

November 18, 2015

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

RE: NPDES Permit AR0000752 Discharge Monitoring Report for period ending October 31, 2015.

Enclosed you will find the Discharge Monitoring Reports ending October 31, 2015.

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

Sincerely,

Edward L Pearson

Environmental Technician

**Enclosures** 

#### NON-COMPLIANCE REPORT

**Facility Name:** 

**El Dorado Chemical Company** 

Permit Number:

AR0000752

AFIN:

70-00040

Month / Year:

Oct-15

Type of Violation	Permit Limit	Date of Violation	Cause of Violation	Corrective Action or Other Narrative
Outfall 006 / Lead Ó Monthly Average (36 ug/L)	3.8 ug/L Monthly Average	10/24/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / Lead Daily Max. (36 ug/L)	7.62 ug/L Daily Max.	10/24/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 TDS Monthly Average (400 mg/L)	291 mg/L Monthly Average	10/23/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 007 / TDS Monthly Average (520 mg/L)	291 mg/L Monthly Average	10/23/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 007 / TDS Daily Max (520 mg/L)	436.5 mg/L Daily Max	10/23/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 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.)

Signature / Date

Bio-Analytical Laboratories (BAL) ADEQ#88-0630 Project X5869

#### **Bio-Analytical Laboratories' Executive Summary**

Permittee:

El Dorado Chemical Company

P.O. Box 231

El Dorado, AR 71731

Project #:

X5869

Outfall:

Outfall 006 (contaminated storm water)

Permit #:

AR0000752/ AFIN #70-00040

Contact:

Mr. David Sartain

**Test Dates:** 

October 25 - 27, 2015

Test Type:

48-hour acute toxicity test using *Pimephales promelas* (EPA 2000.0).

48-hour acute toxicity test using Daphnia pulex (EPA 2021.0)

#### Results:

#### For Pimephales promelas:

- 1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM6C- 0- Pass.
- 2. Report the NOEC for survival, Parameter TOM6C 100.0%.
- 3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM6C 6.06%.

#### For Daphnia pulex:

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- 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**

3240 Spurgin Road Post Office Box 527 Doyline, LA 71023 (318) 745-2772 1-800-259-1246 Fax: (318) 745-2773

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

EL DORADO CHEMICAL COMPANY El Dorado, Arkansas

> NPDES #AR0000752 AFIN #70-00040

EPA Methods 2000.0 and 2021.0

Project X5869

Test Dates: October 25 - 27, 2015 Report Date: November 10, 2015

Prepared for:
Mr. David Sartain
El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731

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

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#### 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<sub>50</sub>, 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. 20<sup>th</sup> 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.

#### 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 sample of Outfall 006 was collected by El Dorado Chemical personnel on October 24, 2015, at 2000 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° 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  $25\pm1^{0}$  Celsius. The total residual chlorine level (SM4500-Cl D 1997) was measured with a Capital Controls<sup>R</sup> amperometric titrator and recorded if present. The total ammonia level was measured using a HACH<sup>R</sup> 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<sup>R</sup> dual controlled illuminated incubator at a temperature of 25±1<sup>0</sup> Celsius. An AEMC<sup>R</sup> data logger was used to monitor diurnal temperature throughout the testing period. Light cycle and intensity were recorded twice a month.

#### 2.8 Data Analysis

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

#### 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* test was 100.0 percent effluent (p=.05). The 48-hour LC<sub>50</sub> values could not be calculated in either test because greater than 50.0 percent survival occurred in each effluent concentration. See Appendix C- Statistical Analyses, for more information.

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

Control of the Contro	R	
Test Organism	Pimephales promelas	Daphnia pulex
Control	100.0	95.0
22.0	95.0	92.5
32.0	90.0	87.5
45.0	95.0	85.0
56.0	100.0	90.0
75.0	95.0	80.0
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.

#### 4.0 Conclusions

The sample of Outfall 006 collected from El Dorado Chemical Company, El Dorado, Arkansas, on October 24, 2015, was not found to be lethally toxic to the fathead minnow test organisms nor the *Daphnia pulex* test organisms in the 100.0 percent critical dilution after 48 hours of exposure (p=.05). The 48-hour  $LC_{50}$  values could not be calculated because greater than 50.0 percent survival occurred in the effluent dilutions (p=.05).

