



CHEMICAL COMPANY

June 22, 2016

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 May 31, 2016.

Enclosed you will find the Discharge Monitoring Reports ending May 31, 2016.

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

Sincerely,

A handwritten signature in cursive script that reads "Edward L. Pearson".

Edward L Pearson

Environmental Technician

Enclosures

NON-COMPLIANCE REPORT

Facility Name: EI Dorado Chemical Company

Permit Number: AR0000752

AFIN:

70-00040

Month / Year: May-16

Type of Violation	Permit Limit	Date of Violation	Cause of Violation	Corrective Action or Other Narrative
Outfall 006 / Lead Monthly Average (32 ug/L)	3.8 ug/L Monthly Average	5/31/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / Lead Daily Max. (32 ug/L)	7.62 ug/L Daily Max.	5/31/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006/ Zinc Monthly Average (620 ug/L)	115.62 ug/L Monthly Average	5/31/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006/ Zinc Daily Max. (620ug/L)	231.99 ug/L Daily Max.	5/31/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006/TDS Monthly Average(500mg/L)	291 mg/L Monthly Average	5/31/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006/TDS Daily Max.(500mg/L)	436.5 mg/L Daily Max.	5/31/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 007 / Lead Monthly Average (9.3 ug/L)	3.8 ug/L Monthly Average	5/31/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007/Lead Daily Max.(9.3ug/L)	7.62 ug/L Daily Max.	5/31/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007/TDS Monthly Average(700mg/L)	291 mg/L Monthly Average	5/31/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007/TDS Daily Max.(700mg/L)	436.5 mg/L Daily Max.	5/31/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
<p>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.)</p>				<p style="text-align: center;"><i>Kelley Jivier</i> 6-20-16</p> <p>Signature / Date</p>

Bio-Analytical Laboratories (BAL)
ADEQ#88-0630
Project X6052

Bio-Analytical Laboratories' Executive Summary

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

Project #: X6052

Outfall: Outfall 006 (contaminated storm water)

Permit #: AR0000752/ AFIN #70-00040

Contact: Mr. Eddie Pearson

Test Dates: May 31 - June 2, 2016

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:

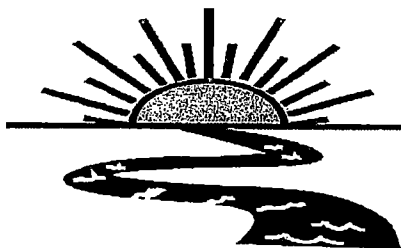
For *Pimephales promelas*:

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 - 37.10%.

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

3240 Spurgin Road
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Doyline, LA 71023

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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 X6052

**Test Dates: May 31 - June 2, 2016
Report Date: June 13, 2016**

Prepared for:
Mr. Eddie Pearson
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 X6052

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BAL
ADEQ #88-0630
Project X6052

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 five 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 X6052

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, 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 composite sample of Outfall 006 was collected by El Dorado Chemical personnel on May 31, 2016 at 0700 hours. Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was 0.9^o 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^o Celsius. The total residual chlorine level (SM4500-Cl E 1997) was measured in milligrams/Liter (mg/) with a Capital Controls^R amperometric titrator and recorded if present. The total ammonia level was measured in mg/L using a test strip. Dissolved oxygen (SM4500-O G 1997), pH (SM4500-H+ B 1997) and conductivity (SM2510-B 1997) measurements (in mg/L, standard units and umhos/cm, respectively) 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 in mg/L as CaCO₃ 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^o 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.

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ADEQ #88-0630
Project X6052

2.8 Data Analysis

The NOEC and LC₅₀ 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 not noted in the critical dilution in either test after 48 hours of exposure (p=.05). The NOEC value for the fathead and *Daphnia pulex* tests was 100.0 percent effluent (p=.05). The 48-hour LC₅₀ values could not be calculated in either test because greater than 50.0 percent survival occurred in each effluent concentration.

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

Percent Effluent	Percent Survival	
Test Organism	<i>Pimephales promelas</i>	<i>Daphnia pulex</i>
Control	100.0	95.0
22.0	100.0	100.0
32.0	100.0	95.0
45.0	100.0	87.5
56.0	100.0	87.5
75.0	100.0	72.5
100.0	100.0	62.5

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 X6052

4.0 Conclusions

The sample of Outfall 006 collected from El Dorado Chemical Company, El Dorado, Arkansas, on May 31, 2016, 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 100.0 percent dilution ($p=.05$).

BAL
ADEQ #88-0630
Project X6052

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: X6052		
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 Recal Coliform						Temp. upon arrival: Temperature upon arrival: 0.98 Thermometer #: 29 Tech: RC Date: 5/31/16		
Permit #: AR0000752/AFIN 70-00040		Purchase Order:									Lab Control Number: C12511	Preservative: (below) ICE
Sampler's Signature/Printed Name/Affiliation: Edward L Pearson / Edward L Pearson / EDCC												
Date Start Date End	Time Start Time End	C	G	# and type of container	Sample Identification							
05-30-16 05-31-16	1700 0700	X		6 half gallons	006		X	X				
Relinquished by/Affiliation: Edward L Pearson				Date: 6/5/16	Time: 1000	Received by/Affiliation: J Bys		Date: 5/31/16	Time: 1000			
Relinquished by/Affiliation:				Date:	Time:	Received by/Affiliation:		Date:	Time:			
Relinquished by/Affiliation: J Bys				Date: 5/31/16	Time: 1200	Received by/Affiliation: R Calahan		Date: 5/31/16	Time: 1200			
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# X6052

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES# AR0000752 Outfall 006

Technicians: EGB/RC/MM

Test initiated: Date 5/31/16 Time 1425

Test terminated: Date 6/2/16 Time 1600

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	Alkalinity	Tech
<u>C2511</u>	<u>8.4/108%</u>	<u>1/6/7.9/65%</u>	<u>0.01</u>	<u>NO</u>	<u>no strips available</u>	<u>N/A</u>	<u>100%</u>	<u>100%</u>	<u>MM</u>
	<u>8.8/104.1%</u>	<u>1/6/8.2/97.9%</u>					<u>92.0</u>	<u>20.0</u>	<u>RC</u>

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
<u>Soft H2O</u>	<u>3870</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>7.3</u>	<u>52.0</u>	<u>24.0</u>	<u>RC</u>

Test Species Information

Test Species Info.	<u>D. pullex</u> Species: ID#: <u>BAL/Ho-J1</u>	<u>P. promelas</u> Species: ID#: <u>052616</u>	Species: ID#:	Species: ID#:
Age	<u><24 hrs</u>	<u><5 days</u>		
Test Container Size	<u>30ml</u>	<u>300ml</u>		
Test volume	<u>25ml</u>	<u>250ml</u>		
Feeding: Type Amount	<u>2 hrs</u> <u>test</u>	<u>prior to</u> <u>initiation</u>		
Aeration? Amount	<u>N/A</u>	<u>N/A</u>		
Condition of survivors	<u>Good</u> <u>RC 6/2/16</u>	<u>Good</u> <u>RC 6/2/16</u>		

