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

EL DORADO
CHEMICAL COMPANY

July 22, 2015

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

RE: NPDES Permit AR0000752 Discharge Monitoring Report for period ending June 30, 2015.

Enclosed you will find the Discharge Monitoring Reports ending June 30, 2015. The DMR's for Outfall 010-A were entered on the blank DMR forms provided by Amy Schluterman, ADEQ Water Enforcement.

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

If you have any questions regarding this report, please contact Edward L Pearson at (870) 863-1400.

Sincerely,

Edward L Pearson

Edward L Pearson

Environmental Technician

Enclosures

NON-COMPLIANCE REPORT

Facility Name: El Dorado Chemical Company

Permit Number: AR0000752 **AFIN:** 70-00040

Month / Year: Jun-15

Type of Violation	Permit Limit	Date of Violation	Cause of Violation	Corrective Action or Other Narrative
Outfall 006/Zinc Monthly Average (420 ug/L)	115.62 ug/L Monthly Average	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 /Zinc Daily Max (420 ug/L)	231.99 ug/L Daily Max	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / Lead Monthly Average (18 ug/L)	3.8 ug/L Monthly Average	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / Lead Daily Max. (18 ug/L)	7.62 ug/L Daily Max.	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 TDS Monthly Average (460 mg/L)	291 mg/L Monthly Average	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006/TDS Daily Max (460 mg/L)	436.5 mg/L Daily Max	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 007 / Zinc Monthly Average (420 ug/L)	115.62 ug/L Monthly Average	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007 / Zinc Daily Max (420 ug/L)	231.99 ug/L Daily Max	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007 / TDS Monthly Average (980 mg/L)	291 mg/L Monthly Average	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007 / TDS Daily Max (980 mg/L)	436.5 mg/L Daily Max	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.

I CERTIFY THAT UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 U.S.C 1001 AND 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)

Greg Withrow
7/22/15

Signature / Date

Bio-Analytical Laboratories (BAL)
ADEQ#88-0630
Project X5778

Bio-Analytical Laboratories' Executive Summary

Permittee: El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731
Project #: X5778
Outfall: Outfall 007 (contaminated storm water)
Permit #: AR0000752/ AFIN #70-00040
Contact: Mr. David Sartain
Test Dates: June 18 - 20, 2015
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 (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM6C- 1 - **Fail**
2. Report the NOEC for survival, Parameter TOM6C - 0.0%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM6C - 0.00%.

For *Daphnia pulex:*

1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM3D- 1-**Fail**
2. Report the NOEC for survival, Parameter TOM3D - 0.0%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM3D - 7.62%.

Adjusting the pH of the sample to a range of 6.0-9.0 did not reduce the toxicity of the effluent.

This report contains a total of 34 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) 746-2773

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 X5778

Test Dates: June 18 - 20, 2015
Report Date: June 30, 2015

Prepared for:
Mr. David Sartain
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 X5778

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BAL
ADEQ #88-0630
Project X5778

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),"Standard Methods for The Examination of Water and Wastewater. 20th Edition" (APHA 1998. Chemical results using this edition are listed in the report as SM 1997), and BAL's standard operating procedures.

2.2 Test Organisms

The fathead minnows were raised in-house at test temperature and were approximately five days old at test initiation. The minnows were acclimated to dilution water hardness prior to test initiation. The *Daphnia pulex* test organisms were also raised in-house at test temperature 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 X5778

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 100.0 (pH adjusted), 100.0, 75.0, 56.0, 50.0, 45.0, and 32.0 percent effluent and a reconstituted water control. Due to lack of available neonates, the test concentrations used in the *Daphnia pulex* test were 100.0 (pH adjusted) and 50.0 percent effluent and a reconstituted water control. 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 17, 2015 . Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was 0.7^0 Celsius.

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 (SM4500-Cl D 1997) 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. An aliquot of the sample was adjusted from an initial pH of 3.9 to a pH range of 6.0-9.0. An extra 100.0 percent dilution was added to each test in order to document any lethality due to low pH. Dissolved oxygen (SM4500-O G 1997), pH (SM4500-H+ B 1997) and conductivity (SM2510-B 1997) measurements were taken on the control and each test concentration at test initiation, at each renewal and at test termination. Alkalinity (SM2320-B 1997) and hardness (SM2340-C 1997) 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.

BAL
ADEQ #88-0630
Project X5778

2.8 Data Analysis

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

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 dilution in both tests after 48 hours of exposure (p=.05). The NOEC for survival for the *Daphnia pulex* and the fathead minnow tests was zero percent effluent (p=.05). The 48 hour LC_{50} values for the *Daphnia pulex* and the fathead minnow test were 25.0 and 37.95 percent effluent, respectively (p=.05). Increasing the pH of the effluent did not reduce the toxicity.

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	100.0	-----
45.0	0.0	-----
50.0	0.0	0.0
56.0	0.0	-----
75.0	0.0	-----
100.0	0.0	-----
100.0 pH adjusted	27.5	0.0

The 48-hour reference toxicant test results indicated 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 X5778

4.0 Conclusions

The sample of Outfall 007 collected from El Dorado Chemical Company, El Dorado, Arkansas, on June 17, 2015, was found to be lethally toxic to the fathead minnow test organisms nor the *Daphnia pulex* test organisms in the 100.0 percent critical dilution after 48 hours of exposure (p=.05). The 48 hour LC_{50} values for the *Daphnia pulex* and the fathead minnow test were 25.0 and 37.95 percent effluent, respectively (p=.05). Increasing the pH of the effluent did not reduce the toxicity.

BAL
ADEQ #88-0630
Project X5778

5.0 References

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.

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.

EPA, 2000. Method Guidance and Recommendations for Whole Effluent (WET) Testing. EPA-821-B-00-04, Office of Water

APHA, 1998. Standard Methods for The Examination of Water and Wastewater. 20th Edition.

APPENDIX A
CHAIN-OF-CUSTODY DOCUMENTS

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Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 627
Doyline, LA 71023

(318) 745-2772
1-800-259-1248
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: DAVID SARTAIN / EDCC

Analysis:

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: / Preservative: (below)
06-17-15 1750	06-17-15 1950	X		6 half gallons	007			X	X				C11127	X5778 / ICE

Temp. upon arrival: 0.7°C Therm 29 EGB 6/18/15

Relinquished by/Affiliation:	Date:	Time:	Received by/Affiliation:	Date:	Time:
DAVID SARTAIN / EDCC	6-18-15	11:04	John Austin	6-18-15	11:04
John J. Austin	6/18/15	1320	Erin L Briggs	6/18/15	1320

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

Comments:

COC Rev. 3.0

APPENDIX B
RAW DATA SHEETS

BIO-ANALYTICAL LABORATORIES
ACUTE TOXICITY TEST WATER QUALITY DATA

Project# X5778

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES#AR0000752 Outfall 007

Technicians: EGB/RC/CR/BJ

Test initiated: Date 6/18/15 Time 1700

Test terminated: Date 6/20/15 Time 1600

Dissolved Oxygen Meter: Model # YSI550A Serial #06E2089 AV
pH Meter: Model #Orion 230A+ Serial #015253
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 100.0%	Alkalinity 100.0%	Tech
C11127	~~8.1~~ 98.1%	NO	<0.01	NO	025	N/A	536.0	0.0	EGB
↓	~~8.3~~ 96.1	NO							↓

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
Soft H2O	376	N/A	N/A	N/A	N/A	6.8	56.0	32.0	EGB
						↓	↓	↓	