#### 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 627 Doyline, LA 71023 (318) 745-277 1-800-269-124 Fax: (318) 746-277

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

Laboratory Use Only: Project Analysis: Phone: Company: Number: (870) 863-1484 **El Dorado Chemical Company Fecal Coliform** Chronic minnow Acute minnow(fresh/marine) Acute Daphnia species Acute Mysid Chronic Ceriodaphnia Acute Ceriodaphnia Fax: Address: 4500 Norwest Ave., El Dorado, AR 71731 (870) 863-7499 Temp. upon arrival: Purchase Order: Permit #: AR0000752/AFIN 70-00040 Sampler's Signature/Printed Name/Affiliation: Morgan - EDCC Lab Control Sample Identification (below)  $\mathbf{C}$ G # and type of Time Start **Date Start** Number: container Date End Time End 7000 006 C11595 1000 X  $\mathbf{X}$ 6 half gallons 2000 10/24/15 Received by/Affiliation: Date: Time: Date: Time: Relinquished by/Affiliation: 1-Rustis 0930 EDCC 0930 Received by/Affiliation: Time: Date: Date: Time: Relinquished by/Affiliation: Received by/Affiliation: Time: Time: Date! Relinquished by/Affiliation: Client Other Tracking # UPS\_ DHL Method of Shipment: Bus Fed Ex Comments: COC Rev. 3.0

APPENDIX B
RAW DATA SHEETS

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#### APPENDIX C STATISTICAL ANALYSES

								X5869
	····			Dap	hnid Acute To	est-48 Hr Survival		Page 22 of 33
Start Date:	10/25/2015	5	Test ID:	X5869DP		Sample ID:	AR0000752/006	
End Date:	10/27/2015	i	Lab ID:	ADEQ880	630	Sample Type:	EFF2-Industrial	
Sample Date:	10/24/2015	;	Protocol:	EPAAW02	2-EPA/821/R-0	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	0.7500	1.0000	1.0000	0.8750	1.0000			
32	1.0000	1.0000	1.0000	0.7500	0.6250			
45	0.8750	0.7500	1.0000	1.0000	0.6250			
56	1.0000	0.8750	0.8750	0.8750	0.8750			
75	1.0000	0.8750	0.8750	0.6250	0.6250			
100	0.8750	1.0000	1.0000	0.8750	1.0000			

			Tra	ansform:	Arcsin Sc	uare Root		Rank	1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	
D-Control	0.9500	1,0000	1.3239	1.0472	1.3931	11.684	5			
22	0.9250	0.9737	1.2872	1.0472	1.3931	12.116	5	25.50	16.00	
32	0.8750	0.9211	1.2276	0.9117	1.3931	18.862	5	24.50	16.00	
45	0.8500	0.8947	1.1909	0.9117	1.3931	17.846	5	22.50	16.00	
56	0.9000	0.9474	1.2462	1.2094	1.3931	6.591	5	22.00	16.00	
75	0.8000	0.8421	1.1271	0.9117	1.3931	18.667	5	20.00	16.00	
100	0.9500	1.0000	1.3196	1.2094	1.3931	7.623	5	26.00	16.00	

Auxiliary Tests					Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates nor	-normal dis	stribution (	p <= 0.05)		0.93248	0.934	-0.4976	-0.7653
Bartlett's Test Indicates equal var					5.75136	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								

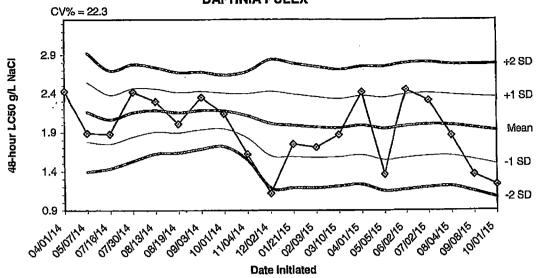
			Page 23 of 33						
Start Date:	10/25/2015	5	Test ID:	X5870PP		Sample 10	<del>)</del> :	AR0000752/006	
End Date:	10/27/2015	5	Lab ID:	ADEQ880	630	Sample T	уре:	EFF2-Industrial	
Sample Date:	10/24/2015	5	Protocol:	EPAAW02	-EPA/821/	R-02-01 Test Spec	cies:	PP-Pimephales pro	omelas
Comments:									
Conc-%	1	2	3	4	5		•		
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000				
22	1.0000	0.8750	1.0000	0.8750	1.0000				
32	0.8750	0.7500	1.0000	0.8750	1.0000				
45	1.0000	1.0000	1.0000	0.8750	0.8750				
56	1.0000	1.0000	1.0000	1.0000	1.0000				
75	1.0000	1.0000	1.0000	1.0000	0.7500				
100	1.0000	0.8750	1.0000	1.0000	1.0000				

			Tra	ansform:	Arcsin So	quare Roo	Rank	1-Tailed		
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5			
22	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50	16.00	
32	0.9000	0.9000	1.2504	1.0472	1.3931	11.683	5	20.00	16.00	
45	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50	16.00	
56	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00	
75	0.9500	0.9500	1.3239	1.0472	1.3931	11.684	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 nor	-normal dis	stribution (	p <= 0.05)	)	0.89011	0.934	-1.136	1.44269
Equality of variance cannot be co	nfirmed	_						
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU				
Steel's Many-One Rank Test	100	>100		1	<u>.</u>			•
Treatments vs D-Control								