Comments: 6.9 ph - within range before initial setup mm

AcuteI Rev. 1.0 C2511: nitrate 10 / tested in place of ammonia
nitrate 0.3

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

Project# X6652
 Client EDCC

Test started: Date 5/31/16 Time 1425
 Test ended: Date 6/2/16 Time 1535

Sample Description 006
 Technician: Ohour RC 24hour RC 48hour RC
 Time: Ohour 1425 24hour 1510 48hour 1535
 Temperature (°C): Ohour 24.7 24hour 24.8 48hour 24.8

Test Species D. pulex ID# BAL/40-31
 72hour / 96hour /
 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%		N/A																				
0s	A	}	8	8	8			7.7	8.1	7.9			7.5	7.4	7.5			167.1	174	173		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	6	6																	
22.0	A	}	8	8	8			7.8	8.1	7.9			7.5	7.3	7.4			206	219	219		261
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	RC	RC			RC	RC	RC			RC	RC	RC		

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

Project# X6052
 Client EDCC

Test started: Date 5/31/16 Time 1425
 Test ended: Date 6/2/16 Time 1535

Sample Description 006
 Technician: Ohour RC 24hour RC 48hour RC
 Time: Ohour 1425 24hour 1510 48hour 1535
 Temperature (°C): Ohour 24.7 24hour 24.8 48hour 24.8

Test Species D. pulex ID# BAL/HO-81
 72hour / 96hour /
 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
010		N/A																				
32.0	A	}	8	8	8			7.8	7.8	8.1	7.9		7.5	7.3	7.2	7.4		225	224	222	265	
	B		8	8	8																	
	C		8	8	6																	
	D		8	8	8																	
	E		8	8	8																	
45.0	A	}	8	8	5			7.8	7.8	8.1	7.9		7.3	7.3	7.2	7.3		250	250	251	292	
	B		8	7	6																	
	C		8	8	6																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	RC	RC	RC		RC	RC	RC	RC		RC	RC	RC	RC	

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

Project# X6052

Test started: Date 5/31/16

Time 1425

Client EDCC

Test ended: Date 6/2/16

Time 1535

Sample Description 006

Test Species D. pulex

ID# BAL/HO-51

Technician: Ohour PC 24hour PC 48hour PC 72hour PC 96hour PC
 Time: Ohour 1425 24hour 1510 48hour 1535 72hour PC 96hour PC
 Temperature (°C): Ohour 24.7 24hour 24.8 48hour 24.8 72hour PC 96hour PC

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
0/10		N/A																				
56.0	A	}	8	8	6			7.8	7.8	8.0	7.8		7.3	7.3	7.3			271	271	276	307	
	B		8	8	8																	
	C		8	8	5																	
	D		8	8	8																	
	E		8	8	8																	
75.0	A	}	8	8	8			7.8	7.8	8.0	7.9		7.2	7.2	7.3			309	309	313	343	
	B		8	8	3																	
	C		8	8	8																	
	D		8	8	2																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			PC	PC	PC			PC	PC	PC			PC	PC	PC			PC	PC	PC		

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

Project# N6052

Test started: Date 5/31/16

Time 1425

Client EDCC

Test ended: Date 6/2/16

Time 1335

Sample Description 006

Test Species D. pulex ID# BAL/Ho-J1

Technician: Ohour RC 24hour RC 48hour RC 72hour / 96hour /
 Time: Ohour 1425 24hour 1510 48hour 1535 72hour / 96hour /
 Temperature (°C): Ohour 24.7 24hour 24.8 48hour 24.8 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
010		N/A																				
100.0	A	}	8	8	3			7.8	7.9	7.9			7.1	7.1	7.2			356	363	401		
	B		8	8	8																	
	C		8	8	6																	
	D		8	2	2																	
	E		8	8	6																	
1000	A	}	8																			
PH	B		8																			
adj	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								RC	RC	RC			RC	RC	RC			RC	RC	RC		

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

Project# X6052

Test started: Date 5/31/16 Time 1500

Client EDCC

Test ended: Date 6/2/16 Time 1600

Sample Description 006

Test Species P. promelas ID# BAL1052616

Technician: 0hour BJ/RC 24hour BJ 48hour RC 72hour / 96hour /
 Time: 0hour 1500 24hour 1630 48hour 1600 72hour / 96hour /
 Temperature (°C): 0hour 25.1 24hour 24.6 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
9/0		N/A																				
0s	A	}	8	8	8			7.7	7.7 7.74	7.7			7.5	7.5 7.4	7.3			167.1	167.1 174.1	183.7		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
22.0	A	}	8	8	8			7.8	7.8 7.6	7.7			7.5	7.5 7.3	7.2			206	206 224	229		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			RC BJ RC RC					RC BJ RC RC					RC BJ RC RC									

* Corrections made by BJ 6/1/16

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

Project# X6052
 Client EDCC

Test started: Date 5/31/16 Time 1500

Test ended: Date 6/2/16 Time 1600

Sample Description 006
 Technician: BJ/PC 24hour BJ 48hour PC
 Time: 1500 24hour 1630 48hour 1500
 Temperature (°C): 25.1 24hour 24.6 48hour 24.7

Test Species P. promelas ID# BAL1052616

72hour / 96hour /
 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
0/0		N/A																				
32.0	A	}	8	8	8			7.8	7.6 8.1	7.7			7.5	7.3 7.2	7.2			225	224 232	241		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
45.0	A	}	8	8	8			7.8	7.6 8.1	7.7			7.3	7.2 7.1	7.1			250	248 257	264		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								PC	BJ PC	PC			PC	BJ PC	PC			PC	BJ PC	PC		

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

Project# X6052

Test started: Date 5/31/16 Time 1500

Client EDCC

Test ended: Date 6/2/16 Time 1600

Sample Description 006

Test Species P. promelas ID# BAL/052616

Technician: Ohour BJ/RC 24hour BJ/RC 48hour RC 72hour / 96hour /

Time: Ohour 1500 24hour 1630 48hour 1600 72hour / 96hour /

Temperature (°C): Ohour 25.1 24hour 24.6 48hour 24.7 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
90		N/A																				
56.0	A	}	8	8	8			7.8	7.5 8.0	7.6			7.3	7.2 7.2	7.1			271	291 276	287		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
75.0	A	}	8	8	8			7.8	7.4 8.0	7.6			7.2	7.2 7.1	7.1			309	331 313	323		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	BJ RC	RC			RC	BJ RC	RC			RC	BJ RC	RC		

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

Project# X6052

Test started: Date 5/31/16 Time 1500

Client EDCC

Test ended: Date 6/2/16 Time 1600

Sample Description 006

Test Species P. promelas ID# BAL052616

Technician: Ohour BJ/RC 24hour BJ/RC 48hour RC 72hour / 96hour /
 Time: Ohour 1500 24hour 1630 48hour 1600 72hour / 96hour /
 Temperature (°C): Ohour 25.1 24hour 24.6 48hour 24.7 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
0/10		N/A																				
100.0	A	N/A	8	6	8			7.8	7.4	8.1	9.5		7.1	7.1	7.0			356	350	363	378	
	B		8	6	8																	
	C		8	6	8																	
	D		8	6	8																	
	E		8	6	8																	
100.0	A		8																			
PH Adj	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								RC	BJ/RC	RC			RC	BJ/RC	RC			RC	BJ/RC	RC		