Test Species Information

Test Species Info.	Species: D. pulex ID#: BAL M30-N3	Species: P. promelas ID#: BAL 061315	Species: ID#:	Species: ID#:
Age	<24 hrs	~5days		
Test Container Size	30ml	300ml		
Test volume	25ml	250ml		
Feeding: Type	2 hrs prior to test			
Amount	Initiation			
Aeration?	N/A	N/A		
Amount				
Condition of survivors	good	good EGB 6/20/15		

Comments: Initial pH 4.3 EGB 6/18/15. Adjusted to 6.0-9.0 using 1.0N NaOH/ColeParmer/20141111102 EGB 6/18/15

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

Project# X5778

Client EDCC

Sample Description 007

Test started: Date 6/18/15 Time 1658

Test ended: Date 6/20/15 Time 1540

Test Species D. pulex ID# BA~~L~~~~H~~315

Technician:	Ohour CR	24hour EGB	48hour EGB	72hour	96hour
Time:	Ohour 1658	24hour 1430	48hour 1540	72hour	96hour
Temperature (°C):	Ohour 24.9	24hour 25.0	48hour 25.2	72hour	96hour

EGB M30-N31 6/19

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
%		N/A																				
0 S&FI	A		8	8	8			8.0	8.1/8.0	7.6			7.5	7.4/7.5	7.2			161.9	182.3/170.9	180.7		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	7																	
	E		8	8	7																	
32.0	A		8																			
	B		8																			
	C		8			VOID			EGB 6/18/15													
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								CR	EGB/EGB	EGB			CR	EGB/EGB	EGB			CR	EGB/EGB	EGB		

ACUTE2 Rev 1.0

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

Project# X5778

Client EDCC

Sample Description 007

Test started: Date 6/18/15 Time 1658

Test ended: Date 6/20/15 Time 1540

Test Species D. pulex ID# BAL/~~0613~~15

Technician:	Ohour CR	24hour EGB	48hour EGB	72hour _____	96hour _____
Time:	Ohour 1658	24hour 1430	48hour 1540	72hour _____	96hour _____
Temperature (°C):	Ohour 24.9	24hour 25.0	48hour 25.2	72hour _____	96hour _____

EGB M30-N31 6/19

Test Dilution %	Replicate	Test Salinity N/A	# 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
45.0	A		8																			
	B		8																			
	C		8			VOID			EGB 6/18/15													
	D		8																			
	E		8																			
50.0	A		8	0	0			8.17	7.1				55	71				521	568			
RC 6/18/15 ~~50.0~~	B		8	0	0																	
	C		8	0	0																	
	D		8	0	0																	
	E		8	0	0																	
Chemistry Tech prerenewal/postrenewal								CR EGB	—				CR EGB	—				CR EGB	—			

ACUTE2 Rev 1.0

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

Project# X5778

Client EDCC

Sample Description 007

Test started: Date 6/18/15 Time 1658

Test ended: Date 6/20/15 Time 1540

Test Species D. pulex ID# ~~BAL 060315~~ M30 N31 EAB 6/19

Technician:	Ohour CR	24hour EAB	48hour EAB	72hour _____	96hour _____
Time:	Ohour 1658	24hour 1430	48hour 1540	72hour _____	96hour _____
Temperature (°C):	Ohour 24.9	24hour 25.0	48hour 25.2	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
100.0	A		8																			
	B		8																			
	C		8					VOID	EAB 6/18/15													
	D		8																			
	E		8																			
pH adj 100.0	A		8	8	0			8.2	10 8.0	7.5			8.6	7.0 8.1	8.0			1341	1500 1472	1529		
	B		8	8	0																	
	C		8	8	0																	
	D		8	8	0																	
	E		8	8	0																	
Chemistry Tech prerenewal/postrenewal								CR EAB/EAB					CR EAB/EAB					CR EAB/EAB				

ACUTE2 Rev 1.0

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

Project# X5778

Client EDCC

Sample Description 007

Test started: Date 6/18/15 Time 1700

Test ended: Date 6/20/15 Time 1600

Test Species P. promelas ID# ~~BAL/PS0N31~~ 061315 EGB 6/19/15

Technician: Ohour BJ/EGB 24hour BJ/EGB 48hour EGB 72hour _____ 96hour _____

Time: Ohour 1700 24hour 1700 48hour 1600 72hour _____ 96hour _____

Temperature (°C): Ohour 24.8 24hour 25.2 48hour 25.2 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 SoFH	A		8	8	8			8.0	FT 8.0	7.7			7.5	7.7 / 7.5	7.2			161.0	192.3 TDS	178.5		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
32.0	A		8	8	8			8.0	7.8 / 8.0	7.7			5.6	6.8 / 5.7	6.9			483	368 / 58	560		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								CR	BJ/EGB/EGB				CR	BJ/EGB/EGB				CR	BJ/EGB/EGB			

ACUTE2 Rev 1.0

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

Project# X5778

Client EDCC

Sample Description 007

Test started: Date 6/18/15 Time 1700

Test ended: Date 6/20/15 Time 1600

Test Species P. promelas ID# BAL/~~H30N31~~ 061315

Technician: Ohour BJ/EB 24hour BJ/EB 48hour EB 72hour _____ 96hour _____

Time: Ohour 1700 24hour 1710 48hour 1600 72hour _____ 96hour _____

Temperature (°C): Ohour 24.8 24hour 25.2 48hour 25.2 72hour _____ 96hour _____

EDB 6/19/15

Test Dilution %	Replicate	Test Salinity N/A	# Live Organisms 0 hr	24	48	72	96	Dissolved Oxygen 0	24	48	72	96	pH 0	24	48	72	96	Conductivity 0	24	48	72	96
45.0	A		8	0	—	—	—	8.1	7.6 /				4.7	5.0 /				685 / 649	738			
	B		8	0	—	—	—															
	C		8	0	—	—	—															
	D		8	0	—	—	—															
	E		8	0	—	—	—															
50.0	A		8	0	—	—	—	8.1	7.6				5.5	4.6 /				521 / 401	839 /			
RC 6/18/15 ~~50.0~~	B		8	0	—	—	—															
	C		8	0	—	—	—															
	D		8	0	—	—	—															
	E		8	0	—	—	—															
Chemistry Tech prerenewal/postrenewal								CR	BJ/EB	—			CR	BJ/EB	—			CR	BJ/EB	—		

ACUTE2 Rev 1.0

CR 6/18/15

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

Project# X5778

Client EDCC

Sample Description 007

Test started: Date 6/18/15 Time 1700

Test ended: Date 6/20/15 Time 1600

Test Species P. promelas ID# BAL/~~M30N83~~ 061315

Technician: Ohour BJ/EGB 24hour BJ/EGB 48hour EGB 72hour _____ 96hour _____

Time: Ohour 1700 24hour 1700 48hour 1600 72hour _____ 96hour _____

Temperature (°C): Ohour 24.8 24hour 25.2 48hour 25.2 72hour _____ 96hour _____

EGB 6/19/15

Test Dilution %	Replicate	Test Salinity N/A	# Live Organisms 0 hr	24	48	72	96	Dissolved Oxygen 0	24	48	72	96	pH 0	24	48	72	96	Conductivity 0	24	48	72	96
56	A		8	0	—	—	—	8.2	7.5				4.6	4.7				458	762			
	B		8	0	—	—	—															
	C		8	0	—	—	—															
	D		8	0	—	—	—															
	E		8	0	—	—	—															
75.0	A		8	0	—	—	—	8.2	7.4				4.4	4.4				946	1021			
	B		8	0	—	—	—															
	C		8	0	—	—	—															
	D		8	0	—	—	—															
	E		8	0	—	—	—															
Chemistry Tech prerenewal/postrenewal								CR	BJ/EGB	—			CR	BJ/EGB	—			CR	BJ/EGB	—		