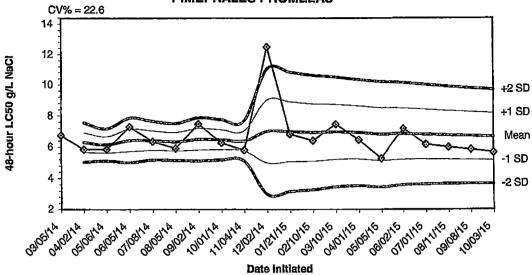
## APPENDIX D QUALITY ASSURANCE CHARTS

## 2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR DAPHNIA PULEX



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
04/01/14	2.4300					
05/07/14	1.8900	2.1600	1.7782	1.3963	2.5418	2.9237
07/16/14	1.8800	2.0667	1.7520	1.4373	2.3814	2.6961
07/30/14	2.4200	2,1550	1.8432	1.5314	2.4668	2,7786
08/13/14	2.3000	2.1840	1.9063	1.6286	2.4617	2.7394
08/19/14	2.0100	2.1550	1.8966	1.6383	2.4134	2.6717
09/03/14	2.3500	2.1829	1.9358	1.6887	2.4300	2.6771
10/01/14	2.1400	2.1775	1.9482	1.7190	2.4068	2.6360
11/04/14	1.6200	2.1156	1.8318	1.5480	2.3993	2.6831
12/02/14	1.1200	2.0160	1.6028	1.1897	2.4292	2.8423
01/21/15	1.7500	1.9918	1.5917	1.1917	2.3919	2.7920
02/03/15	1.7100	1.9683	1.5783	1.1883	2.3584	2.7484
03/10/15	1.8700	1.9608	1.5863	1.2119	2.3352	2.7096
04/01/15	2.4200	1.9936	1.6135	1.2334	2.3737	2.7538
05/05/15	1.3600	1.9513	1.5502	1.1491	2.3525	2.7536
06/02/15	2.4500	1.9825	1.5754	1.1683	2.3896	2.7967
07/02/15	2.3100	2.0018	1.5997	1.1976	2.4039	2.8059
08/04/15	1.8600	1.9939	1.6024	1.2109	2.3854	
09/08/15	1.3600	1.9605	1.5532	1.1459	2,3679	
10/01/15	1.2300	1.9240	1.4952	1.0664	2.3528	2.7816

## 2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR PIMEPHALES PROMELAS



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
03/05/14	6.7500					
04/02/14	5.8600	6.3050	5.6757	5.0463	6.9343	7.5637
05/06/14	5.8600	6.1567	5.6428	5.1290	6.6705	7.1844
06/05/14	7.3100	6.4450	5.7319	5.0187	7.1581	7.8713
07/08/14	6.3700	6.4300	5.8115	5.1930	7.0485	7.6670
08/05/14	5.9200	6.3450	5.7539	5.1628	6.9361	7.5272
09/02/14	7.4800	6.5071	5.8178	5.1285	7.1965	7.8858
10/01/14	6.2800	6.4788	5.8355	5.1923	7.1220	7.7652
11/04/14	5.8100	6.4044	5.7628	5.1211	7.0461	7.6878
12/02/14	12.5000	7.0140	4.9937	2.9734	9.0343	11.0546
01/21/15	6.8500	6.9991	5.0818	3.1646	8.9163	10.8336
02/10/15	6.4200	6.9508	5.1152	3.2795	8.7865	10.6221
03/10/15	7.4800	6.9915	5.2279	3.4643	8.7552	10.5188
04/01/15	6.4800	6.9550	5.2551	3.5551	8.6549	10.3549
05/05/15	5.2900	6.8440	5.1504	3.4568	8.5376	10.2312
06/02/15	7.2000	6.8663	5.2277	3.5891	8.5048	10.1434
07/01/15	6.1800	6.8259	5.2306	3.6354	8.4211	10.0164
08/11/15	6.0000	6.7800	5.2202	3.6604	8.3398	
09/08/15	5.8600	6.7316	5.2011	3.6706	8.2621	9.7925
10/03/15	5.6700	6.6785	5.1700	3.6616	8.1870	9.6954

## 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: 10/23/15

To: 10/24/15

From:

To:

Test Initiated: 10/25/15

**Dilution Water Used:** 

**Receiving Water** 

X Reconstituted Water

**Dilution Series Results - Percent Survival** 

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	75.0	100.0	87.5	100.0	100.0	100.0					
	В	100.0	100.0	100.0	100.0	87.5	87.5	100.0					
	C	100.0	100.0	100.0	100.0	100.0	87.5	100.0					
	D	100.0	87.5	100.0	100.0	100.0	87.5	100.0					
	E	75.0	100.0	87.5	100.0	87.5	100.0	100.0					
48-hour	A	100.0	75.0	100.0	87.5	100.0	100.0	87.5					
	В	100.0	100.0	100.0	75.0	87.5	87.5	100.0					
	С	100.0	100.0	100.0	100.0	87.5	87.5	100.0					
	D	100.0	87.5	75.0	100.0	87.5	62.5	87.5					
	E	75.0	100.0	62.5	62.5	87.5	62.5	100.0					
	Mean	95.0	92,5	87.5	85.0	90.0	80.0	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.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%)

YES

NO

2. Enter percent effluent corresponding to the  $LC_{50}$  below:

 $LC_{50} =$ 

N/A% effluent

95 % confidence limits:

Method of  $LC_{50}$  calculation:

- 3. If you answered NO to 1.a) enter (P) otherwise enter (F) P
- 4. Enter response to item 3 on DMR Form, parameter TEM3D
- 5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
- 6. Enter response to item 5 on DMR Form, parameter TFM3D

## Biomonitoring Daphnia pulex 48 hour Acute Static Renewal Chemical Parameters Chart\*

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

Contact: David Sartain Analyst: Briggs, Rose

Sample Collected

From:

Date 10/23/15

Time 2000

To:

Date 10/24/15 Date 10/25/15 Time 2000 Time 1410

Test Begin Test End

Date 10/27/15

Time 1540

Parameter		D.O.			l'emperatur	e		Alkalinity			Hardness			pH	
Dilut/Time	Ohrs.	24hrs	48hrs	Ohrs	24hrs	48hrs	Ohrs	24hrs	48hrs	Ohrs.	24hrs	48hrs	Ohrs	24hrs	48hrs
0	8.1	8.3	8.1	25.4	25.2	25.6	32.0			40.0			7.3	7.3	7.4
22.0	8.0	8.2	8.1	25.4	25.2	25.6							6.9	6.9	7.3
32.0	7.9	8.1	8.0	25.4	25.2	25.6							6.8	6.8	7.3
45.0	7.8	8.0	8.0	25.4	25.2	25.6							6.8	6.7	7.2
56.0	7.8	7.9	7.7	25.4	25.2	25.6							6.6	6.6	7.1
75.0	7.7	7.7	7.8	25.4	25.2	25.6							6.5	6.5	7.0
100.0	7.4	7.4	7.7	25.4	25.2	25.6	20.0			176.0			6.3	6.2	6.7

<sup>\*</sup>This Form is to be submitted with each DMR.

Alkalinity and hardness to be reported as mg/l CaCO<sub>3</sub>

## Acute Forms <u>Pimephales promelas</u> (Fathead minnow) Survival

Permittee: El Dorado Chemical - Outfall 006

NPDES Permit Number: AR0000752/ AFIN 70-00040

**Composite Collected** 

From: 10/23/15

To: 10/24/15

From:

To:

**Test Initiated: 10/25/15** 

**Dilution Water Used:** 

**Receiving Water** 

X Reconstituted Water

#### **Dilution Series Results - Percent Survival**

Company of the second		ACO ACCOL	1103 1 0	CCHL Bu	1 71 V CAL	역 등이 되십시간에 이 글 글		
TIME OF READING	REP	0	22.0	32.0	45.0	56.0	75.0	100.0
24-hour	A	100.0	100.0	87.5	100.0	100.0	100.0	100.0
	В	100.0	87.5	100.0	100.0	100.0	100.0	100.0
	С	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	87.5	100.0	100.0	100.0	100.0
	В	100.0	87.5	75.0	100.0	100.0	100.0	87.5
	C	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	D	100.0	87.5	87.5	87.5	100.0	100.0	100.0
	E	100.0	100.0	100.0	87.5	100.0	75.0	100.0
	Mean	100.0	95.0	90.0	95.0	100.0	95.0	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

X NO

b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%)

YES

NO

2. Enter percent effluent corresponding to the  $LC_{50}$  below:

 $LC_{50} =$ 

N/A% effluent

95 % confidence limits:

Method of  $LC_{50}$  calculation:

- 3. If you answered NO to 1.a) enter (P) otherwise enter (F) P
- 4. Enter response to item 3 on DMR Form, parameter TEM3D
- 5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
- 6. Enter response to item 5 on DMR Form, parameter TFM3D

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

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

Contact: David Sartain Analyst: Briggs, Rose

Sample Collected

From:

Date 10/23/15

Time 2000

To:

Date 10/24/15 Date 10/25/15 Time 2000 Time 1330

Test Begin Test End

Date 10/27/15

Time 1505

Parameter	ly in the	D.O.			Temperatur	•		Alkalinity			Hardness			рH	
Dilut./Time	Ohrs.	24hrs	48hrs	0hrs	24hrs	48hrs	Ohrs	24hrs	48hrs	°0hrs	24hrs	48hrs	Ohrs .	24hrs	48hrs
0	8.1	8.3	7.7	25.4	25.7	25.6	32.0			40.0	_		7.3	7.3	7.1
22.0	8.0	8.2	7.6	25.4	25.7	25.6							6.9	6.9	7.0
32.0	7.9	8.1	7.5	25.4	25.7	25.6							6.8	6.8	7.0
45.0	7.8	8.0	7.6	25.4	25.7	25.6							6.8	6.7	6.9
56.0	7.8	7.9	7.4	25.4	25.7	25.6							6.6	6.6	6.9
75.0	7.7	7.7	7.4	25.4	25.7	25.6							6.5	6.5	6.7
100.0	7.4	7.4	7.2	25.4	25.7	25.6	20.0			176.0			6.3	6.2	6.6

<sup>\*</sup>This Form is to be submitted with each DMR.

Alkalinity and hardness to be reported as mg/l CaCO<sub>3</sub>



### **Bio-Analytical Laboratories**

3240 Spurgin Road Post Office Box 527 Doyline, LA 71023 (318) 745-2772 1-800-259-1246 Fax: (318) 745-2773

#### REPORT QUALITY ASSURANCE FORM

Client: EL Dorado Chemical - 006
Project#: X 5869
Chain of Custody Documents Checked by: RC 11/2/15  Technician/Date
Raw Data Documents Checked by: Rechnician/Date
Statistical Analysis Package Checked by: ES 10/28/15  Quality Manager/Date
Quality Control Data Checked by: EGS 113/15
Quality Manager/Date  Report Checked by: Up 15  Quality Manager/Date
I certify that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information contained in this document, to the best of my knowledge, is true, accurate and complete.
Quality Manager  Bruging B5  11/10/15  Date

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

Report Rev. 3.0

Bio-Analytical Laboratories (BAL) ADEQ#88-0630 Project X5870

#### **Bio-Analytical Laboratories' Executive Summary**

Permittee:

El Dorado Chemical Company

P.O. Box 231

El Dorado, AR 71731

Project #:

X5870

Outfall:

Outfall 007 (contaminated storm water)

Permit #:

AR0000752/ AFIN #70-00040

Contact:

Mr. David Sartain

Test Dates:

October 25 - 27, 2015

Test Type:

48-hour acute toxicity test using Pimephales promelas (EPA 2000.0).

48-hour acute toxicity test using Daphnia pulex (EPA 2021.0)

#### Results:

#### For Pimephales promelas:

- 1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM6C- 0- Pass.
- 2. Report the NOEC for survival, Parameter TOM6C 100.0%.
- 3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM6C 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**

3240 Spurgin Road Post Office Box 527 Doyline, LA 71023 (318) 745-2772 1-800-269-1246 Fax: (318) 745-2773

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

EL DORADO CHEMICAL COMPANY El Dorado, Arkansas

> NPDES #AR0000752 AFIN #70-00040

EPA Methods 2000.0 and 2021.0

Project X5870

Test Dates: October 25 - 27, 2015 Report Date: November 10, 2015

Prepared for:

Mr. David Sartain El Dorado Chemical Company P.O. Box 231 El Dorado, AR 71731 Prepared by:

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

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# 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<sub>50</sub>, 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. 20<sup>th</sup> 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.

## 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 24, 2015, at 2000 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° 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  $25\pm1^{0}$  Celsius. The total residual chlorine level (SM4500-Cl D 1997) was measured with a Capital Controls<sup>R</sup> amperometric titrator and recorded if present. The total ammonia level was measured using a HACH<sup>R</sup> 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<sup>R</sup> dual controlled illuminated incubator at a temperature of 25±1<sup>0</sup> Celsius. An AEMC<sup>R</sup> data logger was used to monitor diurnal temperature throughout the testing period. Light cycle and intensity were recorded twice a month.

# 2.8 Data Analysis

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

## 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* test was 100.0 percent effluent (p=.05). The 48-hour  $LC_{50}$  values could not be calculated in either test because greater than 50.0 percent survival occurred in each effluent concentration. See Appendix C- Statistical Analyses, for more information.

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

PercentiEfflüent	P	ercentsprevival
Test Organism	Pimephales promelas	Daphnia pulex
Control	100.0	97.5
22.0	100.0	100.0
32.0	100.0	90.0
45.0	95.0	95.0
56.0	92.5	92.5
75.0	95.0	97.5
100.0	97.5	90.0

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.

# 4.0 Conclusions

The sample of Outfall 007 collected from El Dorado Chemical Company, El Dorado, Arkansas, on October 24, 2015, was not found to be lethally toxic to the fathead minnow test organisms nor the *Daphnia pulex* test organisms in the 100.0 percent critical dilution after 48 hours of exposure (p=.05). The 48-hour  $LC_{50}$  values could not be calculated because greater than 50.0 percent survival occurred in the effluent dilutions (p=.05).