APPENDIX C
STATISTICAL ANALYSES

Daphnid Acute Test-48 Hr Survival

Start Date: 5/31/2016 Test ID: X6052DP Sample ID: AR0000752/006
 End Date: 6/2/2016 Lab ID: ADEQ880630 Sample Type: EFF2-Industrial
 Sample Date: 5/30/2016 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	0.7500
22	1.0000	1.0000	1.0000	1.0000	1.0000
32	1.0000	1.0000	0.7500	1.0000	1.0000
45	0.6250	0.7500	1.0000	1.0000	1.0000
56	0.7500	1.0000	0.6250	1.0000	1.0000
75	1.0000	0.3750	1.0000	0.2500	1.0000
100	0.3750	1.0000	0.7500	0.2500	0.7500

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root					Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%	N		
D-Control	0.9500	1.0000	1.3239	1.0472	1.3931	11.684	5		
22	1.0000	1.0526	1.3931	1.3931	1.3931	0.000	5	30.00	16.00
32	0.9500	1.0000	1.3239	1.0472	1.3931	11.684	5	27.50	16.00
45	0.8750	0.9211	1.2276	0.9117	1.3931	18.862	5	24.50	16.00
56	0.8750	0.9211	1.2276	0.9117	1.3931	18.862	5	24.50	16.00
75	0.7250	0.7632	1.0724	0.5236	1.3931	41.193	5	24.00	16.00
100	0.6250	0.6579	0.9340	0.5236	1.3931	37.104	5	19.00	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test Indicates non-normal distribution (p <= 0.05)	0.93392	0.934	-0.5143	-0.2021
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: 5/31/2016 Test ID: X6052PP Sample ID: AR0000752/006
 End Date: 6/2/2016 Lab ID: ADEQ880630 Sample Type: EFF2-Industrial
 Sample Date: 5/30/2016 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	1.0000	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

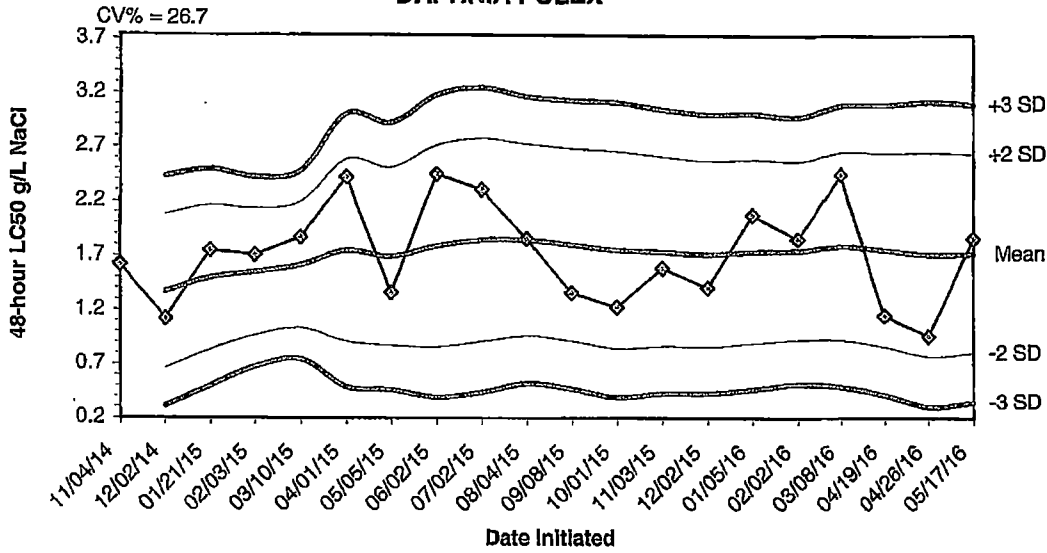
Conc-%	Transform: Arcsin Square Root							Rank Sum	1-Tailed Critical
	Mean	N-Mean	Mean	Min	Max	CV%	N		
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
22	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
32	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
45	1.0000	1.0000	1.3931	1.3931	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 normal distribution (p > 0.05)	1	0.934		
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				

EBB
6/11/16

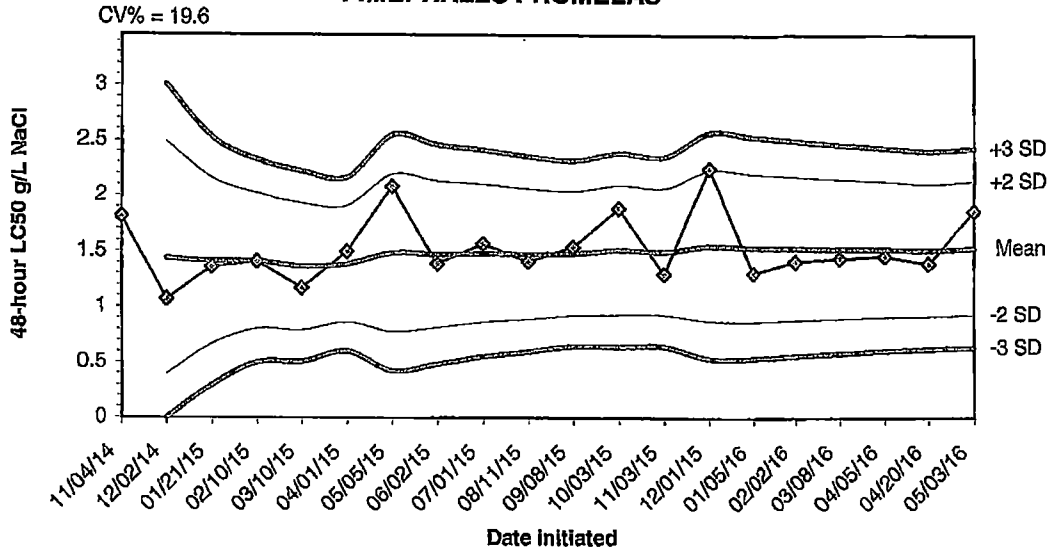
APPENDIX D
QUALITY ASSURANCE CHARTS

**2016 48-HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR
DAPHNIA PULEX**



Dates	Values	Mean	-2 SD	-3 SD	+2 SD	+3 SD
11/04/14	1.6200					
12/02/14	1.1200	1.3700	0.6629	0.3093	2.0771	2.4307
01/21/15	1.7500	1.4967	0.8314	0.4988	2.1619	2.4945
02/03/15	1.7100	1.5500	0.9664	0.6747	2.1336	2.4253
03/10/15	1.8700	1.6140	1.0332	0.7428	2.1948	2.4852
04/01/15	2.4200	1.7483	0.9099	0.4907	2.5868	3.0060
05/05/15	1.3600	1.6929	0.8731	0.4633	2.5126	2.9225
06/02/15	2.4500	1.7875	0.8587	0.3944	2.7163	3.1806
07/02/15	2.3100	1.8456	0.9095	0.4415	2.7816	3.2496
08/04/15	1.8600	1.8470	0.9645	0.5232	2.7295	3.1708
09/08/15	1.3600	1.8027	0.9155	0.4719	2.6900	3.1336
10/01/15	1.2300	1.7550	0.8467	0.3926	2.6633	3.1174
11/03/15	1.5900	1.7423	0.8679	0.4307	2.6167	3.0539
12/02/15	1.4100	1.7186	0.8599	0.4305	2.5773	3.0066
01/05/16	2.0800	1.7427	0.8944	0.4703	2.5909	3.0150
02/02/16	1.8600	1.7500	0.9284	0.5176	2.5716	2.9824
03/08/16	2.4500	1.7912	0.9263	0.4938	2.6561	3.0886
04/19/16	1.1500	1.7556	0.8637	0.4177	2.6474	3.0934
04/26/16	0.9600	1.7137	0.7732	0.3030	2.6542	3.1244
05/17/16	1.8600	1.7210	0.8033	0.3444	2.6387	3.0976

