



November 21, 2014

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 October 31, 2014.

Enclosed you will find the Discharge Monitoring Reports ending October 31, 2014. The DMR's for Outfall 010-A were entered on the blank DMR forms provided by Amy Schluterman, ADEQ Water Enforcement.

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

Sincerely,


A handwritten signature in black ink, appearing to read "Kelly Olivier".

Kelly Olivier
EHS Manager

Enclosures

NON-COMPLIANCE REPORT

Facility Name: EI Dorado Chemical Company
Permit Number: AR0000752 **AFIN:** 70-00040
Month / Year: Oct-14

Type of Violation	Permit Limit	Date of Violation	Cause of Violation	Corrective Action or Other Narrative
Outfall 010 / TSS (1047.19 lb / day)	750.6 Daily Max	10/11/2014	Unknown	Seasonal Algae bloom. All parameters are back in permitted limits.
Outfall 010 / pH (5.9 su / minimum)	6 SU / Minimum	10/9/2014	Unknown	Seasonal Algae bloom. All parameters are back in permitted limits.
Outfall 010 / pH (9.1 su / maximum)	9 SU / Maximum	10/20/2014	Unknown	Seasonal Algae bloom. All parameters are back in permitted limits.
Outfall 003 / pH (5.150 su / minimum)	6 SU / Minimum	10/28/2014	Unknown	Seasonal Algae bloom. All parameters are back in permitted limits.
Outfall 006 / Zinc Monthly Average (415 ug/L)	115.62 ug/L Monthly Average	10/28/2014	Unknown	EDCC has land applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / Zinc Daily Max (640 ug/L)	231.99 ug/L Daily Max	10/28/2014	Unknown	EDCC has land applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / Lead Monthly Average (33.35 ug/L)	3.8 ug/L Monthly Average	10/28/2014	Unknown	EDCC has land applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / Lead Daily Max (61.0 ug/L)	7.62 ug/L Daily Max.	10/28/2014	Unknown	EDCC has land applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / TDS Daily Max (530 mg/L)	436.5 mg/L Daily Max	10/28/2014	Unknown	EDCC has land applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / TDS Monthly Average (430 mg/L)	291 mg/L Monthly Average	10/28/2014	Unknown	EDCC has land applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 007 / pH Minimum (4.29 su)	6 su/ Minimum	10/28/2014	Unknown	EDCC has land applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 007 / Lead Monthly Average (10.20 ug/L)	3.8 ug/L Monthly Average	10/28/2014	Unknown	EDCC has land applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 007 / Lead Daily Maximum (13.00 ug/L)	7.62 ug/L Daily Max.	10/28/2014	Unknown	EDCC has land applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 007 / Zinc Monthly Average (200 ug/L)	115.62 ug/L Monthly Average	10/28/2014	Unknown	EDCC has land applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007 / TDS Monthly Average (1000 mg/L)	291 mg/L Monthly Average	9/2/2014	Unknown	EDCC has land 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.)				 11-21-14 Signature / Date



Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

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1-800-259-1248
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 X5574

**Test Dates: October 14 - 16, 2014
Report Date: November 19, 2014**

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

Bio-Analytical Laboratories (BAL)
ADEQ#88-0630
Project X5574

Bio-Analytical Laboratories' Executive Summary

Permittee: El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731

Project #: X5574

Outfall: Outfall 007 (contaminated storm water)

Permit #: AR0000752/ AFIN #70-00040

Contact: Mr. David Sartain

Test Dates: October 14 - 16, 2014

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 - 6.06%.

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 33 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.

BAL
ADEQ #88-0630
Project X5574

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BAL
ADEQ #88-0630
Project X5574

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 dilution water hardness and were approximately eleven days old at 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.

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ADEQ #88-0630
Project X5574

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 tests were 100.0, 75.0, 56.0, 50.0, 45.0, and 32.0 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 007 was collected by El Dorado Chemical personnel on October 14, 2014. Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was 1.4⁰ 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±1⁰ 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 4.1 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±1⁰ 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 LC₅₀ values were obtained by approved EPA methods of analysis, using the ToxCalc statistical program.

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Project X5574

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 for survival for both tests was 100.0 percent (p=.05).

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

Percent Effluent	Percent Survival	
	<i>Pimephales promelas</i>	<i>Daphnia pulex</i>
Control	100.0	100.0
32.0	92.5	90.0
45.0	100.0	97.5
50.0	95.0	87.5
56.0	95.0	92.5
75.0	97.5	92.5
100.0	97.5	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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ADEQ #88-0630
Project X5574

4.0 Conclusions

The sample of Outfall 007 collected from El Dorado Chemical Company, El Dorado, Arkansas, on October 14, 2014, was not found to be lethally toxic to the fathead minnow test organisms and the *Daphnia pulex* in the 100.0 percent critical dilution after 48 hours of exposure (p=.05).

BAL
ADEQ #88-0630
Project X5574

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



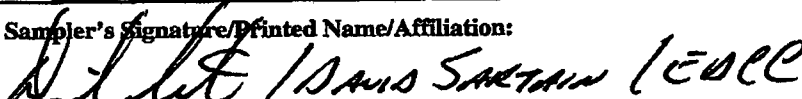

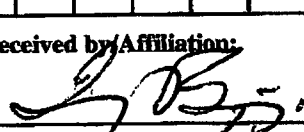
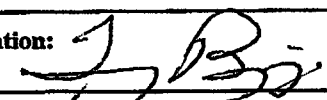
Bio-Analytical Laboratories

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

Laboratory Use Only:

Company: El Dorado Chemical Company		Phone: (870) 863-1484		Analysis:				Project Number: X5574	
Address: 4500 Norwest Ave., El Dorado, AR 71731		Fax: (870) 863-7499		Chronic Ceriodaphnia Chronic minnow Acute minnow (fresh/marine) Acute Daphnia species Acute Mysid Acute Ceriodaphnia Fecal Coliform				Temperature upon arrival: 7.4 Thermometer #: 29 Tech: RC Date: 10/14/14 Lab Control Number: Preservative: (below)	
Permit #: AR0000752/AFIN 70-00040		Purchase Order:							
Sampler's Signature/Printed Name/Affiliation:  DAVID SERTAIN / EDCO									
Date Start Date End	Time Start Time End	C	G	# and type of container	Sample Identification				
10-13-14 10-14-14	1000 1000	X		6 half gallon	007		C9844	ICE	
Relinquished by/Affiliation:  Date: 10/14/14 Time: 1020				Received by/Affiliation:  Date: 10/14/14 Time: 1020					
Relinquished by/Affiliation:				Received by/Affiliation:					
Relinquished by/Affiliation:  Date: 10/14/14 Time: 1300				Received by/Affiliation: R. Callahan Date: 10/14/14 Time: 1300					
Method of Shipment: <input type="checkbox"/> Lab <input type="checkbox"/> Bus <input type="checkbox"/> Fed Ex <input type="checkbox"/> DHL <input type="checkbox"/> UPS <input type="checkbox"/> Client <input type="checkbox"/> Other Tracking # _____									
Comments:									
COC Rev. 3.0									

APPENDIX B
RAW DATA SHEETS

BIO-ANALYTICAL LABORATORIES
ACUTE TOXICITY TEST WATER QUALITY DATA

X5574
Page 12 of 33

Project# X5574

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES# AR0000752 Outfall 007

Technicians: EGB/AH/RC

Test initiated: Date 10/14/14 Time 1715

Test terminated: Date 10/16/14 Time 1635

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
C9844	10.8 130.8%	Y/10/8.3 100%	<0.01	NO	0.5	N/A	304.0	8.0	EGB
↓	11.1	Y/11/8.8	↓	↓	↓	↓	↓	↓	↓