### 5.0 References

- EPA, 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. EPA-821-R-02-012, Office of Water.
- EPA, 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System. EPA-833-R-00-003, Office of Wastewater Management.
- EPA, 2000. Method Guidance and Recommendations for Whole Effluent (WET) Testing, EPA-821-B-00-04, Office of Water
- APHA, 1998. Standard Methods for The Examination of Water and Wastewater. 20th Edition.

# APPENDIX A CHAIN-OF-CUSTODY DOCUMENTS



# Bio-Analytical Laboratories

3240 Spurgin Road Post Office Box 527 Doyline, LA 71023 (318) 746-277 1-800-269-124 Fax: (318) 746-277

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

Deytine, LA 71025							_			Lab	oratory Use Only:	
Company: Phone: El Dorado Chemical Company (870) 863-1484			An	alysis	:						Project Number:	
Address: Fax: 4500 Norwest Ave., El Dorado, AR 71731 (870) 863-7499	·		Chronic	Chronic	Acute m	Acute D	Acute Mysid	Acute C	Fecal Coliforn		X5670 Temp. upon	
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# APPENDIX B RAW DATA SHEETS

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Client: <u>EDCC/El</u>	Dorado Chem	nical Co	ompany					
Address: 4500 No	orthwest Ave	El Doi	cado AR	71731	I			
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Technicians: EG								
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Test terminated Dissolved Oxygen pH Meter: Conductivity Me Amperometric Ti	# Model # ter: Model trator: Mode	Orion 2 Controll 1 #Fiso	230A+ ol Co.	Seria Seria rter Se	il # il #	‡0152 ‡8027	253 77924	
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Soft H20 3788	NA -				7.2	40.0	32.0	ECB
			Informa					
Test Species Info.	Species D. DUTE	Species.	2015	Species: ID#:			Species: ID#:	
Age	LAY hours	_	tays.					
Test Container Size	30m)	25	<u>2m/</u>					
Test volume	30m	300	JWT					
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Test Dilution	Replicate	Test Salinity		# Liv	e Org	anisma	3	;	Diss	olved	Oxtyge	n,	<u> </u>		pH				c	onduct	ivity	
90		NIA	0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
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Test Dilution	Replicate	Test Salinity		# Liv	e Org	eni em	g	;	Diss	olved	Oxyge	n 			pH		-		C	onduct	ivity		
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Test Dilution	Replicate	Test Salinity		# Liv	e Org	anism	s	,	Diss	olved	Ожуде	n			ΕQ	r			c	onduct	tivity	r
90		NA	0 bx	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
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Test Dilution	Replicate	Test Salinity		# Liv	e Org	anism	s _	7	Dias	olved	Oxyge	л. 			Eq	:			d	onduci	Livity	r
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# APPENDIX C STATISTICAL ANALYSES

									X5870
				Dap	hnid Acut	te Test-4	3 Hr Survival		Page 22 of 33
Start Date:	10/25/2015		Test ID:	X5870DP			Sample ID:	AR0000752/007	
End Date:	10/27/2015	i	Lab ID:	ADEQ880	630		Sample Type:	EFF2-Industrial	
Sample Date:	10/24/2015	;	Protocol:	EPAAW02	2-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				
32	1.0000	1.0000	1.0000	1.0000	1.0000				
45	0.7500	1.0000	1.0000	1.0000	0.7500				
50	0.8750	1.0000	1.0000	1.0000	0.8750				

 56
 1.0000
 0.8750
 1.0000
 0.7500
 1.0000

 75
 1.0000
 0.8750
 1.0000
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 100
 0.7500
 1.0000
 0.8750
 1.0000
 0.8750

			Tra	ansform:	Arcsin Sc	uare Roof	ì	Rank	1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	
D-Control	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5			
32	1.0000	1.0256	1.3931	1.3931	1.3931	0.000	5	30.00	16.00	
45	0.9000	0.9231	1.2547	1.0472	1.3931	15.099	5	24.00	16.00	
50	0.9500	0.9744	1.3196	1.2094	1.3931	7.623	5	25.00	16.00	
56	0.9250	0.9487	1.2872	1.0472	1.3931	12.116	5	24.50	16.00	
75	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5	27.50	16.00	
100	0.9000	0.9231	1.2504	1.0472	1.3931	11.683	5	22.00	16.00	

Auxiliary Tests		· · · · · ·	•		Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates nor	-normal dis	stribution (	p <= 0.05)		0.9057	0.934	-0.6986	-0.4393
Equality of variance cannot be co	nfirmed	•						
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU				
Steel's Many-One Rank Test	100	>100		1				
Treatments vs D-Control								

