbm			RC	RC dbm	dbm			RC	RC dbm	dbm		

AH 6/12/12

ACUTE2 020809 Rev.

APPENDIX C
STATISTICAL ANALYSIS

Daphnid Acute Test-48 Hr Survival

Start Date:	6/13/2012	Test ID:	X4773DP	Sample ID:	6
End Date:	6/15/2012	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/12/2012	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	DP-Daphnia pulex

Comments:

Conc-%	1	2	3	4	5
D-Control	1.0000	0.8750	1.0000	0.8750	1.0000
100	0.0000	0.0000	0.0000	0.0000	0.0000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	0.9500	1.0000	1.3196	1.2094	1.3931	7.623	5		
*100	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	19.00

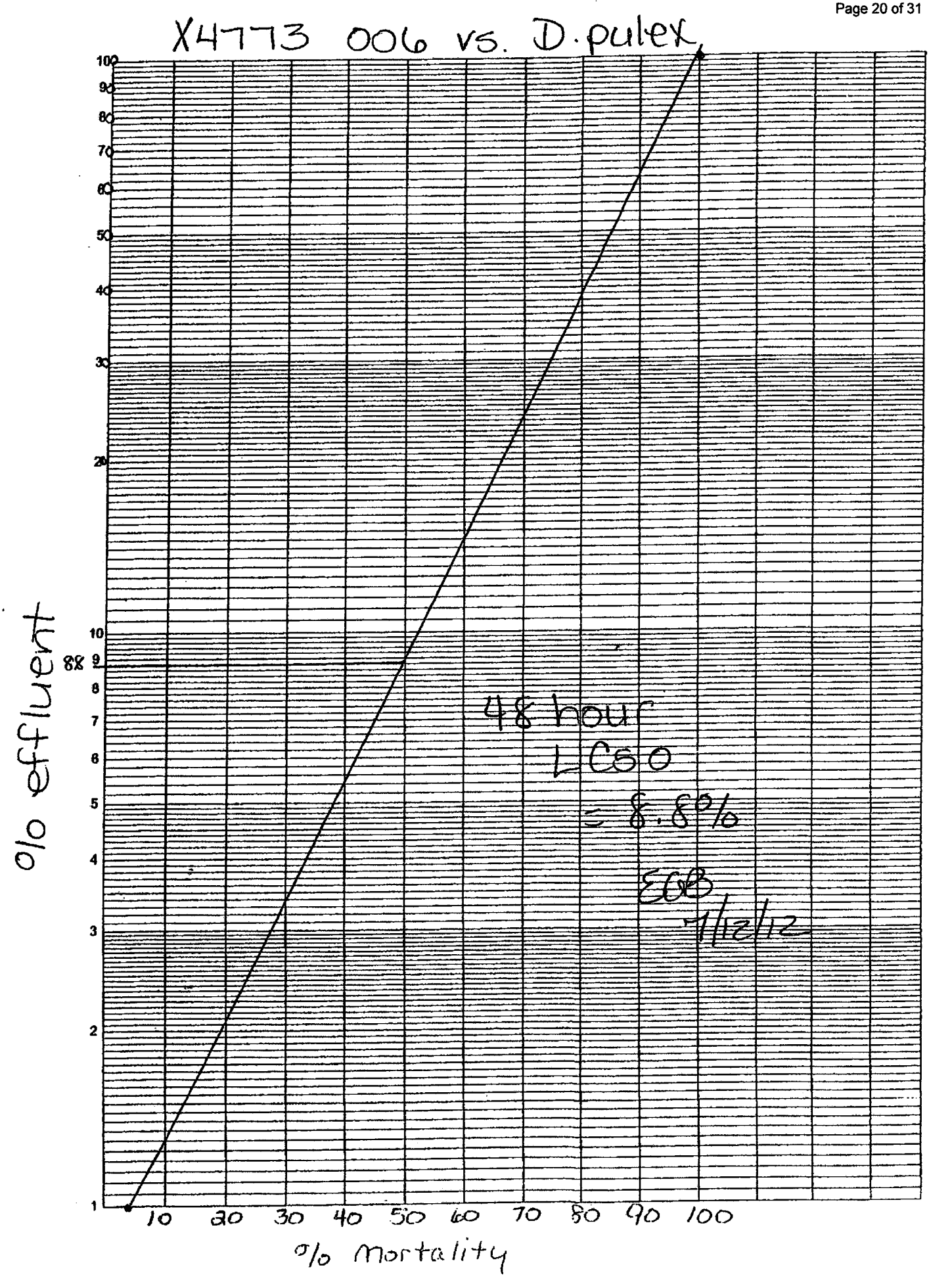
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.81451	0.842	-0.6847	-0.2143
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences
Treatments vs D-Control