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	3661	N/A	N/A	N/A	N/A	7.4	44.0	32.0	EGB

Test Species Information

Test Species Info.	Species: <u>D. pulex</u> ID#: <u>310-311-K11</u>	Species: <u>P. promelas</u> ID#: <u>BAL/110314</u>	Species: ID#:	Species: ID#:
Age	<u><24 hrs</u>	<u>11 days</u>	<u>300ml</u>	
Test Container Size	<u>30ml</u>	<u>300ml</u>	<u>250ml</u>	<u>EGB 10/14/14</u>
Test volume	<u>25ml</u>	<u>200ml</u>	<u>250ml</u>	
Feeding: Type	<u>Algae/YCT</u>	<u>Artemia</u>		
Amount	<u>acclimation</u>	<u>acclimation</u>		
Aeration?	<u>N/A</u>	<u>N/A</u>		
Amount	<u>1</u>	<u>1</u>		
Condition of survivors	<u>Good RC 10/16/14</u>	<u>Good RC 10/16/14</u>		

Comments: pH = 5.8 before aeration; 6.0 after aeration.
EGB 10/14/14

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

Project# X5574

Test started: Date 10/14/14 Time 1515 RC 10/14/14

Client EDCC

Test ended: Date 10/16/14 Time 1525

Sample Description 007

Test Species D. pulex ID# I10, Jn-Kn

Technician: 0hour RC 24hour RC 48hour RC 72hour _____ 96hour _____

Time: 0hour 1715 24hour 1530 48hour 1525 72hour _____ 96hour _____

Temperature (°C): 0hour 24.7 24hour 25.0 48hour 24.9 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
0	A	Na	8	8	8			8.3	7.8/8.2	8.1			7.2	7.4/7.2	7.4			177.9	180/178	181		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
32.0	A		8	8	8			8.3	7.9/8.3	8.1			6.9	7.3/7.2	7.2			318	332/305	338		
	B		8	8	6																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			E18 RC/AS RC					E18 RC/AS RC					E18 RC/AS RC									

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

Project# X5574
 Client EDCC

Test started: Date 10/14/14 Time 1715
 Test ended: Date 10/16/14 Time 1525
 Test Species D. pulex ID# BAL/T10, J11-K11

Sample Description 007
 Technician: 0hour RC 24hour RC 48hour RC 72hour _____ 96hour _____
 Time: 0hour 1715 24hour 1530 48hour 1525 72hour _____ 96hour _____
 Temperature (°C): 0hour 24.7 24hour 23.0 48hour 24.9 72hour _____ 96hour _____

Test Dilution %	Replicate	Test Salinity Na	# 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	8	8			8.3	7.7/8.4	8.0			6.8	7.3/6.8	7.2			362	312/35	395		
	B		8	8	8																	
	C		8	7	7																	
	D		8	8	8																	
	E		8	8	8																	
50.0	A		8	8	5			8.3	7.7/8.4	8.0			6.7	7.2/6.8	7.1			385	345/35	410		
	B		8	7	7																	
	C		8	8	8																	
	D		8	8	7																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								EB RC/EB RC					EB RC/EB RC					EB RC/EB RC				

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

Project# X5574
 Client EDCC

Test started: Date 10/14/14 Time 1715
 Test ended: Date 10/16/14 Time 1525
 Test Species Doulex ID# BAL/I10, J11-K11

Sample Description 007
 Technician: 0hour RC 24hour RC 48hour RC 72hour _____ 96hour _____
 Time: 0hour 1715 24hour 1530 48hour 1525 72hour _____ 96hour _____
 Temperature (°C): 0hour 24.7 24hour 25.0 48hour 24.9 72hour _____ 96hour _____

Test Dilution %	Replicate	Test Salinity Na	# 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
56.0	A		8	8	8			8.0	8.0			6.7	7.3	7.1			415	423	440			
	B		8	8	8																	
	C		8	8	6																	
	D		8	8	8																	
	E		8	7	7																	
75.0	A		8	8	8			8.1	8.1			6.6	7.2	7.0			457	470	509			
	B		8	8	6																	
	C		8	8	7																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal							ESP RC / ASD RC					ESP RC / ASD RC					ESP RC / ASD RC					

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

Project# X5574

Test started: Date 10/14/14 Time 1715

Client EDCC

Test ended: Date 10/16/14 Time 1525

Sample Description 007

Test Species D. pulex ID# BAL/I10, J11-k11

Technician: Ohour RC 24hour RC 48hour RC 72hour _____ 96hour _____

Time: Ohour 1715 24hour 1530 48hour 1525 72hour _____ 96hour _____

Temperature (°C): Ohour 24.7 24hour 25.0 48hour 24.9 72hour _____ 96hour _____

Test Dilution %	Replicate	Test Salinity Na	# 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		
			100.0	A		8	8	8			8.2	8.4	8.2			6.3	6.4	6.7			563	566	600	
	B		8	8	8																			
	C		8	8	8																			
	D		8	8	8																			
	E		8	8	8																			
	D																							
	B																							
	C																							
	D																							
	F																							
Chemistry Tech prerenewal/postrenewal																								

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

Project# X5574

Test started: Date 10/14/14 Time 1835

Client EDCC

Test ended: Date 10/16/14 Time 1635

Sample Description 007

Test Species P. promelas ID# BAL/10314

Technician: 0hour RC 24hour RC 48hour RC 72hour _____ 96hour _____

Time: 0hour 1835 24hour 1629 48hour 1635 72hour _____ 96hour _____

Temperature (°C): 0hour 24.7 24hour 25.1 48hour 24.4 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						
0	A		8	8	8			8.3	7.4	8.2	7.5			7.2	7.0	7.2			1769	1851	1831	1816						
	B		8	8	8																							
	C		8	8	8																							
	D		8	8	8																							
	E		8	8	8																							
32.0	A		8	8	8			8.3	7.3	8.3	7.5			6.9	6.9	7.0			318	327	305	330						
	B		8	8	8																							
	C		8	8	8																							
	D		8	8	8																							
	E		8	8	7																							
Chemistry Tech prerenewal/postrenewal			EOP RC EOP RC					EOP RC EOP RC					EOP RC EOP RC															

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

Project# X5574

Test started: Date 10/14/14 Time 1835

Client EDCC

Test ended: Date 10/16/14 Time 1635

Sample Description 007

Test Species P. promelas ID# BAL/10314

Technician: Ohour RC 24hour RC 48hour RC 72hour _____ 96hour _____
 Time: Ohour 1835 24hour 1635 48hour 1635 72hour _____ 96hour _____
 Temperature (°C): Ohour 24.7 24hour 25.1 48hour 24.9 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
45.0	A	Na	8	8	8			8.3	7.3	7.5			6.8	6.8	6.9			362	361	380		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
50.0	A		8	8	8			8.3	7.4	7.5			6.7	6.8	6.9			388	393	400		
	B		8	8	8																	
	C		8	7	7																	
	D		8	7	7																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			EJB RC/EDRC					EJB RC/EDRC					EJB RC/EDRC									