ACUTE2 Rev 1.0

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

Project# X5778

Client EDCC

Sample Description 007

Test started: Date 6/18/15 Time 1700

Test ended: Date 6/20/15 Time 1600

Test Species P. promelas ID# BAL ~~1430N31~~ 061315

Technician: Ohour BJ 24hour BJ/EB 48hour EB 72hour _____ 96hour _____

Time: Ohour 1700 24hour 1710 48hour 1600 72hour _____ 96hour _____

Temperature (°C): Ohour 24.8 24hour 25.2 48hour 25.2 72hour _____ 96hour _____

EB 6/19/15

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
		N/A																				
100.0	A		8	0	—	—	—	8.3	7.3				4.3	4.3				1257	1337			
	B		8	0	—	—	—															
	C		8	0	—	—	—															
	D		8	0	—	—	—															
	E		8	0	—	—	—															
pH adj 100.0	A		8	2	1			8.2	7.4/8.0	7.5			8.6	7.4/8.1	7.7			1341	1456/1417	1408		
	B		8	4	2																	
	C		8	5	4																	
	D		8	4	2																	
	E		8	5	2																	
Chemistry Tech prerenewal/postrenewal								CR	BJ/EB/EB				CR	BJ/EB/EB				CR	BJ/EB/EB			

ACUTE2 Rev 1.0

APPENDIX C
STATISTICAL ANALYSES

Daphnid Acute Test-48 Hr Survival

Start Date:	6/18/2015	Test ID:	X5778DP	Sample ID:	AR0000752
End Date:	6/20/2015	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/17/2015	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	1.0000	0.8750	0.8750
50	0.0000	0.0000	0.0000	0.0000	0.0000
100PH	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		
*50	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	18.00
*100PH	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	18.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.74482	0.881	-0.7882	1.25641
Equality of variance cannot be confirmed				
Hypothesis Test (1-tail, 0.05)				
Steel's Many-One Rank Test indicates significant differences				
Treatments vs D-Control				

Reviewed by: EGB 6/29/15

Daphnid Acute Test-48 Hr Survival

Start Date:	6/18/2015	Test ID:	X5778DP	Sample ID:	AR0000752
End Date:	6/20/2015	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/17/2015	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	1.0000	0.8750	0.8750
50	0.0000	0.0000	0.0000	0.0000	0.0000
100PH	0.0000	0.0000	0.0000	0.0000	0.0000

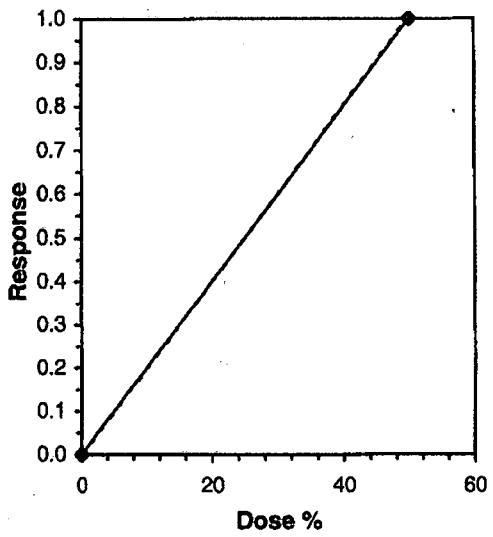
			Transform: Arcsin Square Root					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
								0.9500	1.0000
								0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.74482	0.881	-0.7882	1.25641
Equality of variance cannot be confirmed				

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)		Skew
IC05*	2.500	0.000	2.500	2.500	1.4424
IC10*	5.000	0.000	5.000	5.000	0.4312
IC15*	7.500	0.000	7.500	7.500	-0.3121
IC20*	10.000	0.000	10.000	10.000	-1.8874
IC25*	12.500	0.000	12.500	12.500	0.3435
IC40*	20.000	0.000	20.000	20.000	#DIV/0!
IC50*	25.000	0.000	25.000	25.000	#DIV/0!

* indicates IC estimate less than the lowest concentration



EGB 6/29/15

ToxCalc v5.0.23

Reviewed by:

Acute Fish Test-48 Hr Survival

Start Date:	6/18/2015	Test ID:	X5778DP	Sample ID:	AR0000752
End Date:	6/20/2015	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/17/2015	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	1.0000	1.0000	1.0000	1.0000
45	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.0000	0.0000	0.0000	0.0000	0.0000
56	0.0000	0.0000	0.0000	0.0000	0.0000
75	0.0000	0.0000	0.0000	0.0000	0.0000
100	0.0000	0.0000	0.0000	0.0000	0.0000
100 PH	0.1250	0.2500	0.5000	0.2500	0.2500

			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	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
*45	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	16.00
*50	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	16.00
*56	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	16.00
*75	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	16.00
*100	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	16.00
*100 PH	0.2750	0.2750	0.5435	0.3614	0.7854	28.036	5	15.00	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.35834	0.94	1.87793	20.6156
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Steel's Many-One Rank Test indicates significant differences
Treatments vs D-Control

Reviewed by: EJB 6/29/15

Acute Fish Test-48 Hr Survival

Start Date:	6/18/2015	Test ID:	X5778DP	Sample ID:	AR0000752
End Date:	6/20/2015	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/17/2015	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas

Comments:

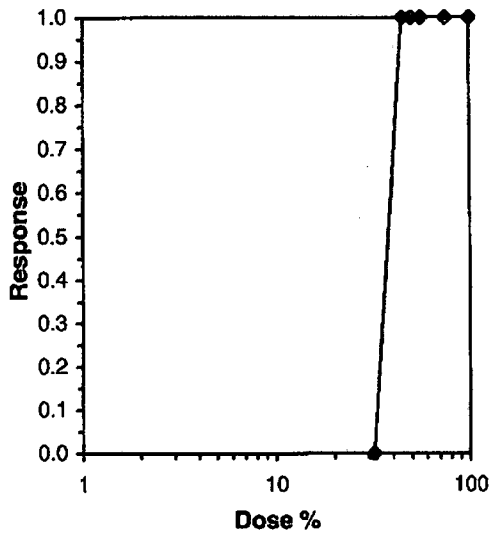
Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000
32	1.0000	1.0000	1.0000	1.0000	1.0000
45	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.0000	0.0000	0.0000	0.0000	0.0000
56	0.0000	0.0000	0.0000	0.0000	0.0000
75	0.0000	0.0000	0.0000	0.0000	0.0000
100	0.0000	0.0000	0.0000	0.0000	0.0000
100 PH	0.1250	0.2500	0.5000	0.2500	0.2500

			Transform: Arcsin Square Root					Number	Total
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	0	40
32	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	0	40
45	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	40	40
50	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	40	40
56	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	40	40
75	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	40	40
100	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	40	40
100 PH	0.2750	0.2750	0.5435	0.3614	0.7854	28.036	5		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.58789	0.881	1.23334	7.52822
Equality of variance cannot be confirmed				