ToxCalc v5.0.23

Reviewed by: EGB 7/10/12


X4773 006 vs. D. pulex
100
90
80
70
60
50
40
30
20
10
9
8
7
6
5
4
3
2
1
88
10
20
30
40
50
60
70
80
90
100
% effluent
% Mortality
48 hour
LC50
= 8.8%
EOB
11/12/12

Acute Fish Test-48 Hr Survival

Start Date:	6/13/2012	Test ID:	X4773PP	Sample ID:	6
End Date:	6/15/2012	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/12/2012	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000
22	0.8750	1.0000	1.0000	1.0000	0.8750
32	0.8750	1.0000	1.0000	1.0000	0.8750
42	0.7500	1.0000	1.0000	1.0000	1.0000
56	0.6250	1.0000	0.8750	1.0000	1.0000
75	0.8750	0.8750	1.0000	0.8750	0.8750
100	0.8750	0.7500	0.7500	0.7500	0.6250

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
22	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50	16.00
32	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50	16.00
42	0.9500	0.9500	1.3239	1.0472	1.3931	11.684	5	25.00	16.00
56	0.9000	0.9000	1.2601	0.9117	1.3931	16.693	5	22.50	16.00
75	0.9000	0.9000	1.2462	1.2094	1.3931	6.591	5	17.50	16.00
*100	0.7500	0.7500	1.0526	0.9117	1.2094	10.024	5	15.00	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.89714	0.934	-1.2077	2.07129
Equality of variance cannot be confirmed				

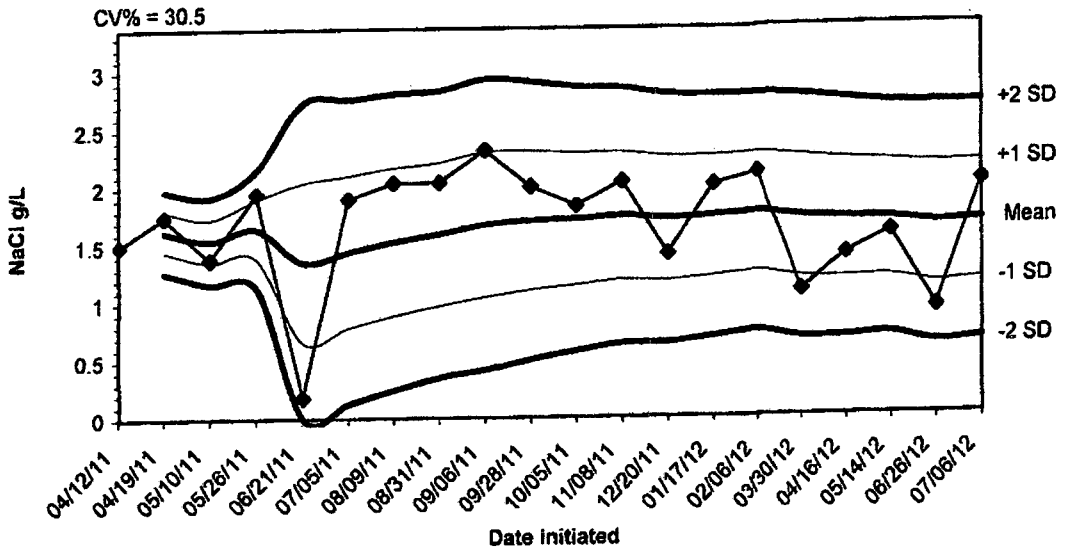
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	75	100	86.6025	1.33333
Treatments vs D-Control				