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

Project# X5574

Test started: Date 10/14/14 Time 1835

Client EDCC

Test ended: Date 10/16/14 Time 1635

Sample Description 007
 Technician: Ohour RC 24hour RC 48hour RC 72hour _____ 96hour _____
 Time: Ohour 1835 24hour 1635 48hour 1635 72hour _____ 96hour _____
 Temperature (°C): Ohour 24.7 24hour 25.1 48hour 24.9 72hour _____ 96hour _____

Test Species P. promelas ID# BAL/10314

Test Dilution %	Replicate	Test Salinity Na	# Live Organisms					Dissolved Oxygen					pH				Conductivity			
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96			
			56.0	A		8	8	8		8.2	7.3	7.4		6.7	6.8	6.9		415	410	431
	B		8	8	8															
	C		8	8	8															
	D		8	8	8															
	E		8	8	8															
75.0	A		8	8	8		8.2	7.3	7.5		6.6	6.7	6.8		415	410	304			
	B		8	8	8															
	C		8	7	7															
	D		8	8	8															
	E		8	8	8															
Chemistry Tech prerenewal/postrenewal							ELB	RC	ELB	RC		ELB	RC	ELB	RC		ELB	RC	ELB	RC

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

Project# X5574

Test started: Date 10/14/14 Time 1835

Client EDCC

Test ended: Date 10/16/14 Time 1635

Sample Description 007

Test Species P. promelas ID# BAL/10314

Technician: Ohour RC 24hour RC 48hour RC 72hour _____ 96hour _____

Time: Ohour 1835 24hour 1635 48hour 1635 72hour _____ 96hour _____

Temperature (°C): Ohour 24.7 24hour 25.1 48hour 24.9 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	
100.0	A	NA	8	8	8			8.2	8.4	7.3			6.3	6.6	6.9			583	564	580	600		
	B		8	8	8																		
	C		8	7	7																		
	D		8	8	8																		
	E		8	8	8																		
	F																						
	G																						
	H																						
	I																						
	J																						
	K																						
	L																						
	M																						
	N																						
	O																						
	P																						
	Q																						
	R																						
	S																						
	T																						
	U																						
	V																						
	W																						
	X																						
	Y																						
	Z																						

APPENDIX C
STATISTICAL ANALYSES

Daphnid Acute Test-48 Hr Survival

X5574

Start Date: 10/14/2014 Test ID: X5574DP Sample ID: AR0000752-007 Page 22 of 33
 End Date: 10/16/2014 Lab ID: 880630 Sample Type: EFF2-Industrial
 Sample Date: 10/13/2014 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
32	1.0000	0.7500	1.0000	0.7500	1.0000
45	1.0000	1.0000	0.8750	1.0000	1.0000
50	0.6250	0.8750	1.0000	0.8750	1.0000
56	1.0000	1.0000	0.7500	1.0000	0.8750
75	1.0000	0.7500	0.8750	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root				N	Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%			
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
32	0.9000	0.9000	1.2547	1.0472	1.3931	15.099	5	22.50 16.00	
45	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00 16.00	
50	0.8750	0.8750	1.2234	0.9117	1.3931	16.097	5	20.00 16.00	
56	0.9250	0.9250	1.2872	1.0472	1.3931	12.116	5	22.50 16.00	
75	0.9250	0.9250	1.2872	1.0472	1.3931	12.116	5	22.50 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)	0.89129	0.934	-0.9039	0.28842
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				

ECB
11/18/14

Acute Fish Test-48 Hr Survival

X5574

Start Date: 10/14/2014 Test ID: X5574PP Sample ID: AR0000752 Page 23 of 33
 End Date: 10/16/2014 Lab ID: 880630 Sample Type: EFF2-Industrial
 Sample Date: 10/13/2014 Protocol: EPAAW02-EPA/821/R-02-01 Test Species: PP-Pimephales promelas

Comments:

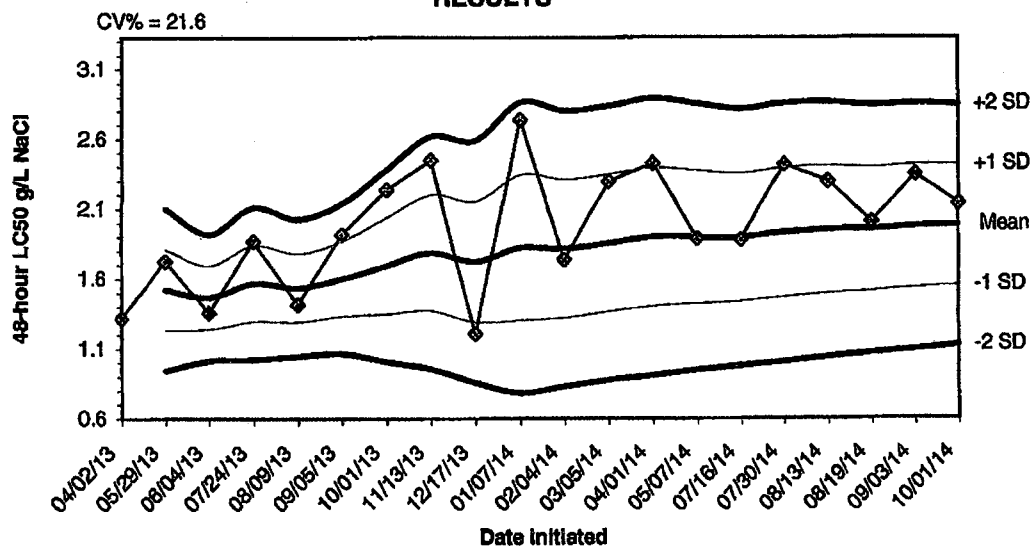
Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000
32	1.0000	0.7500	1.0000	1.0000	0.8750
45	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	0.8750	0.8750	1.0000
56	1.0000	1.0000	0.7500	1.0000	1.0000
75	1.0000	1.0000	0.8750	1.0000	1.0000
100	1.0000	1.0000	0.8750	1.0000	1.0000

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root				N	Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%			
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
32	0.9250	0.9250	1.2872	1.0472	1.3931	12.116	5	22.50 16.00	
45	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50 16.00	
50	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50 16.00	
56	0.9500	0.9500	1.3239	1.0472	1.3931	11.684	5	25.00 16.00	
75	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00 16.00	
100	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00 16.00	

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.82465	0.934	-1.5259	2.12384
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				