Graphical Method

Trim Level	EC50
0.0%	37.947
	37.947

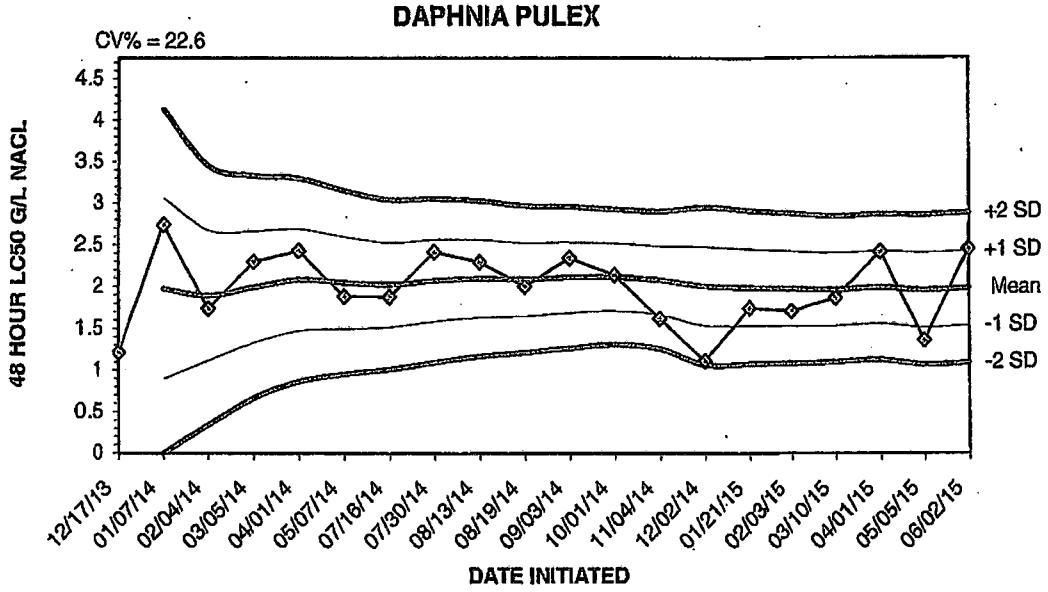


ToxCalc v5.0.23

Reviewed by: EAB 6/29/15

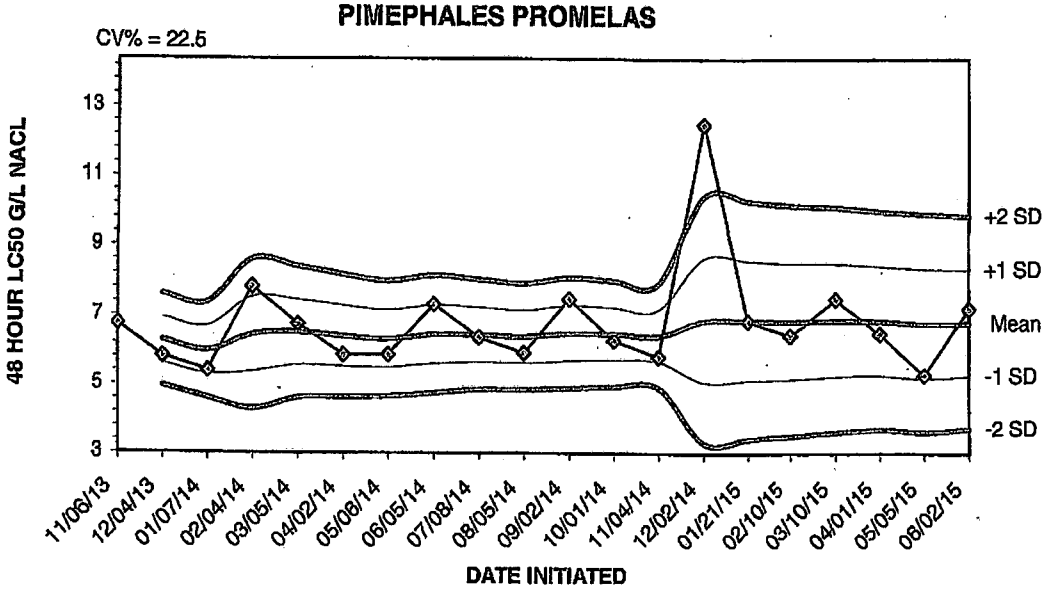
APPENDIX D
QUALITY ASSURANCE CHARTS

2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR DAPHNIA PULEX



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/17/13	1.2100					
01/07/14	2.7400	1.9750	0.8931	0.0000	3.0569	4.1387
02/04/14	1.7400	1.8967	1.1197	0.3428	2.6736	3.4505
03/05/14	2.3000	1.9975	1.3318	0.6662	2.6632	3.3288
04/01/14	2.4300	2.0840	1.4759	0.8679	2.6921	3.3001
05/07/14	1.8900	2.0517	1.5021	0.9525	2.6013	3.1509
07/16/14	1.8800	2.0271	1.5213	1.0154	2.5330	3.0389
07/30/14	2.4200	2.0763	1.5877	1.0992	2.5648	3.0533
08/13/14	2.3000	2.1011	1.6381	1.1751	2.5641	3.0271
08/19/14	2.0100	2.0920	1.6545	1.2170	2.5295	2.9670
09/03/14	2.3500	2.1155	1.6932	1.2709	2.5377	2.9600
10/01/14	2.1400	2.1175	1.7148	1.3121	2.5202	2.9229
11/04/14	1.6200	2.0792	1.6698	1.2603	2.4887	2.8982
12/02/14	1.1200	2.0107	1.5411	1.0716	2.4803	2.9499
01/21/15	1.7500	1.9933	1.5359	1.0784	2.4508	2.9083
02/03/15	1.7100	1.9756	1.5280	1.0804	2.4232	2.8708
03/10/15	1.8700	1.9694	1.5353	1.1011	2.4036	2.8377
04/01/15	2.4200	1.9944	1.5601	1.1257	2.4288	2.8632
05/05/15	1.3600	1.9611	1.5145	1.0680	2.4076	2.8541
06/02/15	2.4500	1.9855	1.5374	1.0892	2.4336	2.8818

2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR PIMEPHALES PROMELAS



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
11/06/13	6.7500					
12/04/13	5.8100	6.2800	5.6153	4.9506	6.9447	7.6094
01/07/14	5.4000	5.9867	5.2945	4.6024	6.6788	7.3709
02/04/14	7.8200	6.4450	5.3681	4.2913	7.5219	8.5987
03/05/14	6.7500	6.5060	5.5635	4.6210	7.4485	8.3910
04/02/14	5.8600	6.3983	5.5150	4.6317	7.2816	8.1649
05/06/14	5.8600	6.3214	5.4898	4.6582	7.1530	7.9847
06/05/14	7.3100	6.4450	5.5995	4.7539	7.2905	8.1361
07/08/14	6.3700	6.4367	5.6453	4.8540	7.2280	8.0193
08/05/14	5.9200	6.3850	5.6212	4.8575	7.1488	7.9125
09/02/14	7.4800	6.4845	5.6883	4.8921	7.2808	8.0770
10/01/14	6.2800	6.4675	5.7060	4.9446	7.2290	7.9904
11/04/14	5.8100	6.4169	5.6654	4.9139	7.1684	7.9200
12/02/14	12.5000	6.8514	5.0725	3.2936	8.6303	10.4092
01/21/15	6.8500	6.8513	5.1371	3.4230	8.5655	10.2797
02/10/15	6.4200	6.8244	5.1648	3.5052	8.4839	10.1435
03/10/15	7.4800	6.8629	5.2482	3.6335	8.4777	10.0924
04/01/15	6.4800	6.8417	5.2726	3.7035	8.4108	9.9799
05/05/15	5.2900	6.7600	5.1941	3.6282	8.3259	9.8918
06/02/15	7.2000	6.7820	5.2547	3.7274	8.3093	9.8366