ToxCalc v5.0.23

Reviewed by: EGB 7/10/12

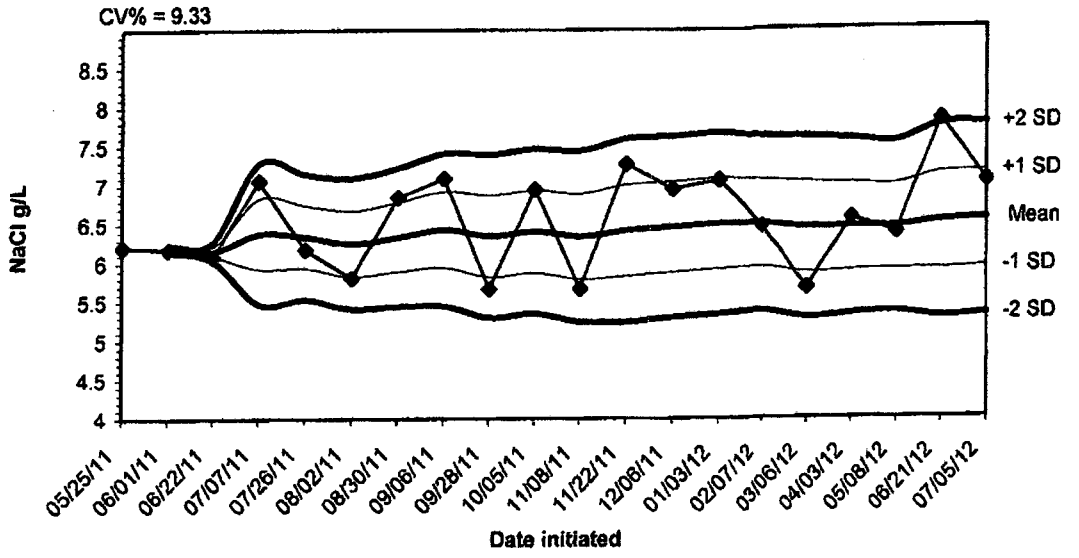
APPENDIX D
QUALITY ASSURANCE CHARTS

2012 48-hour Reference Toxicant Test Results for Daphnia pulex



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
04/12/11	1.5000					
04/19/11	1.7500	1.6250	1.4482	1.2714	1.8018	1.9786
05/10/11	1.3800	1.5433	1.3546	1.1658	1.7321	1.9209
05/26/11	1.9500	1.6450	1.3899	1.1347	1.9001	2.1553
06/21/11	0.1800	1.3520	0.6606	0.0000	2.0434	2.7349
07/05/11	1.9000	1.4433	0.7857	0.1280	2.1010	2.7586
08/09/11	2.0400	1.5286	0.8873	0.2459	2.1699	2.8112
08/31/11	2.0400	1.5925	0.9718	0.3512	2.2132	2.8338
09/06/11	2.3200	1.6733	1.0441	0.4150	2.3025	2.9317
09/28/11	2.0000	1.7060	1.1039	0.5017	2.3081	2.9103
10/05/11	1.8300	1.7173	1.1448	0.5724	2.2897	2.8622
11/08/11	2.0400	1.7442	1.1905	0.6368	2.2979	2.8516
12/20/11	1.4100	1.7185	1.1803	0.6421	2.2566	2.7948
01/17/12	2.0100	1.7393	1.2164	0.6935	2.2622	2.7851
02/06/12	2.1100	1.7640	1.2511	0.7382	2.2769	2.7898
03/30/12	1.0800	1.7213	1.1971	0.6729	2.2454	2.7696
04/16/12	1.3900	1.7018	1.1879	0.6741	2.2156	2.7295
05/14/12	1.5800	1.6950	1.1957	0.6963	2.1943	2.6937
06/26/12	0.9200	1.6542	1.1374	0.6206	2.1710	2.6878
07/06/12	2.0100	1.6720	1.1627	0.6534	2.1813	2.6906