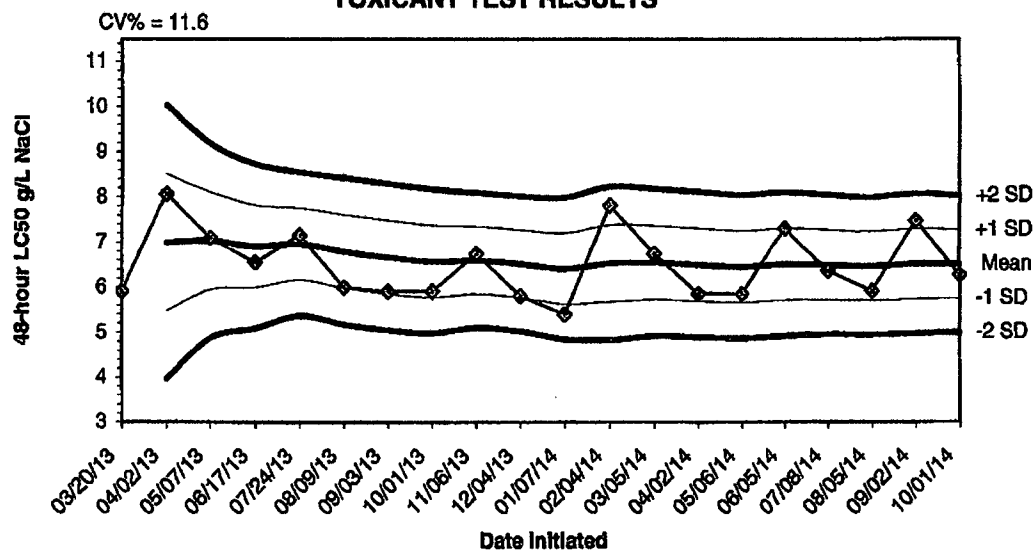
APPENDIX D
QUALITY ASSURANCE CHARTS

2014 DAPHNIA PULEX 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
04/02/13	1.3200					
05/29/13	1.7300	1.5250	1.2351	0.9452	1.8149	2.1048
06/04/13	1.3600	1.4700	1.2439	1.0179	1.6961	1.9221
07/24/13	1.8700	1.5700	1.2978	1.0257	1.8422	2.1143
08/09/13	1.4200	1.5400	1.2949	1.0499	1.7851	2.0301
09/05/13	1.9200	1.6033	1.3348	1.0663	1.8719	2.1404
10/01/13	2.2400	1.6943	1.3508	1.0073	2.0378	2.3813
11/13/13	2.4500	1.7888	1.3734	0.9580	2.2041	2.6195
12/17/13	1.2100	1.7244	1.2906	0.8569	2.1582	2.5920
01/07/14	2.7400	1.8260	1.3060	0.7860	2.3460	2.8660
02/04/14	1.7400	1.8182	1.3242	0.8302	2.3122	2.8062
03/05/14	2.3000	1.8583	1.3672	0.8761	2.3495	2.8406
04/01/14	2.4300	1.9023	1.4061	0.9099	2.3985	2.8948
05/07/14	1.8900	1.9014	1.4247	0.9479	2.3782	2.8550
07/16/14	1.8800	1.9000	1.4405	0.9811	2.3595	2.8189
07/30/14	2.4200	1.9325	1.4700	1.0075	2.3950	2.8575
08/13/14	2.3000	1.9541	1.4975	1.0409	2.4107	2.8674
08/19/14	2.0100	1.9572	1.5140	1.0709	2.4004	2.8436
09/03/14	2.3500	1.9779	1.5379	1.0979	2.4179	2.8579
10/01/14	2.1400	1.9860	1.5562	1.1264	2.4158	2.8456

**2014 PIMEPHALES PROMELAS 48 HOUR ACUTE REFERENCE
TOXICANT TEST RESULTS**



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
03/20/13	5.9200					
04/02/13	8.0700	6.9950	5.4747	3.9544	8.5153	10.0356
05/07/13	7.0900	7.0267	5.9503	4.8739	8.1031	9.1795
06/17/13	6.5600	6.9100	6.0007	5.0914	7.8193	8.7286
07/24/13	7.1600	6.9600	6.1646	5.3692	7.7554	8.5508
08/09/13	6.0000	6.8000	5.9878	5.1755	7.6122	8.4245
09/03/13	5.9200	6.6743	5.8616	5.0490	7.4869	8.2996
10/01/13	5.9200	6.5800	5.7818	4.9835	7.3782	8.1765
11/06/13	6.7500	6.5989	5.8501	5.1012	7.3477	8.0965
12/04/13	5.8100	6.5200	5.7712	5.0224	7.2688	8.0176
01/07/14	5.4000	6.4182	5.6316	4.8451	7.2047	7.9913
02/04/14	7.8200	6.5350	5.6829	4.8307	7.3871	8.2393
03/05/14	6.7500	6.5515	5.7335	4.9154	7.3696	8.1876
04/02/14	5.8600	6.5021	5.6948	4.8874	7.3095	8.1169
05/06/14	5.8600	6.4593	5.6638	4.8684	7.2548	8.0503
06/05/14	7.3100	6.5125	5.7151	4.9177	7.3099	8.1073
07/08/14	6.3700	6.5041	5.7313	4.9584	7.2770	8.0498
08/05/14	5.9200	6.4717	5.7094	4.9470	7.2340	7.9963
09/02/14	7.4800	6.5247	5.7486	4.9725	7.3008	8.0770
10/01/14	6.2800	6.5125	5.7551	4.9977	7.2699	8.0273

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: 10/13/14 To: 10/14/14
From: To:

Test Initiated: 10/14/14

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
24-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	B	100.0	100.0	100.0	87.5	100.0	100.0	100.0
	C	100.0	100.0	87.5	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	87.5	100.0	100.0
48-hour	A	100.0	100.0	100.0	62.5	100.0	100.0	100.0
	B	100.0	75.0	100.0	87.5	100.0	75.0	100.0
	C	100.0	100.0	87.5	100.0	75.0	87.5	100.0
	D	100.0	100.0	100.0	87.5	100.0	100.0	100.0
	E	100.0	100.0	100.0	100.0	87.5	100.0	100.0
	Mean	100.0	90.0	97.5	87.5	92.5	92.5	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.) **1/2 LOW FLOW OR 2X CRITICAL DILUTION (N/A%)** YES NO

2. Enter percent effluent corresponding to the LC₅₀ below:

LC₅₀ = N/A % effluent

95 % confidence limits: N/A

Method of LC₅₀ calculation: N/A

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 007
 NPDES Number: AR0000752/ AFIN 70-00040
 Contact: David Sartain
 Analyst: Briggs, Callahan

Sample Collected From: Date 10/13/14 Time 1000
 To: Date 10/14/14 Time 1000
 Test Begin Date 9/3/14 Time 1715
 Test End Date 9/5/14 Time 1525

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	8.3	8.2	8.1	24.7	25.0	24.9	32.0				44.0			7.2	7.2	7.4
32.0	8.3	8.3	8.1	24.7	25.0	24.9								6.9	6.9	7.2
45.0	8.3	8.4	8.0	24.7	25.0	24.9								6.8	6.8	7.2
50.0	8.3	8.4	8.0	24.7	25.0	24.9								6.7	6.8	7.1
56.0	8.2	8.3	8.0	24.7	25.0	24.9								6.7	6.7	7.1
75.0	8.2	8.4	8.1	24.7	25.0	24.9								6.6	6.7	7.0
100.0	8.2	8.4	8.2	24.7	25.0	24.9	8.0				204.0			6.3	6.4	6.7

*This Form is to be submitted with each DMR.
 Alkalinity and hardness to be reported as mg/l CaCO₃

Acute Forms
Pimephales promelas (Fathead Minnow) Survival

Permittee: El Dorado Chemical - Outfall 007
NPDES Permit Number: AR0000752/ AFIN 70-00040

Composite Collected From: 10/13/14 To: 10/14/14
From: To:

Test Initiated: 10/14/14

Dilution Water Used: Receiving Water Reconstituted Water

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	32.0	45.0	50.0	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	100.0	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	87.5	100.0	87.5	87.5
	D	100.0	100.0	100.0	87.5	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	100.0	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	87.5	100.0	87.5	87.5
	D	100.0	100.0	100.0	87.5	100.0	100.0	100.0
	E	100.0	87.5	100.0	100.0	100.0	100.0	100.0
	Mean	100.0	92.5	100.0	95.0	95.0	97.5	97.5

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%)** YES NO
b.) **1/2 LOW FLOW OR 2X CRITICAL DILUTION (N/A%)** YES NO