APPENDIX E
AGENCY FORMS

Acute Forms
Daphnia pulex Survival

Permittee: El Dorado Chemical - Outfall 007
NPDES Permit Number: AR0000752/ AFIN 70-00040
Composite Collected **From: 6/17/15** **To: 6/17/15**
From: **To:**
Test Initiated: 6/18/15
Dilution Water Used: **Receiving Water** **X Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	50.0	100.0 pH adj				
24-hour	A	100.0	0.0	100.0				
	B	100.0	0.0	100.0				
	C	100.0	0.0	100.0				
	D	100.0	0.0	100.0				
	E	100.0	0.0	100.0				
48-hour	A	100.0	0.0	0.0				
	B	100.0	0.0	0.0				
	C	100.0	0.0	0.0				
	D	87.5	0.0	0.0				
	E	87.5	0.0	0.0				
	Mean	95.0	0.0	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 (100.0%) **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} = 25.0% 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 pulex 48 hour Acute Static Renewal
Chemical Parameters Chart*

Permittee: El Dorado Chemical - Outfall 007
NPDES Number: AR0000752/ AFIN 70-00040
Contact: David Sartain
Analyst: Briggs, Rose

Sample Collected	**From:**	**Date 6/17/15**	**Time 1750**
	To:	**Date 6/17/15**	**Time 1950**
Test Begin		**Date 6/18/15**	**Time 1658**
Test End		**Date 6/20/15**	**Time 1540**

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	8.0	7.6	24.9	25.0	25.2	32.0			56.0			7.5	7.5	7.2
50.0	8.1	7.9		24.9	25.0								5.5	7.1	
100.0 pH adj	8.2	8.0	7.5	24.9	25.0	25.2	0.0			536.0			8.6	8.1	8.0

*This Form is to be submitted with each DMR.
Alkalinity and Hardness tested on control and unadjusted effluent. 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/ AFIN 70-00040
Composite Collected **From: 6/17/15** **To: 6/17/15**
From: **To:**
Test Initiated: 6/18/15
Dilution Water Used: **Receiving Water** **X Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	32.0	45.0	50.0	56.0	75.0	100.0	100.0 pH adj
24-hour	A	100.0	100.0	0.0	0.0	0.0	0.0	0.0	25.0
	B	100.0	100.0	0.0	0.0	0.0	0.0	0.0	50.0
	C	100.0	100.0	0.0	0.0	0.0	0.0	0.0	62.5
	D	100.0	100.0	0.0	0.0	0.0	0.0	0.0	50.0
	E	100.0	100.0	0.0	0.0	0.0	0.0	0.0	62.5
48-hour	A	100.0	100.0	0.0	0.0	0.0	0.0	0.0	12.5
	B	100.0	100.0	0.0	0.0	0.0	0.0	0.0	25.0
	C	100.0	100.0	0.0	0.0	0.0	0.0	0.0	50.0
	D	100.0	100.0	0.0	0.0	0.0	0.0	0.0	25.0
	E	100.0	100.0	0.0	0.0	0.0	0.0	0.0	25.0
	Mean	100.0	100.0	0.0	0.0	0.0	0.0	0.0	27.5

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 (100.0%) **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} = 37.95% 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 007
NPDES Number: AR0000752/ AFIN 70-00040
Contact: David Sartain
Analyst: Briggs
Sample Collected **From:** **Date 6/17/15** **Time 1750**
To: **Date 6/17/15** **Time 1950**
Test Begin **Date 6/18/15** **Time 1700**
Test End **Date 6/20/15** **Time 1600**

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	8.0	7.7	24.8	25.2	25.2	32.0			56.0			7.5	7.5	7.2
32.0	8.0	8.0	7.7	24.8	25.2	25.2							5.6	5.7	6.9
45.0	8.1	7.6		24.8	25.2								4.7	5.0	
50.0	8.1	7.6		24.8	25.2								5.5	4.6	
56.0	8.2	7.5		24.8	25.2								4.6	4.7	
75.0	8.2	7.4		24.8	25.2								4.4	4.4	
100.0	8.2	7.3		24.8	25.2		0.0			536.0			4.3	4.3	
100.0 pH	8.2	8.0	7.5	24.8	25.2	25.2							8.6	8.1	7.2

*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

Client: EL Dorado Chemical - 007

Project#: X5778

Chain of Custody Documents Checked by: RC 6/22/15
Technician/Date

Raw Data Documents Checked by: RC 6/22/15
Technician/Date

Statistical Analysis Package Checked by: EGB 6/29/15
Quality Manager/Date

Quality Control Data Checked by: EGB 6/10/15
Quality Manager/Date

Report Checked by: EGB 6/30/15
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 — 6/30/15
Quality Manager — Date

Bio-Analytical Laboratories (BAL)
ADEQ#88-0630
Project X5777

Bio-Analytical Laboratories' Executive Summary

Permittee: El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731
Project #: X5777
Outfall: Outfall 006 (contaminated storm water)
Permit #: AR0000752/ AFIN #70-00040
Contact: Mr. David Sartain
Test Dates: June 18 - 20, 2015
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 (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM6C- 0- **Pass.**
2. Report the NOEC for survival, Parameter TOM6C - 100.0%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM6C - 0.00%.

For *Daphnia pulex:*

1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM3D- 0 - **Pass.**
2. Report the NOEC for survival, Parameter TOM3D -100.0%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM3D - 0.00%.

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 X5777

Test Dates: June 18 - 20, 2015
Report Date: June 30, 2015

Prepared for:
Mr. David Sartain
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 X5777

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BAL
ADEQ #88-0630
Project X5777

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),"Standard Methods for The Examination of Water and Wastewater. 20th Edition" (APHA 1998. Chemical results using this edition are listed in the report as SM 1997), and BAL's standard operating procedures.

2.2 Test Organisms

The fathead minnows were raised in-house and were approximately six days old at test initiation. The minnows were acclimated to dilution water hardness prior to testing. The *Daphnia pulex* test organisms were also raised in-house at test temperature 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 X5777

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 100.0, 75.0, 56.0, 45.0, 32.0 and 22.0 percent effluent and a reconstituted water control. Due to lack of available neonates, the test concentrations used in the *Daphnia pulex* test were 100.0 and 22.0 percent effluent and a reconstituted water control. The critical dilution was defined as 100.0 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 17, 2015. Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was 1.6^0 Celsius.

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 (SM4500-Cl D 1997) 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 (SM4500-O G 1997), pH (SM4500-H+ B 1997) and conductivity (SM2510-B 1997) measurements were taken on the control and each test concentration at test initiation, at each renewal and at test termination. Alkalinity (SM2320-B 1997) and hardness (SM2340-C 1997) 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.

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3.0 Results and Discussion

The results of the tests can be found in Table 1. Significant differences in survival were not noted in the critical dilution in either test after 48 hours of exposure (p=.05). The NOEC value for the tests was 100.0 percent effluent (p=.05). The 48-hour LC_{50} values could not be calculated in either test because greater than 50.0 percent survival occurred in each effluent concentration. See Appendix C- Statistical Analyses, for more information.

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

Percent Effluent	Percent Survival	
Test Organism	*Pimephales promelas*	*Daphnia pulex*
Control	100.0	100.0
22.0	97.5	100.0
32.0	100.0	------
45.0	100.0	------
56.0	100.0	------
75.0	100.0	------
100.0	100.0	100.0

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

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Project X5777

4.0 Conclusions

The sample of Outfall 006 collected from El Dorado Chemical Company, El Dorado, Arkansas, on June 17, 2015, was not found to be lethally toxic to the fathead minnow test organisms nor the *Daphnia pulex* test organisms in the 100.0 percent critical dilution after 48 hours of exposure (p=.05). The 48-hour LC_{50} values could not be calculated because greater than 50.0 percent survival occurred in the effluent dilutions (p=.05).