**2016 48-HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR
PIMEPHALES PROMELAS**



Dates	Values	Mean	-2 SD	-3 SD	+2 SD	+3 SD
11/04/14	1.8100					
12/02/14	1.0700	1.4400	0.3935	0.0000	2.4865	3.0098
01/21/15	1.3600	1.4133	0.6676	0.2947	2.1591	2.5319
02/10/15	1.4100	1.4125	0.8036	0.4991	2.0214	2.3259
03/10/15	1.1700	1.3640	0.7938	0.5087	1.9342	2.2193
04/01/15	1.5000	1.3867	0.8647	0.6037	1.9086	2.1696
05/05/15	2.0800	1.4857	0.7774	0.4232	2.1940	2.5482
06/02/15	1.3900	1.4738	0.8145	0.4849	2.1330	2.4626
07/01/15	1.5700	1.4844	0.8644	0.5544	2.1045	2.4145
08/11/15	1.4100	1.4770	0.8906	0.5973	2.0634	2.3567
09/08/15	1.5400	1.4827	0.9251	0.6463	2.0404	2.3192
10/03/15	1.8900	1.5167	0.9353	0.6446	2.0980	2.3887
11/03/15	1.3000	1.5000	0.9306	0.6458	2.0694	2.3542
12/01/15	2.2500	1.5536	0.8753	0.5362	2.2318	2.5710
01/05/16	1.3100	1.5373	0.8718	0.5390	2.2029	2.5357
02/02/16	1.4100	1.5294	0.8832	0.5601	2.1755	2.4986
03/08/16	1.4400	1.5241	0.8970	0.5834	2.1513	2.4648
04/05/16	1.4600	1.5206	0.9114	0.6068	2.1297	2.4343
04/20/16	1.3900	1.5137	0.9187	0.6211	2.1087	2.4062
05/03/16	1.8600	1.5310	0.9315	0.6317	2.1305	2.4303

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: 5/30/16 To: 5/31/16
From: To:

Test Initiated: 5/31/16

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	100.0	100.0	87.5	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	25.0
	E	75.0	100.0	100.0	100.0	100.0	100.0	100.0
48-hour	A	100.0	100.0	100.0	62.5	75.0	100.0	37.5
	B	100.0	100.0	100.0	75.0	100.0	37.5	100.0
	C	100.0	100.0	75.0	100.0	62.5	100.0	75.0
	D	100.0	100.0	100.0	100.0	100.0	25.0	25.0
	E	75.0	100.0	100.0	100.0	100.0	100.0	75.0
	Mean	95.0	100.0	95.0	87.5	87.5	72.5	62.5

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 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/ AFTN 70-00040
Contact: Eddie Pearson
Analyst: Callahan

Sample Collected **From:** **Date 5/30/16** **Time 1700**
To: **Date 5/31/16** **Time 0700**
Test Begin **Date 5/31/16** **Time 1425**
Test End **Date 6/02/16** **Time 1535**

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH		
	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	7.7	8.1	7.9	24.7	24.7	24.8	24.0			52.0			7.5	7.4	7.5
22.0	7.8	8.1	7.9	24.7	24.7	24.8							7.5	7.3	7.4
32.0	7.8	8.1	7.9	24.7	24.7	24.8							7.5	7.2	7.4
45.0	7.8	8.1	7.9	24.7	24.7	24.8							7.3	7.2	7.3
56.0	7.8	8.0	8.0	24.7	24.7	24.8							7.3	7.2	7.3
75.0	7.8	8.0	7.9	24.7	24.7	24.8							7.2	7.1	7.3
100.0	7.8	8.1	7.9	24.7	24.7	24.8	20.0			92.0			7.1	7.0	7.2

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

Acute Forms
Pimephales promelas Survival

Permittee: El Dorado Chemical - Outfall 006

NPDES Permit Number: AR0000752/ AFIN 70-00040

Composite Collected From: 5/30/16 To: 5/31/16
From: To:

Test Initiated: 5/31/16

Dilution Water Used: Receiving Water 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	100.0	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	100.0	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	100.0	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 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
Pimephales promelas 48 hour Acute Static Renewal
Chemical Parameters Chart*

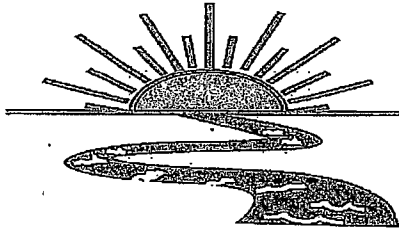
Permittee: El Dorado Chemical - Outfall 006
 NPDES Number: AR0000752/ AFIN 70-00040
 Contact: Eddie Pearson
 Analyst: Callahan, Jones

Sample Collected **From:** **Date 5/30/16** **Time 1700**
 To: **Date 5/31/16** **Time 0700**
 Test Begin **Date 5/31/16** **Time 1500**
 Test End **Date 6/02/16** **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		7.7	8.1	7.7	25.1	24.6	24.7	24.0			52.0			7.5	7.4	7.3
22.0		7.8	8.1	7.7	25.1	24.6	24.7							7.5	7.3	7.2
32.0		7.8	8.1	7.7	25.1	24.6	24.7							7.5	7.2	7.2
45.0		7.8	8.1	7.7	25.1	24.6	24.7							7.3	7.2	7.1
56.0		7.8	8.0	7.6	25.1	24.6	24.7							7.3	7.2	7.1
75.0		7.8	8.0	7.6	25.1	24.6	24.7							7.2	7.1	7.1
100.0		7.8	8.1	7.5	25.1	24.6	24.7	20.0			92.0			7.1	7.0	7.0

*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: El Dorado Chemical Company/006

Project#: X6052

Chain of Custody Documents Checked by: RC 6/8/16
Technician/Date

Raw Data Documents Checked by: RC 6/8/16
Technician/Date

Statistical Analysis Package Checked by: EGB 6/1/16
Quality Manager/Date

Quality Control Data Checked by: EGB 6/10/16
Quality Manager/Date

Report Checked by: EGB 6/13/16
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.

Allen H. Baupp, BS 6/13/16
Quality Manager 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 X6053

Bio-Analytical Laboratories' Executive Summary

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

Project #: X6053

Outfall: Outfall 007 (contaminated storm water)

Permit #: AR0000752/ AFIN #70-00040

Contact: Mr. Eddie Pearson

Test Dates: May 31 - June 2, 2016

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 - 11.68%.

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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Doyline, LA 71023

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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 X6053

**Test Dates: May 31 - June 2, 2016
Report Date: June 13, 2016**

Prepared for:
Mr. Eddie Pearson
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 X6053

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BAL
ADEQ #88-0630
Project X6053

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 and were approximately five 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.