2. Enter percent effluent corresponding to the LC₅₀ below:

LC₅₀ = N/A % effluent

95 % confidence limits: N/A

Method of LC₅₀ calculation: N/A

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/ AFIN 70-00040
 Contact: David Sartain
 Analyst: Callahan

Sample Collected From: Date 10/13/14 Time 1000
 To: Date 10/14/14 Time 1000
 Test Begin Date 9/3/14 Time 1835
 Test End Date 9/5/14 Time 1635

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	8.3	8.2	7.5	24.7	25.0	24.9	32.0				44.0			7.2	7.2	7.2
32.0	8.3	8.3	7.5	24.7	25.0	24.9								6.9	6.9	7.0
45.0	8.3	8.4	7.5	24.7	25.0	24.9								6.8	6.8	6.9
50.0	8.3	8.4	7.5	24.7	25.0	24.9								6.7	6.8	6.9
56.0	8.2	8.3	7.4	24.7	25.0	24.9								6.7	6.7	6.9
75.0	8.2	8.4	7.5	24.7	25.0	24.9								6.6	6.7	6.8
100.0	8.2	8.4	7.3	24.7	25.0	24.9	8.0				204.0			6.3	6.4	6.5

*This Form is to be submitted with each DMR.
 Alkalinity and hardness to be reported as mg/l CaCO₃

APPENDIX F
REPORT QUALITY ASSURANCE FORM



Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

(318) 745-2772
1-800-258-1246
Fax: (318) 745-2773

REPORT QUALITY ASSURANCE FORM

Client: Eldorado Chemical 007

Project#: X5574

Chain of Custody Documents Checked by: EGB 11/19/14
Technician/Date

Raw Data Documents Checked by: EGB 11/19/14
Technician/Date

Statistical Analysis Package Checked by: EGB 11/18/14
Quality Manager/Date

Quality Control Data Checked by: EGB 11/1/14
Quality Manager/Date

Report Checked by: EGB 11/19/14
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.

Cynthia L. Bragg, BS
Quality Manager

11/19/14
Date

No part of this work may be altered in any form or by any means without written permission from Bio-Analytical Laboratories.

Bio-Analytical Laboratories (BAL)
ADEQ#88-0630
Project X5573

Bio-Analytical Laboratories' Executive Summary

Permittee: El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731

Project #: X5573

Outfall: Outfall 006 (contaminated storm water)

Permit #: AR0000752/ AFIN #70-00040

Contact: Mr. David Sartain

Test Dates: October 14 - 16, 2014

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 - 7.62%.

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 - 24.48%.

This report contains a total of 33 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

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**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 X5573

**Test Dates: October 14 - 16, 2014
Report Date: November 19, 2014**

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 X5573

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BAL
ADEQ #88-0630
Project X5573

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 obtained from Environmental Testing and Consulting, Superior, Wisconsin (ECT) and were approximately 10 days old at test initiation. The minnows were acclimated to test temperature and dilution water hardness prior to testing. The *Daphnia pulex* test organisms were 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 X5573

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 acute tests were 100.0, 75.0, 56.0, 45.0, 32.0 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 October 14, 2014. 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° 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 $25 \pm 1^{\circ}$ 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 $25 \pm 1^{\circ}$ 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 LC₅₀ values were obtained by approved EPA methods of analysis, using the ToxCalc statistical program.

BAL
ADEQ #88-0630
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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 values for both tests was 100.0 percent effluent ($p=.05$). The 48-hour LC_{50} values could not be calculated 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	
	<i>Pimephales promelas</i>	<i>Daphnia pulex</i>
Control	100.0	97.5
22.0	95.0	95.0
32.0	100.0	92.5
45.0	95.0	95.0
56.0	100.0	95.0
75.0	100.0	92.5
100.0	95.0	80.0

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 X5573

4.0 Conclusions

The sample of Outfall 006 collected from El Dorado Chemical Company, El Dorado, Arkansas, on October 14, 2014, 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 X5573

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



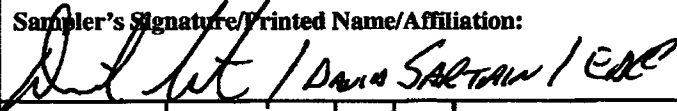

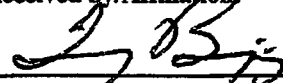
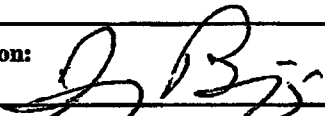

Bio-Analytical Laboratories

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1-800-268-1348
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NELAP/LELAP 01975, ADEQ 88-0630, TCEQ T104704278

Laboratory Use Only:

Company: El Dorado Chemical Company				Phone: (870) 863-1484				Analysis:				Project Number: X5573	
Address: 4500 Norwest Ave., El Dorado, AR 71731				Fax: (870) 863-7499				Chronic Ceriodaphnia Chronic minnow Acute minnow/fresh/marine) Acute Daphnia species Acute Mysid Acute Ceriodaphnia Fecal Coliform	Temperature upon arrival: 0.7 Thermometer #: 29 Tech: RC Date: 10/14/14	Temp. upon arrival: 0.7 Preservative: (below)	Lab Control Number: C9843	ICE	
Permit #: AR0000752/AFIN 70-00040				Purchase Order:									
Sampler's Signature/Printed Name/Affiliation:  Dana Sartain / EDC													
Date Start	Time Start	C	G	# and type of container	Sample Identification								
10-17-14	1000			6 half gallons	006				X	X			
10-14-14	1000	X											
Relinquished by/Affiliation:  Dana Sartain / EDC				Date:	Time:	Received by/Affiliation:  J. B. Jones				Date:	Time:		
Relinquished by/Affiliation:  J. B. Jones				Date:	Time:	Received by/Affiliation:  R. Collins				Date:	Time:		
Method of Shipment: <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Bus <input type="checkbox"/> Fed Ex <input type="checkbox"/> DHL <input type="checkbox"/> UPS <input type="checkbox"/> Client <input type="checkbox"/> Other Tracking # _____													
Comments:													
COC Rev. 3.0													

APPENDIX B
RAW DATA SHEETS

BIO-ANALYTICAL LABORATORIES
ACUTE TOXICITY TEST WATER QUALITY DATA

Project# X5573

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES# AR0000752 Outfall 006
EGB 10/14/14

Technicians: EGB/AH/RC

Test initiated: Date 10/14/14 Time 1630

Test terminated: Date 10/16/14 Time 1605

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
05843	10.4	Y 10/14/14	2.0	NO	3.0	N/A	100.0	24.0	EGB
	↓	↓	↓	↓	↓	↓	↓	↓	EGB

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	3461	N/A	N/A	N/A	N/A	7.4	44.0	32.0	EGB

Test Species Information

Test Species Info.	Species: <u>D. pulex</u> ID#: <u>EMBAUIN-1</u>	Species: <u>P. promelas</u> ID#: <u>ECT/797</u>	Species: ID#:	Species: ID#:
Age	24 hrs	10 days		
Test Container Size	30 ml	300 ml		
Test volume	25 ml	200 ml → 250 ml		EGB 10/14
Feeding: Type	Algae/NCT	Artemia		
Amount	acclimation	acclimation		
Aeration?	N/A	N/A		
Amount	↓	↓		
Condition of survivors	Good RC 10/16/14	Good RC 10/16/14		

Comments:

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

Project# X5573

Test started: Date 10/14/14 Time 1030

Client EDCC

Test ended: Date 10/16/14 Time 1510

Sample Description 006

Test Species D. pulex ID# BAL II-311

Technician: Ohour R 24hour RC 48hour RC 72hour _____ 96hour _____

Time: Ohour 1636 24hour 1505 48hour 1510 72hour _____ 96hour _____

Temperature (°C): Ohour 24.7 24hour 25.0 48hour 24.9 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			8.3	7.9 8.3	8.2			7.3	7.4 7.1	7.4			175.7	200 174	200					
	B		8	8	8																				
	C		8	8	8																				
	D		8	8	8																				
	E		8	7	7																				
22.0	D		8	8	8			8.2	7.8 8.4	8.0			7.2	7.2 7.1	7.1			252	268 250	274					
	B		8	8	8																				
	C		8	8	8																				
	D		8	8	6																				
	E		8	8	8																				
Chemistry Tech prerenewal/postrenewal			EOP RC EOP RC					EOP RC EOP RC					EOP RC EOP RC												

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

Project# X5573
 Client EDCC

Test started: Date 10/14/14 Time 1630
 Test ended: Date 10/16/14 Time 1510

Sample Description 006
 Technician: RC 24hour RC 48hour RC 72hour _____ 96hour _____
 Time: 1630 24hour 1505 48hour 1510 72hour _____ 96hour _____
 Temperature (°C): 24.7 24hour 25.0 48hour 24.9 72hour _____ 96hour _____

Test Species D. pulex ID# BAL/In-J11

Test Dilution %	Replicate	Test Salinity Na	# 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
			Chemistry Tech prerenewal/postrenewal																			
32.0	A		8	8	7			8.2	7.7/8.4	7.9			7.0	7.2/7.1	7.1			283	298/276	291		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	6																	
45.0	A		8	8	8			8.2	7.8/8.5	8.0			6.9	7.1/7.0	7.1			325	332/321	340		
	B		8	8	8																	
	C		8	6	6																	
	D		8	8	8																	
	E		8	8	8																	
			ELB RC / ELB RC					ELB RC / ELB RC					ELB RC / ELB RC									

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

Project# X5573

Test started: Date 10/14/14 Time 1630

Client EDCC

Test ended: Date 10/16/14 Time 1510

Sample Description 006

Test Species D. pulex ID# BAL II - J11

Technician: 0hour RC 24hour RC 48hour RC 72hour _____ 96hour _____
 Time: 0hour 1630 24hour 1505 48hour 1510 72hour _____ 96hour _____
 Temperature (°C): 0hour 24.7 24hour 25.0 48hour 24.9 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	
56.0	A	Na	8	8	8			8.2	7.7 8.3	8.0			6.9	7.0 7.0	7.0			362	364 361	379			
	B		8	8	8																		
	C		8	8	8																		
	D		8	8	8																		
	E		8	6	6																		
75.0	A		8	8	5			8.2	7.9 8.5	8.0			6.9	7.0 6.9	6.9			428	421 423	442			
	B		8	8	8																		
	C		8	8	8																		
	D		8	8	8																		
	E		8	8	8																		
Chemistry Tech prerenewal/postrenewal			EJB RC EJB RC				EJB RC EJB RC					EJB RC EJB RC											

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

Project# X5573

Test started: Date 10/14/14 Time 1630

Client EDCC

Test ended: Date 10/16/14 Time 1510

Sample Description 006

Test Species D. pulex ID# BAL/In-5n

Technician: Ohour RC 24hour RC 48hour RC 72hour _____ 96hour _____

Time: Ohour 1630 24hour 1505 48hour 1510 72hour _____ 96hour _____

Temperature (°C): Ohour 24.7 24hour 25.0 48hour 24.9 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
100.0	A	NA	8	7	7			8.2	7.8	7.9			6.8	6.9	6.8			514	505	526		
	B		8	8	8																	
	C		8	5	5																	
	D		8	8	8																	
	E		8	8	4																	
	D																					
	B																					
	C																					
	D																					
	E																					
Chemistry Tech prerenewal/postrenewal																						

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

Project# X5573
 Client EDCC

Test started: Date 10/14/14 Time 1805
 Test ended: Date 10/16/14 Time 1605
 Test Species P. promelas ID# ECT 1747

Sample Description 006
 Technician: 0hour RC 24hour RC 48hour RC 72hour _____ 96hour _____
 Time: 0hour 1805 24hour 1605 48hour 1605 72hour _____ 96hour _____
 Temperature (°C): 0hour 24.7 24hour 25.1 48hour 24.9 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																			
32.0	A		8	8	8			8.2	7.3	7.5			7.0	6.9	7.0			283	288	284		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
45.0	A		8	8	8			8.2	7.3	7.5			6.9	6.9	6.9			325	329	342		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			EUP <u>RC</u> / <u>RC</u>					EUP <u>RC</u> / <u>RC</u>					EUP <u>RC</u> / <u>RC</u>				EUP <u>RC</u> / <u>RC</u>					

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

Project# X5573

Test started: Date 10/14/14 Time 1805

Client EDCC

Test ended: Date 10/16/14 Time 1605

Sample Description 006

Test Species P. promelas ID# ECT/797

Technician: Ohour RC 24hour RC 48hour RC 72hour _____ 96hour _____

Time: Ohour 1805 24hour 1605 48hour 1605 72hour _____ 96hour _____

Temperature (°C): Ohour 24.7 24hour 25.1 48hour 24.9 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
56.0	A	Na	8	8	8			8.2	7.3	7.4			6.9	6.9	6.9			362	361	359		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
75.0	A		8	8	8			8.2	7.3	7.3			6.9	6.8	6.8			428	424	450		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								28	RC	RC			28	RC	RC			28	RC	RC		

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

Project# X5573

Test started: Date 10/14/14 Time 1805

Client EDCC

Test ended: Date 10/16/14 Time 1605

Sample Description 006

Test Species P. promelas ID# ECT1797

Technician: Ohour RC 24hour RC 48hour RC 72hour _____ 96hour _____

Time: Ohour 1805 24hour 1605 48hour 1605 72hour _____ 96hour _____

Temperature (°C): Ohour 24.2 24hour 25.1 48hour 24.9 72hour _____ 96hour _____

Test Dilution %	Replicate	Test Salinity Na	# 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	
100.0	A		8	8	7			8.2	7.1	8.0	7.3			6.8	6.7	6.7			544	511	509	511	
	B		8	8	8																		
	C		8	8	8																		
	D		8	8	8																		
	E		8	8	7																		
	D																						
	B																						
	C																						
	D																						
	E																						
Chemistry Tech prerenewal/postrenewal																							

APPENDIX C
STATISTICAL ANALYSES

Daphnid Acute Test-48 Hr Survival

X5573

Start Date: 10/14/2014 Test ID: X5573DP Sample ID: AR0000752-006 Page 22 of 33
 End Date: 10/16/2014 Lab ID: 880630 Sample Type: EFF2-Industrial
 Sample Date: 10/13/2014 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	0.8750
22	1.0000	1.0000	1.0000	0.7500	1.0000
32	0.8750	1.0000	1.0000	1.0000	0.7500
45	1.0000	1.0000	0.7500	1.0000	1.0000
56	1.0000	1.0000	1.0000	1.0000	0.7500
75	0.6250	1.0000	1.0000	1.0000	1.0000
100	0.8750	1.0000	0.6250	1.0000	0.5000