BAL
ADEQ #88-0630
Project X5777

5.0 References

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.

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.

EPA, 2000. Method Guidance and Recommendations for Whole Effluent (WET) Testing. EPA-821-B-00-04, Office of Water

APHA, 1998. Standard Methods for The Examination of Water and Wastewater. 20th Edition.

APPENDIX A
CHAIN-OF-CUSTODY DOCUMENTS

Bio-Analytical Laboratories
3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023
(318) 745-2772
1-800-259-1246
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: David Sartain / DAVID SARTAIN / 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: / Temp. upon arrival: / Preservative: (below)
06-17-15 1730	06-17-15 1930	✓		6 half gallon	006			X	X				C111216	X5777 / 1.6°C Therm 29 EGB 6/18/15 / ICE

Relinquished by/Affiliation:	Date:	Time:	Received by/Affiliation:	Date:	Time:
/ EDCC	6-18-15	11:04	John Austin	6/18/15	11:04
John S. Austin	6/18/15	1320	Erin R. Bragg	6/18/15	1320

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

Comments:

COC Rev. 3.0

APPENDIX B
RAW DATA SHEETS

BIO-ANALYTICAL LABORATORIES
ACUTE TOXICITY TEST WATER QUALITY DATA

Project# X5777

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES#AR0000752 Outfall 006

Technicians: EGB/RC/CR/BJ

Test initiated: Date 6/18/15 Time 1145

Test terminated: Date 6/20/15 Time 1550

Dissolved Oxygen Meter: Model # YSI550A Serial #06E2089 AV
pH Meter: Model #Orion 230A+ Serial #015253
Conductivity Meter: Model # Control Co. Serial #122175539
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 100%	Alkalinity 100.0%	Tech
C11216	~~6.6~~ 6.0 60.0%	Y/15/7.7 94.3%	<0.01	NO	1.0	N/A	172.0	20.0	EGB
↓	~~6.3~~ 14.5	Y/15/7.8 94.0%	↓	↓	↓	↓	↓	↓	↓

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
Soft H2O	3746	N/A	N/A	N/A	N/A	6.8	56.0	32.0	EGB
		↓	↓	↓	↓				

Test Species Information

Test Species Info.	Species: D. pulex M30 ID#: BAL-N31	Species: P. promelas ID#: BAL 061215	Species: ID#:	Species: ID#:
Age	<24 hrs	~6 days	EGB 6/20/15	
Test Container Size	30 ml	~~200ml~~ 250ml		
Test volume	25 ml	200ml		
Feeding: Type	2 hrs prior to test			
Amount	initiation	—		
Aeration?	N/A	N/A		
Amount	↓	↓		
Condition of survivors	good	good	EGB 6/20/15	

Comments: Initial pH=6.3

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

Project# X5777

Client EDCC

Sample Description 006

Technician: Ohour BJ/EGB 24hour EGB 48hour EGB 72hour _____ 96hour _____

Time: Ohour 1620 24hour 1410 48hour 1530 72hour _____ 96hour _____

Temperature (°C): Ohour 24.9 24hour 25.0 48hour 25.2 72hour _____ 96hour _____

Test started: Date 6/18/15 Time 1620

Test ended: Date 6/20/15 Time 1530 6/19/15

Test Species D. pulex ID# BAL 160425 M30-N31

Test Dilution %	Replicate	Test Salinity	# Live Organisms 0 hr	24	48	72	96	Dissolved Oxygen 0	24	48	72	96	pH 0	24	48	72	96	Conductivity 0	24	48	72	96
		N/A																				
0s	A		8	8	8			8.0	7.8/7.9	7.6			7.3	7.9/7.2	7.3			163.4	187/182	188.4		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
22.0	A		8	8	8			8.0	7.7/8.0	7.6			7.1	7.4/7.7	7.3			273	276/274	274		
	B		8	8	8									7.1 EGB 6/19								
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								CR	EGB/EGB	EGB			CR	EGB/EGB	EGB			CR	EGB/EGB	EGB		

ACUTE2 Rev 1.0

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

Project# X5777

Client EDCC

Sample Description 906

Test started: Date 6/18/15 Time 1620

Test ended: Date 6/20/15 Time 1520 EGB 6/20/15

Test Species D. pulex ID# BAL 06/12/15 M30-N31

Technician: Ohour BJ 1620 24hour EGB 48hour EGB 72hour _____ 96hour _____

Time: Ohour 1625 24hour 1410 48hour 1530 72hour _____ 96hour _____

Temperature (°C): Ohour 24.9 24hour 25.0 48hour 25.2 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
100.0	A		8	8	8			7.8	7.8/7.6	7.7			7.0	7.1/6.9	7.0			689	482/429	300		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
pH adj 100.0	A		8																			
	B		8																			
	C		8					VOID														
	D		8					EGB 6/18/15														
	E		8																			
Chemistry Tech prerenewal/postrenewal								CR EGB	EGB EGB				CR	EGB EGB				CR	EGB EGB			

ACUTE2 Rev 1.0

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

Project# X5777

Client EDCC

Test started: Date 6/18/15 Time 1645

Test ended: Date 6/20/15 Time 1550

Sample Description 0066

Test Species P. promelas ID# BAL/~~MA301331~~ 061215

Technician: Ohour BJ/EGB 24hour BJ/EGB 48hour EGB 72hour _____ 96hour _____

Time: Ohour 1645 24hour 1640 48hour 1550 72hour _____ 96hour _____

Temperature (°C): Ohour 24.8 24hour 25.2 48hour 25.2 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
0s	A		8	8	8			8.0	7.6/7.9	7.6			7.3	7.3/7.2	7.2			1634	2098/1705	1773		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
22.0	A		8	8	8			8.0	7.5/8.0	7.6			7.1	7.2/7.1	7.2			213	305/294	294		
	B		8	7	7														294/319			
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								CR	BJ/EGB	EGB			CR	BJ/EGB	EGB			CR	BJ/EGB	EGB		

ACUTE2 Rev 1.0

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

Project# X5777

Client EDCC

Sample Description 006

Test started: Date 6/18/15 Time 1645

Test ended: Date 6/20/15 Time 1550

Test Species P. promelas ID# BAL ~~1303~~ 1531

Technician: Ohour BJ EGB 24hour BJ EGB 48hour EGB 72hour _____ 96hour _____

Time: Ohour 1645 24hour 1640 48hour 1550 72hour _____ 96hour _____

Temperature (°C): Ohour 24.8 24hour 25.2 48hour 25.2 72hour _____ 96hour _____

06/21/15 EGB 6/19/15

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
%		N/A																				
32.0	A		8	8	8			7.9	7.5/7.9	7.5			7.1	7.2/7.1	7.2			323	349/351	350		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
									7.5					7.3					416			
45.0	A		8	8	8			7.9	7.9*	7.7			7.0	7.2*/7.1	7.2			386	399*/411	419		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								CR	BJ/EGB	EGB			CR	BJ/EGB	EGB			CR	BJ/EGB	EGB		