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ADEQ #88-0630
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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 composite sample of Outfall 007 was collected by El Dorado Chemical personnel on May 31, 2016 at 0710 hours. Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was 1.0° 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° Celsius. The total residual chlorine level (SM4500-Cl E 1997) was measured in milligrams/Liter (mg/L) with a Capital Controls^R amperometric titrator and recorded if present. The total ammonia level was measured in mg/L using a test strip. Dissolved oxygen (SM4500-O G 1997), pH (SM4500-H+ B 1997) and conductivity (SM2510-B 1997) measurements (in mg/L, standard units and umhos/cm, respectively) 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 in mg/L as CaCO₃ 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° 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.

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2.8 Data Analysis

The NOEC and LC₅₀ 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 not noted in the critical dilution in either test after 48 hours of exposure (p=.05). A significant difference in the 32.0 percent dilution in the *Daphnia pulex* test was noted, but this was determined to be an anomaly. The NOEC value for the fathead and *Daphnia pulex* tests was 100.0 percent effluent (p=.05). The 48-hour LC₅₀ values could not be calculated in either test because greater than 50.0 percent survival occurred in each effluent concentration.

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

Percent Effluent	Percent Survival	
	<i>Pimephales promelas</i>	<i>Daphnia pulex</i>
Test Organism		
Control	97.5	100.0
22.0	92.5	65.0
32.0	100.0	100.0
45.0	100.0	82.5
56.0	100.0	95.0
75.0	100.0	77.5
100.0	97.5	95.0

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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4.0 Conclusions

The sample of Outfall 007 collected from El Dorado Chemical Company, El Dorado, Arkansas, on May 31, 2016, 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 100.0 percent dilution ($p=.05$).

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Project X6053

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 827
Covington, LA 71023

(318) 745-2772
1-800-252-1248
Fax: (318) 745-2773

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

Laboratory Use Only:

Company: El Dorado Chemical Company		Phone: (870) 863-1484		Analysis:				Project Number: X6053 Temp. upon arrival: Temperature upon arrival: 1.0°C Thermometer #: 29 Tech: RC Date: 5/31/16 Lab Control Number: Preservative: (below)
Address: 4500 Norwest Ave., El Dorado, AR 71731		Fax: (870) 863-7499		Chronic Ceriodaphnia	Chronic minnow	Acute minnow/fresh/marine)	Acute Daphnia species	
Permit #: AR0000752/AFIN 70-00040		Purchase Order:		Acute Mysid	Acute Ceriodaphnia	Fecal Coliform		
Sampler's Signature/Printed Name/Affiliation: <i>Edward L Pearson / Edward L Pearson / EDCC</i>								
Date Start	Time Start	C	G	# and type of container	Sample Identification			
05-30-16	1710	X		6 half gallons	007		C12512 ICE	
05-31-16	0710							
Relinquished by/Affiliation: <i>Edward L Pearson</i>				Date: 05-31-16	Time: 1000	Received by/Affiliation: <i>L. B. [Signature]</i>		
				Date:	Time:	Date: 5-31-16		
				Date:	Time:	Time: 1000		
Relinquished by/Affiliation: <i>L. B. [Signature]</i>				Date: 5-31-16	Time: 1200	Received by/Affiliation: <i>L. C. [Signature]</i>		
				Date:	Time:	Date: 5/31/16		
				Date:	Time:	Time: 1200		
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# X6053

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES# AR0000752 Outfall 007

Technicians: EGB/RC/MM

Test initiated: Date 5/31/16 Time 1435 1545 RC 5/31/16

Test terminated: Date 6/2/16 Time 1615

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	Alkalinity	Tech
C12512	8.7 / 100.9%	1/2 hr / 95.4%	<0.01	NO	no strips available	N/A	196.0	32.0	MM
	8.8 / 103.3%	1/2 hr / 8.3 / 98.4%							RC

Dilution Water Information

Dilution Water	ID#	Initial D.O. (mg/L & %)	Aerate? Minutes/D.O. (mg/L & %)	Total Residual Chlorine (mg/L)	Ammonia (NH3) mg/L	pH	Hardness	Alkalinity	Tech
Soft H2O	3870	N/A	N/A	N/A	N/A	7.3	52.0	24.0	RC

Test Species Information

Test Species Info.	D. pulchellus Species: ID#: <u>201/40-31</u>	P. promelas Species: ID#: <u>052616</u>	Species: ID#:	Species: ID#:
Age	<24 hrs	<5 days		
Test Container Size	30 ml	300 ml		
Test volume	25 ml	250 ml		
Feeding: Type	2 hrs	prior to		
Amount	test	initiation		
Aeration?	N/A	N/A		
Amount	1	1		
Condition of survivors	Good RC 6/2/16	Good RC 6/2/16		

Comments: 7.3 ph - within range before initial setup mm

Acute1 Rev. 1.0 C12512; nitrate 2 / tested in place of ammoniaz
nitrite 0.15/

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

Project# X6053

Test started: Date 5/31/16

Time 1435

Client EDCC

Test ended: Date 6/2/16

Time 1545

Sample Description 007

Test Species D. pulex ID# BAL/Ho-51

Technician: Ohour PC 24hour RC 48hour RC 72hour / 96hour /

Time: Ohour 1435 24hour 1545 48hour 1545 72hour / 96hour /

Temperature (°C): Ohour 24.7 24hour 24.8 48hour 24.8 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	
90		N/A																					
3s	A	}	8	8	8			7.6	7.7 8.1	7.9			7.6	7.4 7.5	7.4		165.6	215 176.5	239				
	B		8	8	8																		
	C		8	8	8																		
	D		8	8	8																		
	E		8	8	8																		
32.0	A	}	8	8	7			7.7	7.7 8.1	7.9			7.5	7.4 7.3	7.3		351	392 373	421				
	B		8	8	6																		
	C		8	7	3 ^{at 48h}																		
	D		8	8	5																		
	E		8	6	3																		
Chemistry Tech prerenewal/postrenewal			NA RC RC					NA RC RC					NA RC RC										

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

Project# X6053

Test started: Date 5/31/16 Time 1435

Client EDCC

Test ended: Date 6/2/16 Time 1545

Sample Description 007

Test Species D. pulex ID# BAL/H0-J1

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

Time: Ohour 1435 24hour 1545 48hour 1545 72hour RC 96hour RC

Temperature (°C): Ohour 24.7 24hour 24.8 48hour 24.8 72hour RC 96hour RC

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
90		N/A																				
45.0	A	}	8	8	8			7.4	7.6	7.9			7.6	7.4	7.4			420	416	524		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
50.0	A	}	8	8	8			7.7	7.6	7.9			7.5	7.4	7.4			450	505	524		
	B		8	8	8																	
	C		8	8	5																	
	D		8	6	6																	
	E		8	8	6																	
chemistry tech prerenewal/postrenewal								MM	RC	RC			MM	RC	RC			MM	RC	RC		