Conc-%	Transform: Arcsin Square Root						N	Rank Sum	1-Tailed Critical
	Mean	N-Mean	Mean	Min	Max	CV%			
D-Control	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5		
22	0.9500	0.9744	1.3239	1.0472	1.3931	11.684	5	27.00	16.00
32	0.9250	0.9487	1.2872	1.0472	1.3931	12.116	5	24.50	16.00
45	0.9500	0.9744	1.3239	1.0472	1.3931	11.684	5	27.00	16.00
56	0.9500	0.9744	1.3239	1.0472	1.3931	11.684	5	27.00	16.00
75	0.9250	0.9487	1.2968	0.9117	1.3931	16.600	5	27.00	16.00
100	0.8000	0.8205	1.1385	0.7854	1.3931	24.481	5	21.50	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.79178	0.934	-1.0672	0.21418
Bartlett's Test indicates equal variances (p = 0.47)	5.60771	16.8119		
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

X5573

Page 23 of 33

Start Date: 10/14/2014	Test ID: X5573PP	Sample ID: AR0000752-006
End Date: 10/16/2014	Lab ID: 880630	Sample Type: EFF2-Industrial
Sample Date: 10/13/2014	Protocol: EPAAW02-EPA/821/R-02-01	Test Species: PP-Pimephales promelas

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	0.7500	1.0000
32	1.0000	1.0000	1.0000	1.0000	1.0000
45	1.0000	1.0000	0.7500	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	0.8750	1.0000	1.0000	1.0000	0.8750

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root				N	Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%			
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
22	0.9500	0.9500	1.3239	1.0472	1.3931	11.684	5	25.00 16.00	
32	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50 16.00	
45	0.9500	0.9500	1.3239	1.0472	1.3931	11.684	5	25.00 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	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50 16.00	

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test Indicates non-normal distribution (p <= 0.05)	0.65746	0.934	-2.2824	5.98808

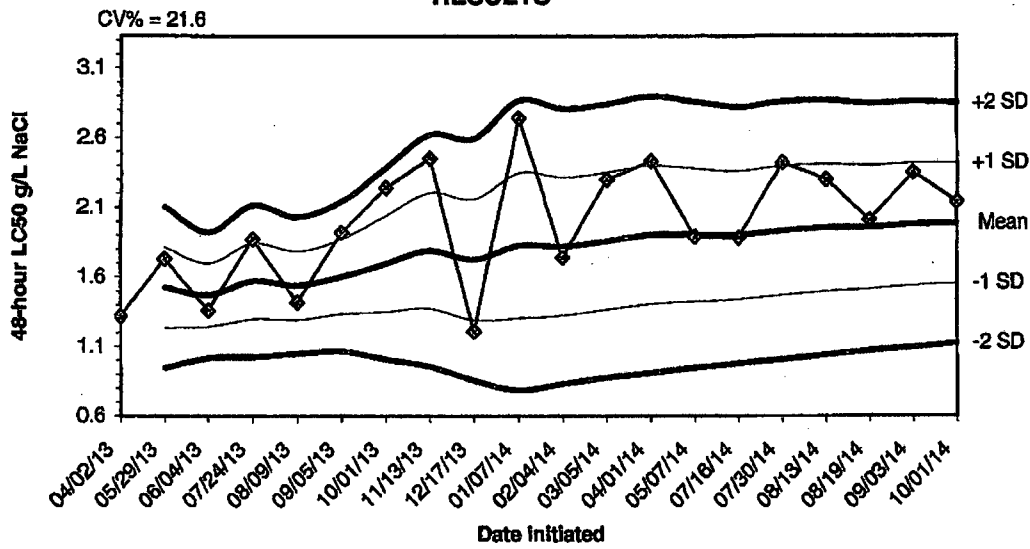
Equality of variance cannot be confirmed

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

2014 DAPHNIA PULEX 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS



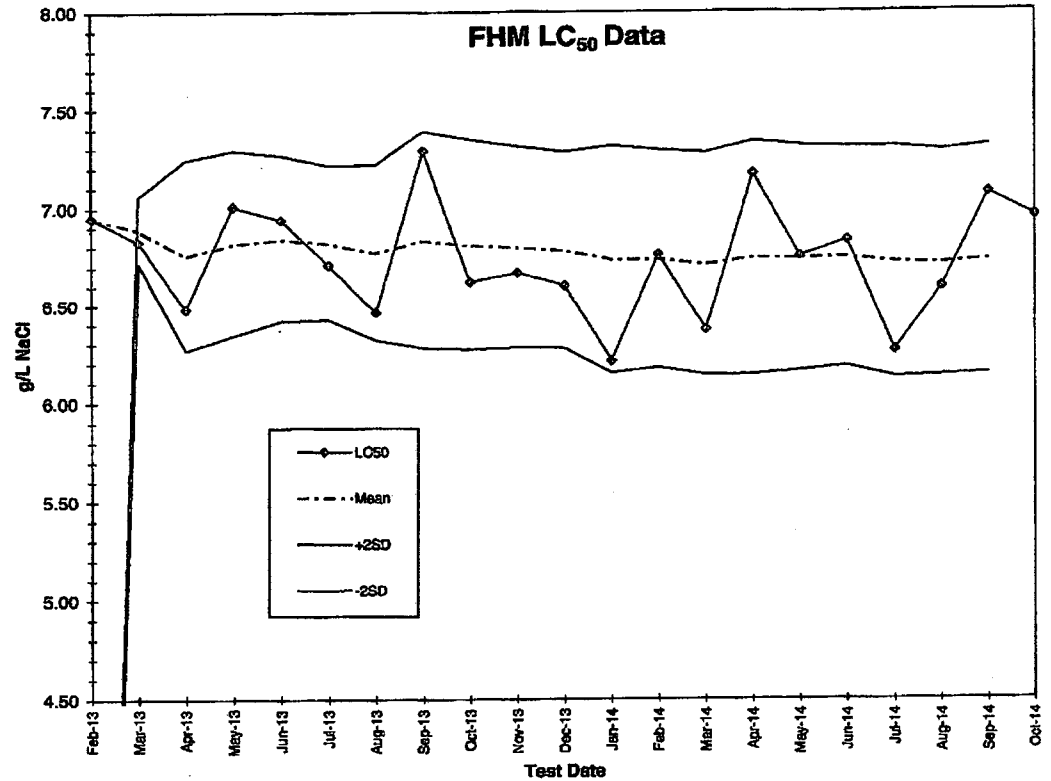
Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
04/02/13	1.3200					
05/29/13	1.7300	1.5250	1.2351	0.9452	1.8149	2.1048
06/04/13	1.3600	1.4700	1.2439	1.0179	1.6981	1.9221
07/24/13	1.8700	1.5700	1.2978	1.0257	1.8422	2.1143
08/09/13	1.4200	1.5400	1.2949	1.0499	1.7851	2.0301
09/05/13	1.9200	1.6033	1.3348	1.0663	1.8719	2.1404
10/01/13	2.2400	1.6943	1.3508	1.0073	2.0378	2.3813
11/13/13	2.4500	1.7888	1.3734	0.9580	2.2041	2.6195
12/17/13	1.2100	1.7244	1.2906	0.8569	2.1582	2.5920
01/07/14	2.7400	1.8260	1.3060	0.7860	2.3480	2.8660
02/04/14	1.7400	1.8182	1.3242	0.8302	2.3122	2.8062
03/05/14	2.3000	1.8583	1.3672	0.8761	2.3495	2.8406
04/01/14	2.4300	1.9023	1.4061	0.9099	2.3985	2.8948
05/07/14	1.8900	1.9014	1.4247	0.9479	2.3782	2.8550
07/16/14	1.8800	1.9000	1.4405	0.9811	2.3595	2.8189
07/30/14	2.4200	1.9325	1.4700	1.0075	2.3950	2.8575
08/13/14	2.3000	1.9541	1.4975	1.0409	2.4107	2.8674
08/19/14	2.0100	1.9572	1.5140	1.0709	2.4004	2.8436
09/03/14	2.3500	1.9779	1.5379	1.0979	2.4179	2.8579
10/01/14	2.1400	1.9860	1.5562	1.1264	2.4158	2.8456