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ACUTE2 Rev 1.0 * BJ 6/19/15

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

Project# X5777

Client EDCC

Test started: Date 6/15/15 Time 1645

Test ended: Date 6/20/15 Time 1550

Sample Description 006

Test Species P. promelas ID# BAL/M30N81 06/21/15 EGB 6/19/15

Technician: Ohour BJ/EGB 24hour BJ/EGB 48hour EGB 72hour _____ 96hour _____

Time: Ohour 1645 24hour 1640 48hour 1550 72hour _____ 96hour _____

Temperature (°C): Ohour 24.8 24hour 25.2 48hour 25.2 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
		N/A																				
56.0	A		8	8	8			7.8	7.4/7.7	7.5			7.0	7.2/7.1	7.1			450	420/417	478		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
75.0	A		8	8	8			7.8	7.2/7.8	7.5			7.0	7.2/7.1	7.2			554	528/577	582		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								CR	BJ/EGB	EGB			CR	BJ/EGB	EGB			CR	BJ/EGB	EGB		

ACUTE2 Rev 1.0

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

Project# X5777

Client FDCC

Sample Description 006

Test started: Date 6/18/15 Time 1645

Test ended: Date 6/20/15 Time 1550

Test Species P. promelas ID# BAL/MSO/31 06/2/15 EGB 6/19/15

Technician: Ohour BJ 24hour BJ/EGB 48hour EGB 72hour _____ 96hour _____

Time: Ohour 1645 24hour 1640 48hour 1550 72hour _____ 96hour _____

Temperature (°C): Ohour 24.8 24hour 25.2 48hour 25.2 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
		N/A																				
100.0	A		8	8	8			7.8	7.4/7.6	7.4			7.0	7.9/8.0	7.0			689	722/720	732		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
~~pH adj~~ 100.0	A		8																			
	B		8																			
	C		8					VOID EGB 6/19/15														
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								CR	BJ/EGB	EGB			CR	BJ/EGB	EGB			CR	BJ/EGB	EGB		

ACUTE2 Rev 1.0

APPENDIX C
STATISTICAL ANALYSES

Daphnid Acute Test-48 Hr Survival

Start Date:	6/18/2015	Test ID:	X5777DP	Sample ID:	AR0000752
End Date:	6/20/2015	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/17/2015	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	1.0000	1.0000	1.0000
22	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000

			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	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	18.00
100	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	18.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	1	0.881		
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				

Acute Fish Test-48 Hr Survival

Start Date:	6/18/2015	Test ID:	X5777PP	Sample ID:	AR0000752
End Date:	6/20/2015	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/17/2015	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	1.0000	0.8750	1.0000	1.0000	1.0000
32	1.0000	1.0000	1.0000	1.0000	1.0000
45	1.0000	1.0000	1.0000	1.0000	1.0000
56	1.0000	1.0000	1.0000	1.0000	1.0000
75	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000

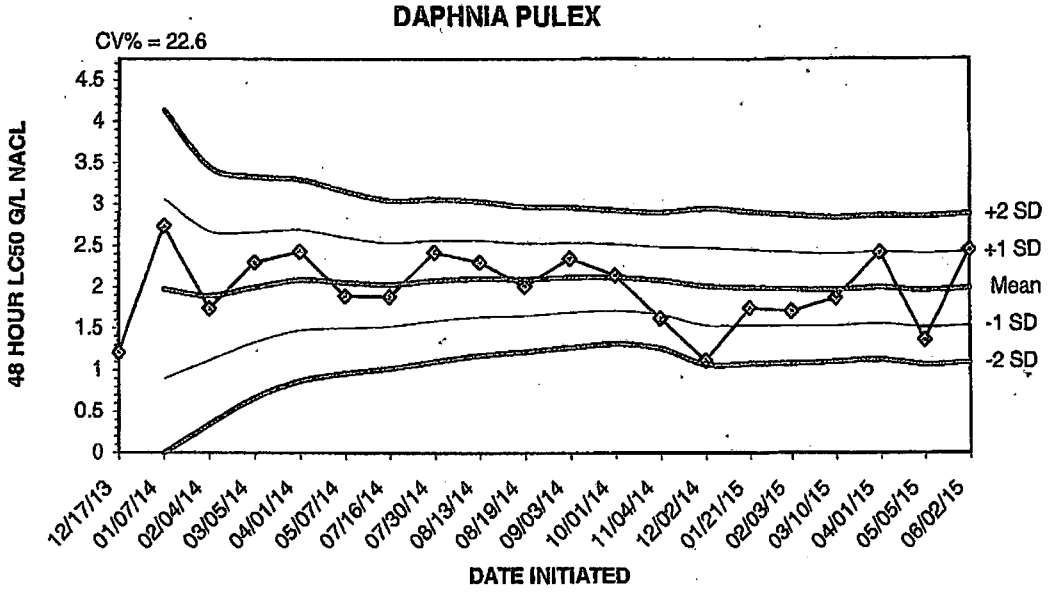
			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
22	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00	16.00
32	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
45	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
56	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
75	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
100	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.38831	0.934	-4.1486	23.0852
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				

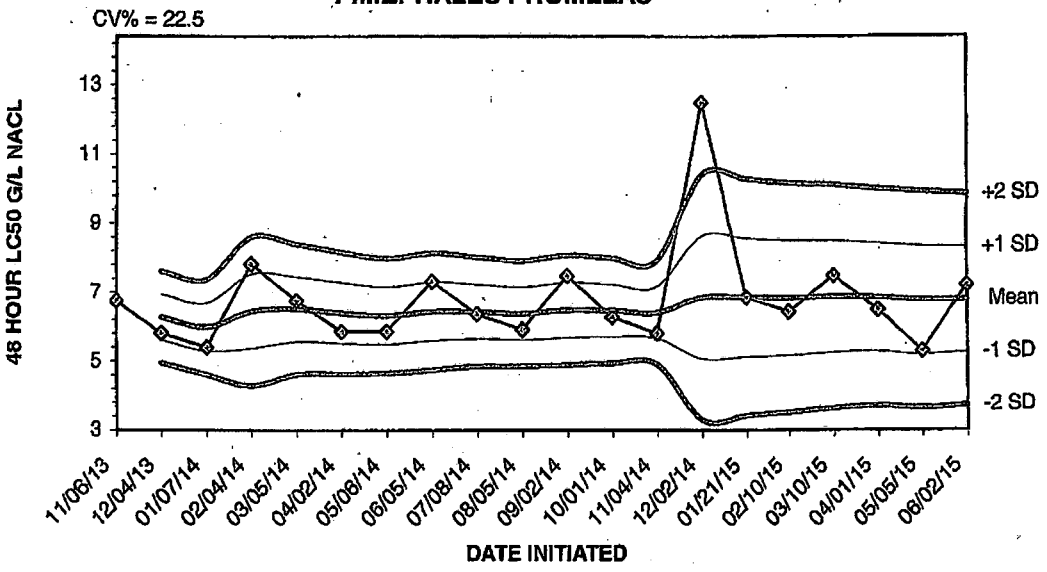
APPENDIX D
QUALITY ASSURANCE CHARTS

2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR DAPHNIA PULEX



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/17/13	1.2100					
01/07/14	2.7400	1.9750	0.8931	0.0000	3.0569	4.1387
02/04/14	1.7400	1.8967	1.1197	0.3428	2.6736	3.4505
03/05/14	2.3000	1.9975	1.3318	0.6662	2.6632	3.3288
04/01/14	2.4300	2.0840	1.4759	0.8679	2.6921	3.3001
05/07/14	1.8900	2.0517	1.5021	0.9525	2.6013	3.1509
07/16/14	1.8800	2.0271	1.5213	1.0154	2.5330	3.0389
07/30/14	2.4200	2.0763	1.5877	1.0992	2.5648	3.0533
08/13/14	2.3000	2.1011	1.6381	1.1751	2.5641	3.0271
08/19/14	2.0100	2.0920	1.6545	1.2170	2.5295	2.9670
09/03/14	2.3500	2.1155	1.6932	1.2709	2.5377	2.9600
10/01/14	2.1400	2.1175	1.7148	1.3121	2.5202	2.9229
11/04/14	1.6200	2.0792	1.6698	1.2603	2.4887	2.8982
12/02/14	1.1200	2.0107	1.5411	1.0716	2.4803	2.9499
01/21/15	1.7500	1.9933	1.5359	1.0784	2.4508	2.9083
02/03/15	1.7100	1.9756	1.5280	1.0804	2.4232	2.8708
03/10/15	1.8700	1.9694	1.5353	1.1011	2.4036	2.8377
04/01/15	2.4200	1.9944	1.5601	1.1257	2.4288	2.8632
05/05/15	1.3600	1.9611	1.5145	1.0680	2.4076	2.8541
06/02/15	2.4500	1.9855	1.5374	1.0892	2.4336	2.8818