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

Project# X6053

Test started: Date 5/31/16

Time 1435

Client EDCC

Test ended: Date 6/2/16

Time 1545

Sample Description 007

Test Species D. pulex ID# BAL440-51

Technician: Ohour rc 24hour rc 48hour rc 72hour rc 96hour rc

Time: Ohour 1435 24hour 1545 48hour 1545 72hour rc 96hour rc

Temperature (°C): Ohour 24.7 24hour 24.8 48hour 24.8 72hour rc 96hour rc

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	
0/10		N/A																					
56.0	A	}	8	6	6			7.6	7.5 8.1	7.8			7.6	7.4 7.4	7.4			487	549 499	546			
	B		8	8	8																		
	C		8	8	8																		
	D		8	8	8																		
	E		8	8	8																		
75.0	A	}	8	8	8			7.7	7.6 8.1	7.8			7.6	7.4 7.4	7.4			588	587 600	687			
	B		8	8	5																		
	C		8	8	8																		
	D		8	8	5																		
	E		8	7	5																		
Chemistry Tech prerenewal/postrenewal								<u>rc</u>	<u>rc</u>	<u>rc</u>			<u>rc</u>	<u>rc</u>	<u>rc</u>			<u>rc</u>	<u>rc</u>	<u>rc</u>			

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

Project# X6053
 Client EDCC

Test started: Date 5/31/16 Time 1435
 Test ended: Date 6/2/16 Time 1545

Sample Description 007
 Technician: Ohour RC 24hour RC 48hour RC 72hour RC 96hour RC
 Time: Ohour 1435 24hour 1545 48hour 1545 72hour RC 96hour RC
 Temperature (°C): Ohour 24.7 24hour 24.8 48hour 24.8 72hour RC 96hour RC

Test Species D. pulex ID# BAL/140-31

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
0/0		N/A																				
100.0	A	}	8	8	8			7.7	7.5	8.0	7.7		7.5	7.3	7.4			720	720	720	720	
100.0	B		8	8	8																	
100.0	C		8	8	8																	
	D		8	8	6																	
	E		8	8	8																	
100.0																						
pH. adj	A		8																			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal																						

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

Project# X6053

Test started: Date 5/31/16 Time 1545

Client EDCC

Test ended: Date 6/2/16 Time 1615

Sample Description 007

Test Species P. promelas ID# BAL/052616

Technician: BJ/RC 24hour BJ/RC 48hour RC 72hour / 96hour /

Time: 1545 24hour 1505 48hour 1615 72hour / 96hour /

Temperature (°C): 24.9 24hour 25.5 48hour 24.7 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
90		N/A																				
3s	A	[Handwritten bracket]	8	8	8			7.6	7.6 8.1	7.7			7.4	7.3 7.5	7.4			165	159 176	186		
	B		8	8	8																	
	C		8	7	7																	
	D		8	8	8																	
	E		8	8	8																	
32.0	A	[Handwritten bracket]	8	8	6			7.7	7.6 8.1	7.7			7.5	7.4 7.3	7.2			351	316 373	378		
	B		8	8	8																	
	C		8	8	7																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			MM/BJ/RC RC					MM/BJ/RC RC					HM/BJ/RC RC									

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

Project# X6053
 Client EDCC

Test started: Date 5/31/16 Time 1545
 Test ended: Date 6/2/16 Time 1615

Sample Description 007
 Technician: BJ/RC 24hour BJ/RC 48hour RC 72hour RC 96hour RC
 Time: 1545 24hour 1505 48hour 1615 72hour 1615 96hour 1615
 Temperature (°C): 24.9 24hour 25.5 48hour 24.7 72hour 24.7 96hour 24.7

Test Species P. promelas ID# BAL052612

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
9.0		N/A																				
45.0	A	}	8	8	8			7.4	7.5	8.1	7.7		7.6	7.4	7.3	7.3		420	446	468	475	
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
50.0	A	}	8	8	8			7.7	7.5	8.1	7.7		7.5	7.4	7.2	7.2		450	476	475	481	
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			MM/BJ/RC/RC					MM/BJ/RC/RC					MM/BJ/RC/RC									

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

Project# X6053

Test started: Date 5/31/16 Time 1545

Client EDCC

Test ended: Date 6/2/16 Time 1615

Sample Description 007

Test Species P. promelas ID# BAL052672

Technician: Ohour BJ/RC 24hour BJ/RC 48hour RC 72hour / 96hour /

Time: Ohour 1545 24hour 1505 48hour 1615 72hour / 96hour /

Temperature (°C): Ohour 24.9 24hour 25.5 48hour 24.7 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		
0/10	A	N/A	8	8	8			7.6	7.5 8.1	7.6			7.6	7.4 7.4	7.3			487	510 509	508				
	B		8	8	8																			
	C		8	8	8																			
	D		8	8	8																			
	E		8	8	8																			
75.0	A	N/A	8	8	8			7.7	7.4 8.1	7.6			7.6	7.4 7.4	7.3			588	612 600	608				
	B		8	8	8																			
	C		8	8	8																			
	D		8	8	8																			
	E		8	8	8																			
Chemistry Tech prerenewal/postrenewal			MM BJ RC RC					MM BJ RC RC					MM BJ RC RC											

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

Project# X6053

Client EDCC

Sample Description 007

Technician: BJ/PC 24hour BJ/PC 48hour PC 72hour PC 96hour PC

Time: 1545 24hour 1505 48hour 1615 72hour 1615 96hour 1615

Temperature (°C): 24.9 24hour 25.5 48hour 24.7 72hour 24.7 96hour 24.7

Test started: Date 5/31/16 Time 1545

Test ended: Date 6/2/16 Time 1615

Test Species P. promelas ID# BAL/052202

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
0/0		N/A																				
100.0	A	N/A	8	8	8			7.7	7.4	7.6			7.5	7.4	7.3			720	740	750		
100.0	B		8	8	8																	
	C		8	7	7																	
	D		8	8	8																	
	E		8	8	8																	
100.0																						
pH	A		8																			
DO	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal																						

APPENDIX C
STATISTICAL ANALYSES

Daphnid Acute Test-48 Hr Survival

Start Date: 5/31/2016 Test ID: X6053DP Sample ID: AR0000752/007
 End Date: 6/2/2016 Lab ID: ADEQ880630 Sample Type: EFF2-Industrial
 Sample Date: 5/30/2016 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	0.8750	0.7500	0.3750	0.6250	0.6250
45	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	0.6250	0.7500	0.7500
56	0.7500	1.0000	1.0000	1.0000	1.0000
75	1.0000	0.6250	1.0000	0.6250	0.6250
100	1.0000	1.0000	1.0000	0.7500	1.0000

Conc-%	Transform: Arcsin Square Root							Rank Sum	1-Tailed Critical
	Mean	N-Mean	Mean	Min	Max	CV%	N		
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
*32	0.6500	0.6500	0.9478	0.6591	1.2094	21.383	5	15.00	16.00
45	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
50	0.8250	0.8250	1.1585	0.9117	1.3931	19.095	5	20.00	16.00
56	0.9500	0.9500	1.3239	1.0472	1.3931	11.684	5	25.00	16.00
75	0.7750	0.7750	1.1043	0.9117	1.3931	23.875	5	20.00	16.00
100	0.9500	0.9500	1.3239	1.0472	1.3931	11.684	5	25.00	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.92363	0.934	-0.0834	-0.2325
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: 5/31/2016 Test ID: X6053PP Sample ID: AR0000752/007
 End Date: 6/2/2016 Lab ID: ADEQ880630 Sample Type: EFF2-Industrial
 Sample Date: 5/30/2016 Protocol: EPAAW02-EPA/821/R-02-01 Test Species: PP-Pimephales promelas
 Comments:

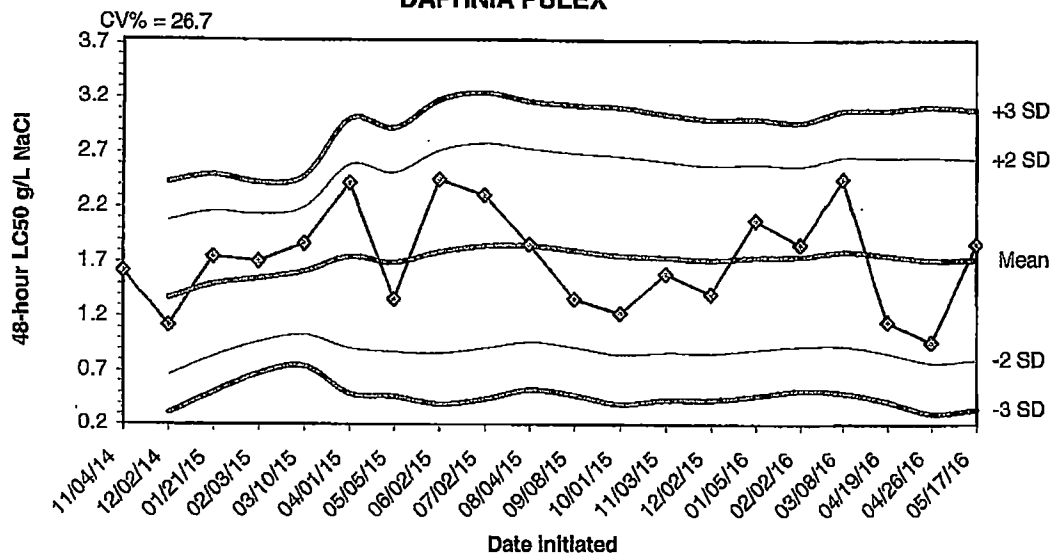
Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	0.8750	1.0000	1.0000
32	0.7500	1.0000	0.8750	1.0000	1.0000
45	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000	1.0000
56	1.0000	1.0000	1.0000	1.0000	1.0000
75	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	0.8750	1.0000	1.0000

Conc-%	Transform: Arcsin Square Root							Rank Sum	1-Tailed Critical
	Mean	N-Mean	Mean	Min	Max	CV%	N		
D-Control	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5		
32	0.9250	0.9487	1.2872	1.0472	1.3931	12.116	5	24.50	16.00
45	1.0000	1.0256	1.3931	1.3931	1.3931	0.000	5	30.00	16.00
50	1.0000	1.0256	1.3931	1.3931	1.3931	0.000	5	30.00	16.00
56	1.0000	1.0256	1.3931	1.3931	1.3931	0.000	5	30.00	16.00
75	1.0000	1.0256	1.3931	1.3931	1.3931	0.000	5	30.00	16.00
100	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5	27.50	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.73574	0.934	-1.7529	5.00989
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				

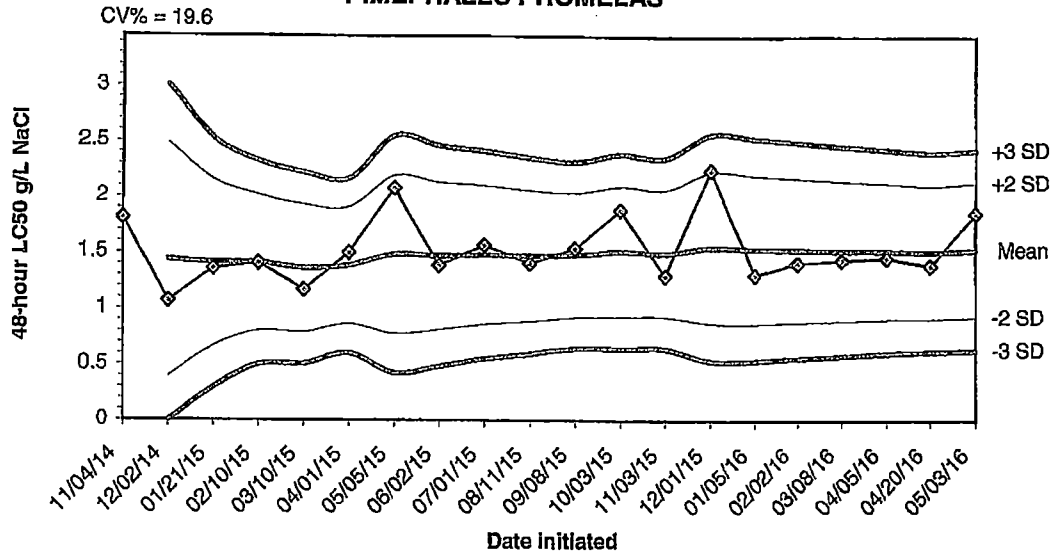
APPENDIX D
QUALITY ASSURANCE CHARTS

2016 48-HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR
DAPHNIA PULEX



Dates	Values	Mean	-2 SD	-3 SD	+2 SD	+3 SD
11/04/14	1.6200					
12/02/14	1.1200	1.3700	0.6629	0.3093	2.0771	2.4307
01/21/15	1.7500	1.4967	0.8314	0.4988	2.1619	2.4945
02/03/15	1.7100	1.5500	0.9664	0.6747	2.1336	2.4253
03/10/15	1.8700	1.6140	1.0332	0.7428	2.1948	2.4852
04/01/15	2.4200	1.7483	0.9099	0.4907	2.5868	3.0060
05/05/15	1.3600	1.6929	0.8731	0.4633	2.5126	2.9225
06/02/15	2.4500	1.7875	0.8587	0.3944	2.7163	3.1806
07/02/15	2.3100	1.8456	0.9095	0.4415	2.7816	3.2496
08/04/15	1.8600	1.8470	0.9645	0.5232	2.7295	3.1708
09/08/15	1.3600	1.8027	0.9155	0.4719	2.6900	3.1336
10/01/15	1.2300	1.7550	0.8467	0.3926	2.6633	3.1174
11/03/15	1.5900	1.7423	0.8679	0.4307	2.6167	3.0539
12/02/15	1.4100	1.7186	0.8599	0.4305	2.5773	3.0066
01/05/16	2.0800	1.7427	0.8944	0.4703	2.5909	3.0150
02/02/16	1.8600	1.7500	0.9284	0.5176	2.5716	2.9824
03/08/16	2.4500	1.7912	0.9263	0.4938	2.6561	3.0886
04/19/16	1.1500	1.7556	0.8637	0.4177	2.6474	3.0934
04/26/16	0.9600	1.7137	0.7732	0.3030	2.6542	3.1244
05/17/16	1.8600	1.7210	0.8033	0.3444	2.6387	3.0976