Environmental Consulting and Testing Inc.
Fathead Minnow Acute RTT

11/5/2014

Test	Date	LC50	+2SD	-2SD	Mean	std dev
1	Feb-13	6.95	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2	Mar-13	6.83	#DIV/0!	#DIV/0!	6.95	#DIV/0!
3	Apr-13	6.48	7.08	6.72	6.89	0.08
4	May-13	7.01	7.24	6.28	6.75	0.24
5	Jun-13	6.94	7.29	6.34	6.82	0.24
6	Jul-13	6.71	7.27	6.42	6.84	0.21
7	Aug-13	6.46	7.22	6.42	6.82	0.20
8	Sep-13	7.29	7.22	6.32	6.77	0.23
9	Oct-13	6.62	7.39	6.28	6.83	0.28
10	Nov-13	6.67	7.35	6.27	6.81	0.27
11	Dec-13	6.60	7.31	6.28	6.80	0.26
12	Jan-14	6.21	7.28	6.27	6.78	0.25
13	Feb-14	6.76	7.31	6.15	6.73	0.29
14	Mar-14	6.37	7.29	6.18	6.73	0.28
15	Apr-14	7.17	7.28	6.14	6.71	0.28
16	May-14	6.75	7.34	6.14	6.74	0.30
17	Jun-14	6.83	7.32	6.16	6.74	0.29
18	Jul-14	6.26	7.31	6.18	6.74	0.28
19	Aug-14	6.59	7.31	6.13	6.72	0.30
20	Sep-14	7.07	7.28	6.13	6.71	0.29
21	Oct-14	6.95	7.31	6.14	6.73	0.29

sd 0.29
cv 4%



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: 10/13/14 To: 10/14/14
From: To:

Test Initiated: 10/14/14

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	87.5
	B	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	75.0	100.0	100.0	75.0
	D	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	E	87.5	100.0	100.0	100.0	75.0	10.0	100.0
48-hour	A	100.0	100.0	87.5	100.0	100.0	75.0	87.5
	B	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	75.0	100.0	100.0	75.0
	D	100.0	75.0	100.0	100.0	100.0	100.0	100.0
	E	87.5	100.0	75.0	100.0	75.0	100.0	50.0
	Mean	97.5	95.0	92.5	95.0	95.0	92.5	80.0

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.) **1/2 LOW FLOW OR 2X CRITICAL DILUTION (N/A%)** YES NO

2. Enter percent effluent corresponding to the LC₅₀ below:

LC₅₀ = N/A% effluent

95 % confidence limits:

Method of LC₅₀ 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, Callahan

Sample Collected From: Date 10/13/14 Time 1000
 To: Date 10/14/14 Time 1000
Test Begin Date 10/14/14 Time 1630
Test End Date 10/16/14 Time 1510

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		8.3	8.3	8.2	24.7	25.0	24.9	32.0			44.0			7.3	7.7	7.4
22.0		8.2	8.4	8.0	24.7	25.0	24.9							7.2	7.2	7.1
32.0		8.2	8.4	7.9	24.7	25.0	24.9							7.0	7.1	7.1
45.0		8.2	8.5	8.0	24.7	25.0	24.9							6.9	7.0	7.1
56.0		8.2	8.3	8.0	24.7	25.0	24.9							6.9	7.0	7.0
75.0		8.2	8.5	8.0	24.7	25.0	24.9							6.9	6.9	6.9
100.0		8.2	8.5	7.9	24.7	25.0	24.9	24.0			100.0			6.8	6.8	6.8

*This Form is to be submitted with each DMR.
Alkalinity and hardness to be reported as mg/l CaCO₃

Acute Forms
Pimephales promelas (Fathead Minnow) Survival

Permittee: El Dorado Chemical - Outfall 006
NPDES Permit Number: AR0000752/ AFIN 70-00040

Composite Collected From: 10/13/14 To: 10/14/14
From: To:

Test Initiated: 10/14/14

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	87.5
	B	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	75.0	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	10.0	87.5
48-hour	A	100.0	100.0	100.0	100.0	100.0	75.0	87.5
	B	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	75.0	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	87.5
	Mean	100.0	95.0	100.0	95.0	100.0	100.0	95.0

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.) **1/2 LOW FLOW OR 2X CRITICAL DILUTION (N/A%)** YES NO

2. Enter percent effluent corresponding to the LC₅₀ below:

LC₅₀ = N/A % effluent

95 % confidence limits:

Method of LC₅₀ 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, Callahan

Sample Collected From: Date 10/13/14 Time 1000
 To: Date 10/14/14 Time 1000
 Test Begin Date 10/14/14 Time 1805
 Test End Date 10/16/14 Time 1605

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	8.3	8.3	7.6	24.7	25.1	24.9	32.0				44.0			7.3	7.7	7.1
22.0	8.2	8.4	7.5	24.7	25.1	24.9								7.2	7.2	7.0
32.0	8.2	8.4	7.5	24.7	25.1	24.9								7.0	7.1	7.0
45.0	8.2	8.5	7.5	24.7	25.1	24.9								6.9	7.0	6.9
56.0	8.2	8.3	7.4	24.7	25.1	24.9								6.9	7.0	6.9
75.0	8.2	8.5	7.3	24.7	25.1	24.9								6.9	6.9	6.8
100.0	8.2	8.5	7.3	24.7	25.1	24.9	24.0				100.0			6.8	6.8	6.7

*This Form is to be submitted with each DMR.
 Alkalinity and hardness to be reported as mg/l CaCO₃

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: EIDorado Chemical 006

Project#: X5573

Chain of Custody Documents Checked by: EGB 11/19/14
Technician/Date

Raw Data Documents Checked by: EGB 11/19/14
Technician/Date

Statistical Analysis Package Checked by: EGB 11/18/14
Quality Manager/Date

Quality Control Data Checked by: EGB 11/1/14
Quality Manager/Date

Report Checked by: EGB 11/19/14
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.

Cristina Baggett, BS
Quality Manager

11/19/14
Date

No part of this work may be altered in any form or by any means without written permission from Bio-Analytical Laboratories.

From: (870) 863-1400
 Scott Brice
 El Dorado Chemical Company
 4500 NW Ave

Origin ID: ELDA



J142214092303UV

El Dorado, AR 71730

Ship Date: 24NOV14
 ActWgt: 2.0 LB
 CAD: 5887030/NET3550

Delivery Address Bar Code



SHIP TO: (501) 682-0744

BILL SENDER

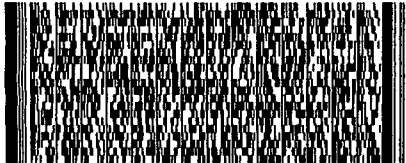
ADEQ - Water Division Enforcement
 5301 Northshore Drive

NORTH LITTLE ROCK, AR 72118

Ref #
 Invoice #
 PO #
 Dept #

TUE - 25 NOV 10:30A
 PRIORITY OVERNIGHT

TRK# 7719 7241 3154
 0201



X2 LITA

72118
 AR-US
 LIT



522G1616C8AC3

After printing this label:

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