2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR PIMEPHALES PROMELAS



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
11/06/13	6.7500					
12/04/13	5.8100	6.2800	5.6153	4.9506	6.9447	7.6094
01/07/14	5.4000	5.9867	5.2945	4.6024	6.6788	7.3709
02/04/14	7.8200	6.4450	5.3681	4.2913	7.5219	8.5987
03/05/14	6.7500	6.5060	5.5635	4.6210	7.4485	8.3910
04/02/14	5.8600	6.3983	5.5150	4.6317	7.2816	8.1649
05/06/14	5.8600	6.3214	5.4898	4.6582	7.1530	7.9847
06/05/14	7.3100	6.4450	5.5995	4.7539	7.2905	8.1361
07/08/14	6.3700	6.4367	5.6453	4.8540	7.2280	8.0193
08/05/14	5.9200	6.3850	5.6212	4.8575	7.1488	7.9125
09/02/14	7.4800	6.4845	5.6883	4.8921	7.2808	8.0770
10/01/14	6.2800	6.4675	5.7060	4.9446	7.2290	7.9904
11/04/14	5.8100	6.4169	5.6654	4.9139	7.1684	7.9200
12/02/14	12.5000	6.8514	5.0725	3.2936	8.6303	10.4092
01/21/15	6.8500	6.8513	5.1371	3.4230	8.5655	10.2797
02/10/15	6.4200	6.8244	5.1648	3.5052	8.4839	10.1435
03/10/15	7.4800	6.8629	5.2482	3.6335	8.4777	10.0924
04/01/15	6.4800	6.8417	5.2726	3.7035	8.4108	9.9799
05/05/15	5.2900	6.7600	5.1941	3.6282	8.3259	9.8918
06/02/15	7.2000	6.7820	5.2547	3.7274	8.3093	9.8366

APPENDIX E
AGENCY FORMS

Acute Forms
Daphnia pulex Survival

Permittee: El Dorado Chemical - Outfall 006
NPDES Permit Number: AR0000752/ AFIN 70-00040
Composite Collected **From: 6/17/15** **To: 6/17/15**
From: **To:**
Test Initiated: 6/18/15
Dilution Water Used: **Receiving Water** **X Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	22.0	100.0				
24-hour	A	100.0	100.0	100.0				
	B	100.0	100.0	100.0				
	C	100.0	100.0	100.0				
	D	100.0	100.0	100.0				
	E	100.0	100.0	100.0				
48-hour	A	100.0	100.0	100.0				
	B	100.0	100.0	100.0				
	C	100.0	100.0	100.0				
	D	100.0	100.0	100.0				
	E	100.0	100.0	100.0				
	Mean	100.0	100.0	100.0				

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 (100.0%) **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:
Method of LC_{50} calculation:
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
Daphnia pulex 48 hour Acute Static Renewal
Chemical Parameters Chart*

Permittee: El Dorado Chemical - Outfall 006
NPDES Number: AR0000752/ AFIN 70-00040
Contact: David Sartain
Analyst: Briggs
Sample Collected **From:** **Date 6/17/15** **Time 1730**
To: **Date 6/17/15** **Time 1930**
Test Begin **Date 6/18/15** **Time 1620**
Test End **Date 6/20/15** **Time 1530**

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	7.6	24.9	25.0	25.2	32.0			56.0			7.3	7.2	7.3
22.0	8.0	8.0	7.6	24.9	25.0	25.2							7.1	7.1	7.3
100.0	7.8	7.6	7.7	24.9	25.0	25.2	20.0			172.0			7.0	6.9	7.0

*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 006
NPDES Permit Number: AR0000752/ AFIN 70-00040
Composite Collected **From: 6/17/15** **To: 6/17/15**
From: **To:**
Test Initiated: 6/18/15
Dilution Water Used: **Receiving Water** **X Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	22.0	32.0	45.0	56.0	75.0	100.0
24-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	B	100.0	87.5	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	D	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	E	100.0	100.0	100.0	100.0	100.0	100.0	100.0
48-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	B	100.0	87.5	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	D	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	E	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Mean	100.0	97.5	100.0	100.0	100.0	100.0	100.0

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 (100.0%) **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:
Method of LC_{50} calculation:
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 006
NPDES Number: AR0000752/ AFIN 70-00040
Contact: David Sartain
Analyst: Briggs
Sample Collected **From:** **Date 6/17/15** **Time 1730**
To: **Date 6/17/15** **Time 1930**
Test Begin **Date 6/18/15** **Time 1645**
Test End **Date 6/20/15** **Time 1550**

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	7.6	24.8	25.2	25.2	32.0			56.0			7.3	7.2	7.2
22.0	8.0	8.0	7.6	24.8	25.2	25.2							7.1	7.1	7.2
32.0	7.9	7.9	7.5	24.8	25.2	25.2							7.1	7.1	7.2
45.0	7.9	7.9	7.7	24.8	25.2	25.2							7.0	7.1	7.2
56.0	7.8	7.7	7.5	24.8	25.2	25.2							7.0	7.1	7.1
75.0	7.8	7.8	7.5	24.8	25.2	25.2							7.0	7.1	7.2
100.0	7.8	7.6	7.4	24.8	25.2	25.2	20.0			172.0			7.0	6.9	7.0

*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

Client: El Dorado Chemical - 006

Project#: X5777

Chain of Custody Documents Checked by: RC 6/22/15
Technician/Date

Raw Data Documents Checked by: RC 6/22/15
Technician/Date

Statistical Analysis Package Checked by: EGB 6/29/15
Quality Manager/Date

Quality Control Data Checked by: EGB 6/10/15
Quality Manager/Date

Report Checked by: EGB 6/30/15
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 G. Boggs, BS — 6/30/15
Quality Manager — **Date**

Report Rev. 3.0

ORIGIN ID:ELDA (870) 863-1400
EDDIE PEARSON
ELDORADO CHEMICAL COMPANY
4500 NORTH WEST AVE

ELDORADO, AR 71730
UNITED STATES US

SHIP DATE: 22JUL15
ACTWGT: 4.00 LB
CAD: 5887030/INET3670

BILL SENDER

TO **ADEQ -WATER ENFORCEMENT BRANCH**
ADEQ -WATER ENFORCEMENT BRANCH
5301 NORTHSHORE DRIVE

NORTH LITTLE ROCK AR 72118
(501) 682-0744 REF:
INV:
PO: DEPT:

539J31A15/3100

FedEx Express

THU - 23 JUL 10:30A
PRIORITY OVERNIGHT

TRK# 0201 **7741 1086 5221**

X2 LITA

72118
AR-US **LIT**