2012 48-hour Reference Toxicant Test Results for Pimephales promelas



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
05/25/11	6.2100					
06/01/11	6.1800	6.1950	6.1738	6.1526	6.2162	6.2374
06/22/11	6.0900	6.1600	6.0976	6.0351	6.2224	6.2849
07/07/11	7.0600	6.3850	5.9321	5.4792	6.8379	7.2908
07/26/11	6.1800	6.3440	5.9412	5.5384	6.7468	7.1496
08/02/11	5.8100	6.2550	5.8339	5.4128	6.6761	7.0972
08/30/11	6.8500	6.3400	5.8947	5.4493	6.7853	7.2307
09/06/11	7.0900	6.4338	5.9435	5.4533	6.9240	7.4142
09/28/11	5.6700	6.3489	5.8244	5.2999	6.8734	7.3979
10/05/11	6.9500	6.4090	5.8792	5.3495	6.9388	7.4685
11/08/11	5.6700	6.3418	5.7921	5.2423	6.8916	7.4413
11/22/11	7.2700	6.4192	5.8305	5.2418	7.0079	7.5965
12/06/11	6.9500	6.4600	5.8775	5.2949	7.0425	7.6251
01/03/12	7.0600	6.5029	5.9207	5.3385	7.0851	7.6673
02/07/12	6.4600	6.5000	5.9389	5.3777	7.0611	7.6223
03/06/12	5.6700	6.4481	5.8677	5.2872	7.0286	7.6090
04/03/12	6.5600	6.4547	5.8920	5.3293	7.0174	7.5801
05/08/12	6.3700	6.4500	5.9038	5.3575	6.9962	7.5425
06/21/12	7.8200	6.5221	5.9052	5.2883	7.1390	7.7560
07/05/12	7.0300	6.5475	5.9364	5.3253	7.1586	7.7697

APPENDIX E
AGENCY FORMS

Acute Forms
Daphnia pulex Survival

Permittee: El Dorado Chemical - Outfall 006
NPDES Permit Number: AR0000752
Composite Collected **From: 6/12/12** **To: 6/12/12**
From: **To:**
Test Initiated: 6/13/12
Dilution Water Used: **Receiving Water** **X** **Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	100				
24-hour	A	100	100				
	B	100	100				
	C	100	100				
	D	100	100				
	E	100	100				
48-hour	A	100	0				
	B	87.5	0				
	C	100	0				
	D	87.5	0				
	E	100	0				
	Mean	95.0	0				

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:
a.) LOW FLOW OR CRITICAL DILUTION (100%) **X** **YES** **NO**
b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%) **YES** **NO**
2. Enter percent effluent corresponding to the LC_{50} below:
LC_{50} = 8.8% effluent
95 % confidence limits: N/A
Method of LC_{50} calculation: Graphical
3. If you answered NO to 1.a) enter (P) otherwise enter (F): F
4. Enter response to item 3 on DMR Form, parameter TEM3D
5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
6. Enter response to item 5 on DMR Form, parameter TFM3D

Biomonitoring
Daphnia 48 hour Acute Static Renewal
Chemical Parameters Chart*

Permittee: El Dorado Chemical - Outfall 006
NPDES Number: AR0000752
Contact: Larken Pennington
Analyst: Haughton, Callahan
Sample Collected **From:** **Date 6/12/12** **Time 0800**
To: **Date 6/12/12** **Time 0800**
Test Begin **Date 6/13/12** **Time 1340**
Test End **Date 6/15/12** **Time 1345**

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH		
Dilut./Time	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	8.0	7.9	8.2	24.6	24.6	24.7	36.0	32.0		48.0	48.0		7.4	8.4	7.7
100	8.3	8.0		24.6	24.6		8.0			800.0			6.0	5.9	

*This Form is to be submitted with each DMR.
Alkalinity and hardness to be reported as mg/l $CaCO_3$

Acute Forms
Pimephales promelas Survival

Permittee: El Dorado Chemical - Outfall 006
NPDES Permit Number: AR0000752
Composite Collected **From: 6/12/12** **To: 6/12/12**
From: **To:**