**2016 48-HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR
PIMEPHALES PROMELAS**



Dates	Values	Mean	-2 SD	-3 SD	+2 SD	+3 SD
11/04/14	1.8100					
12/02/14	1.0700	1.4400	0.3935	0.0000	2.4865	3.0098
01/21/15	1.3600	1.4133	0.6676	0.2947	2.1591	2.5319
02/10/15	1.4100	1.4125	0.8036	0.4991	2.0214	2.3259
03/10/15	1.1700	1.3640	0.7938	0.5087	1.9342	2.2193
04/01/15	1.5000	1.3867	0.8647	0.6037	1.9086	2.1696
05/05/15	2.0800	1.4857	0.7774	0.4232	2.1940	2.5482
06/02/15	1.3900	1.4738	0.8145	0.4849	2.1330	2.4626
07/01/15	1.5700	1.4844	0.8644	0.5544	2.1045	2.4145
08/11/15	1.4100	1.4770	0.8906	0.5973	2.0634	2.3567
09/08/15	1.5400	1.4827	0.9251	0.6463	2.0404	2.3192
10/03/15	1.8900	1.5167	0.9353	0.6446	2.0980	2.3887
11/03/15	1.3000	1.5000	0.9306	0.6458	2.0694	2.3542
12/01/15	2.2500	1.5536	0.8753	0.5362	2.2318	2.5710
01/05/16	1.3100	1.5373	0.8718	0.5390	2.2029	2.5357
02/02/16	1.4100	1.5294	0.8832	0.5601	2.1755	2.4986
03/08/16	1.4400	1.5241	0.8970	0.5834	2.1513	2.4648
04/05/16	1.4600	1.5206	0.9114	0.6068	2.1297	2.4343
04/20/16	1.3900	1.5137	0.9187	0.6211	2.1087	2.4062
05/03/16	1.8600	1.5310	0.9315	0.6317	2.1305	2.4303

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: 5/30/16 To: 5/31/16
From: To:

Test Initiated: 5/31/16

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	75.0	100.0	100.0
	B	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	C	100.0	87.5	100.0	100.0	100.0	100.0	100.0
	D	100.0	100.0	100.0	75.0	100.0	100.0	100.0
	E	100.0	75.0	100.0	100.0	100.0	87.5	100.0
48-hour	A	100.0	87.5	100.0	100.0	75.0	100.0	100.0
	B	100.0	75.0	100.0	100.0	100.0	62.5	100.0
	C	100.0	37.5	100.0	62.5	100.0	100.0	100.0
	D	100.0	62.5	100.0	75.0	100.0	62.5	75.0
	E	100.0	62.5	100.0	75.0	100.0	62.5	100.0
	Mean	100.0	65.0	100.0	82.5	95.0	77.5	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 NO
b.) 1/2 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 007
NPDES Number: AR0000752/ AFIN 70-00040
Contact: Eddie Pearson
Analyst: Callahan
Sample Collected **From:** **Date 5/30/16** **Time 1710**
 To: **Date 5/31/16** **Time 0710**
Test Begin **Date 5/31/16** **Time 1435**
Test End **Date 6/02/16** **Time 1545**

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH			
	Dilut./Time	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	7.6	8.1	7.9	24.7	24.8	24.8	24.0				52.0			7.6	7.5	7.4
32.0	7.7	8.1	7.9	24.7	24.8	24.8								7.5	7.3	7.3
45.0	7.4	8.1	7.6	24.7	24.8	24.8								7.6	7.3	7.4
50.0	7.7	8.1	7.9	24.7	24.8	24.8								7.5	7.4	7.4
56.0	7.6	8.1	7.8	24.7	24.8	24.8								7.6	7.4	7.4
75.0	7.7	8.1	7.8	24.7	24.8	24.8								7.6	7.4	7.4
100.0	7.7	8.0	7.7	24.7	24.8	24.8	32.0				196.0			7.5	7.4	7.4

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

Acute Forms
Pimephales promelas Survival

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

Composite Collected From: 5/30/16 To: 5/31/16
From: To:

Test Initiated: 5/31/16

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	87.5	100.0	100.0	100.0	100.0	100.0	87.5
	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	75.0	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	87.5	87.5	100.0	100.0	100.0	100.0	87.5
	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	97.5	92.5	100.0	100.0	100.0	100.0	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 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
Pimephales promelas 48 hour Acute Static Renewal
Chemical Parameters Chart*

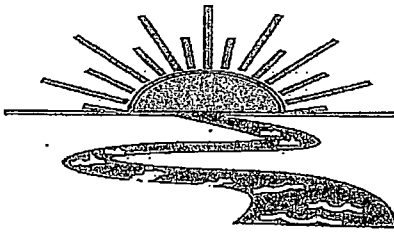
Permittee: El Dorado Chemical - Outfall 007
 NPDES Number: AR0000752/ AFIN 70-00040
 Contact: Eddie Pearson
 Analyst: Callahan, Jones

Sample Collected From: Date 5/30/16 Time 1710
 To: Date 5/31/16 Time 0710
 Test Begin Date 5/31/16 Time 1545
 Test End Date 6/02/16 Time 1615

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH			
	Dilut./Time	0hrs.	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0		7.6	8.1	7.7	24.9	25.5	24.7	24.0			52.0			7.6	7.5	7.4
32.0		7.7	8.1	7.7	24.9	25.5	24.7							7.5	7.3	7.2
45.0		7.4	8.1	7.7	24.9	25.5	24.7							7.6	7.3	7.3
50.0		7.7	8.1	7.7	24.9	25.5	24.7							7.5	7.4	7.2
56.0		7.6	8.1	7.6	24.9	25.5	24.7							7.6	7.4	7.3
75.0		7.7	8.1	7.6	24.9	25.5	24.7							7.6	7.4	7.3
100.0		7.7	8.0	7.6	24.9	25.5	24.7	32.0			196.0			7.5	7.4	7.3

*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: El Dorado Chemical Company / 007

Project#: X 6053

Chain of Custody Documents Checked by: RC 6/8/16
Technician/Date

Raw Data Documents Checked by: RC 6/8/16
Technician/Date

Statistical Analysis Package Checked by: EGB 6/11/16
Quality Manager/Date

Quality Control Data Checked by: EGB 6/10/16
Quality Manager/Date

Report Checked by: EGB 6/13/16
Quality Manager/Date

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

Erin L. Beapp BS 6/13/16
Quality Manager Date

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ELDORADO CHEMICAL COMPANY
4500 NORTH WEST AVE

ELDORADO, AR 71730
UNITED STATES US

SHIP DATE: 22JUN16
ACTWGT: 1.00 LB
CAD: 5887030/NET3730

BILL SENDER

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ADEQ
5301 NORTSHORE DR

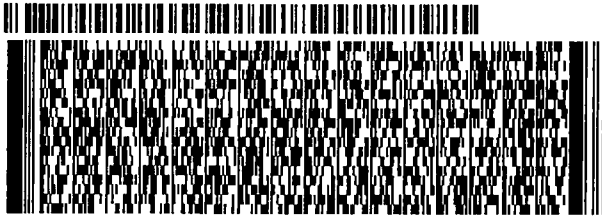
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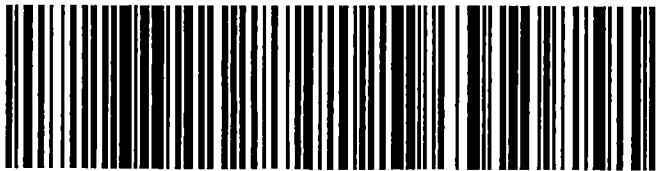
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