X5870

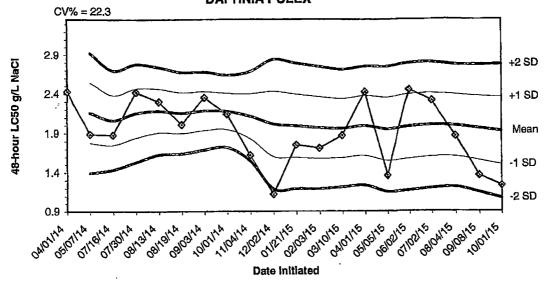
				Ac	Page 23	Page 23 of 33		
Start Date:	10/25/2015		Test ID:	X5870PP		Sample ID:	AR0000752/007	
End Date:	10/27/2015		Lab ID:	ADEQ880	630	Sample Type:	EFF2-Industrial	
Sample Date:	10/24/2015		Protocol:	EPAAW02	2-EPA/821/R-	02-01 Test Species:	PP-Pimephales promelas	
Comments:								
Conc-%	1	2	3	4	5			
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000			
32	1.0000	1.0000	1.0000	1.0000	1.0000			
45	1.0000	1.0000	1.0000	1.0000	1.0000			
50	1.0000	1.0000	1.0000	1.0000	0.7500			
56	1.0000	1.0000	0.7500	1.0000	0.8750		•	
75	1.0000	0.7500	1.0000	1.0000	1.0000			
100	1,0000	1.0000	1.0000	0.8750	1.0000			

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

<b>Auxiliary Tests</b>					Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates nor	n-normal dis	stribution (	p <= 0.05)		0.73847	0.934	-1.8628	3.27478
Equality of variance cannot be co	nfirmed							_
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	·			
Steel's Many-One Rank Test	100	>100		1				
Treatments vs D-Control								

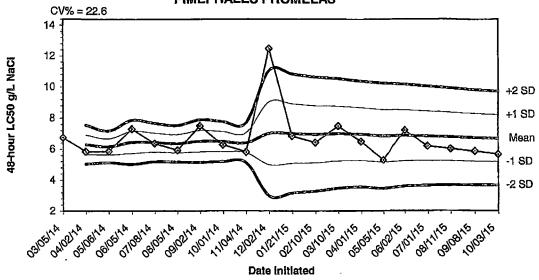
# APPENDIX D QUALITY ASSURANCE CHARTS

# 2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR DAPHNIA PULEX



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
04/01/14	2.4300					
05/07/14	1.8900	2.1600	1.7782	1.3963	2.5418	2.9237
07/16/14	1.8800	2.0667	1.7520	1.4373	2.3814	2.6961
07/30/14	2.4200	2.1550	1.8432	1.5314	2.4668	2.7786
08/13/14	2.3000	2.1840	1.9063	1.6286	2.4617	2.7394
08/19/14	2.0100	2.1550	1.8966	1.6383	2.4134	2.6717
09/03/14	2.3500	2.1829	1.9358	1.6887	2.4300	2.677.1
10/01/14	2.1400	2.1775	1.9482	1.7190	2.4068	2.6360
11/04/14	1.6200	2.1156	1.8318	1.5480	2.3993	2.6831
12/02/14	1.1200	2.0160	1.6028	1.1897	2.4292	2.8423
01/21/15	1.7500	1.9918	1.5917	1.1917	2.3919	2.7920
02/03/15	1.7100	1.9683	1.5783	1.1883	2.3584	2.7484
03/10/15	1.8700	1.9608	1.5863	1.2119	2.3352	2.7096
04/01/15	2.4200	1.9936	1.6135	1.2334	2.3737	2.7538
05/05/15	1.3600	1.9513	1.5502	1.1491	2.3525	2.7536
06/02/15	2.4500	1.9825	1.5754	1.1683	2.3896	2.7967
07/02/15	2.3100	2,0018	1.5997	1.1976	2.4039	2.8059
08/04/15	1.8600	1.9939	1.6024	1.2109	2.3854	2.7769
09/08/15	1.3600	1.9605	1.5532	1.1459	2.3679	2.7752
10/01/15	1.2300	1.9240	1,4952	1.0664	2.3528	2.7816