Test Initiated: 6/12/12
Dilution Water Used: **Receiving Water** **X** **Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	22	32	42	56	75	100
24-hour	A	100	87.5	100	75.0	62.5	87.5	87.5
	B	100	100	100	100	100	87.5	75.0
	C	100	100	100	100	87.5	100	75.0
	D	100	100	100	100	100	87.5	75.0
	E	100	87.5	87.5	100	100	87.5	62.5
48-hour	A	100	87.5	87.5	75.0	62.5	87.5	87.5
	B	100	100	100	100	100	87.5	75.0
	C	100	100	100	100	87.5	100	75.0
	D	100	100	100	100	100	87.5	75.0
	E	100	87.5	87.5	100	100	87.5	62.5
	Mean	100	95.0	95.0	95.0	90.0	90.0	75.0

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:
a.) LOW FLOW OR CRITICAL DILUTION (100%) **X** **YES** **NO**
b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%) **YES** **NO**
2. Enter percent effluent corresponding to the LC_{50} below:
LC_{50} = N/A% effluent
95 % confidence limits: N/A
Method of LC_{50} calculation: Graphical
3. If you answered NO to 1.a) enter (P) otherwise enter (F): F
4. Enter response to item 3 on DMR Form, parameter TEM3D
5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
6. Enter response to item 5 on DMR Form, parameter TFM3D

Biomonitoring
Fathead minnow 48 hour Acute Static Renewal
Chemical Parameters Chart*

Permittee: El Dorado Chemical - Outfall 006
NPDES Number: AR0000752
Contact: Larken Pennington
Analyst: Haughton, Callahan
Sample Collected **From:** **Date 6/12/12** **Time 0800**
To: **Date 6/12/12** **Time 0800**
Test Begin **Date 6/12/12** **Time 1625**
Test End **Date 6/14/12** **Time 1440**

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH		
Dilut./Time	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	7.9	8.0	7.7	25.4	24.9	25.5	36.0	32.0		48.0	48.0		7.8	7.4	7.6
22	7.9	8.2	7.6	25.4	24.9	25.5							7.1	7.1	7.1
32	7.9	8.2	7.5	25.4	24.9	25.5							6.9	7.0	6.9
42	7.8	8.2	7.5	25.4	24.9	25.5							6.8	6.8	6.8
56	7.8	8.2	7.4	25.4	24.9	25.5							6.7	6.7	6.6
75	7.8	8.2	7.3	25.4	24.9	25.5							6.5	6.5	6.3
100	7.7	8.3	7.3	25.4	24.9	25.5	8.0			800.0			5.9	6.0	6.0

*This Form is to be submitted with each DMR.
Alkalinity and hardness to be reported as mg/l $CaCO_3$

APPENDIX F
REPORT QUALITY ASSURANCE FORM

Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

(318) 745-2772
1-800-259-1246
Fax: (318) 745-2773

REPORT QUALITY ASSURANCE FORM (v. 31612)

Client: El Dorado Chemical

Project#: X4773

Chain of Custody Documents Checked by: EGB 7/10/12
Technician/Date

Raw Data Documents Checked by: EGB 7/10/12
Technician/Date

Statistical Analysis Package Checked by: EGB 7/10/12
Quality Manager/Date

Quality Control Data Checked by: EGB 7/10/12
Quality Manager/Date

Report Checked by: EGB 7/18/12
Quality Manager/Date

I certify that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information contained in this document, to the best of my knowledge, is true, accurate and complete.

Eric L. Bruggo, BS
Quality Manager

7/18/12
Date

From: (870) 863-1125 Origin ID: ELDA
Larken Pennington
EL DORADO CHEMICAL COMPANY
4500 Northwest Ave.

El Dorado, AR 71730

FedEx Express

J122012071603 25

SHIP TO: (501) 682-0655 BILL SENDER

ADEQ - Water Division Enforcement
5301 NORTHSHORE DR

NORTH LITTLE ROCK, AR 72118

Ship Date: 23JUL12
ActWgt: 2.0 LB
CAD: 5887030/INET3300

Delivery Address Bar Code

Ref #
Invoice #
PO #
Dept #

TUE - 24 JUL A4
PRIORITY OVERNIGHT

TRK# 7938 2099 5093
0201

X2 LITA

72118
AR-US
MEM