# 2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR PIMEPHALES PROMELAS



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
03/05/14	6.7500					
04/02/14	5.8600	6.3050	5.6757	5.0463	6.9343	7.5637
05/06/14	5.8600	6.1567	5.6428	5.1290	6.6705	7.1844
06/05/14	7.3100	6.4450	5.7319	5.0187	7.1581	7.8713
07/08/14	6.3700	6.4300	5.8115	5.1930	7.0485	7.6670
08/05/14	5.9200	6.3450	5.7539	5.1628	6.9361	7.5272
09/02/14	7.4800	6.5071	5.8178	5.1285	7.1965	7.8858
10/01/14	6.2800	6.4788	5.8355	5.1923	7.1220	7.7652
11/04/14	5.8100	6.4044	5.7628	5.1211	7.0461	7.68 <b>7</b> 8
12/02/14	12.5000	7.0140	4.9937	2.9734	9.0343	11.0546
01/21/15	6.8500	6.9991	5.0818	3.1646	8.9163	10.8336
02/10/15	6.4200	6.9508	5.1152	3.2795	8.78 <del>6</del> 5	10.6221
03/10/15	7.4800	6.9915	5.2279	3.4643	8.7552	10.5188
04/01/15	6.4800	6.9550	5.2551	3.5551	8.6549	10.3549
05/05/15	5.2900	6.8440	5.1504	3.4568	8.5376	10.2312
06/02/15	7.2000	6.8663	5.2277	3.5891	8.5048	10.1434
07/01/15	6.1800	6.8259	5.2306	3.6354	8.4211	10.0164
08/11/15	6.0000	6.7800	5.2202	3.6604	8.3398	9.8996
09/08/15	5.8600	6.7316	5.2011	3.6706	8.2621	9.7925
10/03/15	5.6700	6.6785	5.1700	3.6616	8,1870	9.6954

# 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: 10/23/15

To: 10/24/15

From:

To:

Test Initiated: 10/25/15

**Dilution Water Used:** 

**Receiving Water** 

X Reconstituted Water

### **Dilution Series Results - Percent Survival**

TIME OF READING	REP	0	32.0	45.0	50.0	56.0	75,0	100.0
24-hour	A	100.0	100.0	87.5	87.5	100.0	100.0	75.0
	В	100.0	100.0	100.0	100.0	100.0	87.5	10.0
	C	100.0	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	87.5
48-hour	A	100.0	100.0	75.0	87.5	100.0	100.0	75.0
	В	100.0	100.0	100.0	100.0	87.5	87.5	100.0
	С	100.0	100.0	100.0	100.0	100.0	100.0	87.5
	D	100.0	100.0	100.0	100.0	75.0	100.0	100.0
	E	87.5	100.0	75.0	87.5	100.0	100.0	87.5
	Mean	97.5	100.0	90.0	95.0	92.5	97.5	90.0

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:

a.) LOW FLOW OR CRITICAL DILUTION (100.0%)

YES

X NO

b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%)

YES

NO

2. Enter percent effluent corresponding to the LC<sub>so</sub> below:

 $LC_{50} =$ 

N/A% effluent

95 % confidence limits:

Method of LC<sub>50</sub> 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: David Sartain** 

Analyst: Briggs, Rose, Callahan

Sample Collected

From: To:

Date 10/23/15

Time 2000

**Test Begin** 

Date 10/24/15 Date 10/25/15 Time 2000 Time 1430

		Test En				Date:	10/27/15	Time 154	15	···					
Parameter		D.O.			<b>Femperatur</b>	•		Alkalinity			Hardness			рH	
Dilut/Time	Ohrs.	24hrs	48hrs	Ohrs	24hrs	48hrs	Ohrs	24hrs	48hrs	0hrs	24hrs	48hrs	Ohrs	24hrs	48hrs
0	8.2	8.4	8.0	25.4	25.1	25.6	32.0			40.0			7.3	7.3	7.4
32.0	7.9	8.0	8.0	25.4	25.1	25.6							6.9	7.1	7.3
45.0	7.8	7.9	7.9	25.4	25.1	25.6							6.9	7.0	7.3
50.0	7.8	7.8	7.9	25.4	25.1	25.6							6.9	7.0	7.3
56.0	7.7	7.8	7.8	25.4	25.1	25.6							6.9	7.0	7.4
75.0	7.8	7.7	7.8	25.4	25.1	25.6							6.8	7.0	7.3
100.0	7.5	7.6	7.7	25.4	25.1	25.6	28.0			568.0			6.7	6.9	7.2

<sup>\*</sup>This Form is to be submitted with each DMR.

Alkalinity and hardness to be reported as mg/l CaCO<sub>3</sub>

# Acute Forms Pimephales promelas (Fathead minnow) Survival

Permittee: El Dorado Chemical - Outfall 007

NPDES Permit Number: AR0000752/ AFIN 70-00040

**Composite Collected** 

From: 10/23/15

To: 10/24/15

From:

To:

Test Initiated: 10/25/15

**Dilution Water Used:** 

**Receiving Water** 

X Reconstituted Water

## **Dilution Series Results - Percent Survival**

TIME OF READING	REP	0	32.0	45.0	50.0	56.0	75.0	100.0
24-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Ì	В	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	100.0	<b>7</b> 5.0	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
	В	100.0	100.0	100.0	100.0	100.0	100.0	75.0
	C	100.0	100.0	100.0	100.0	75.0	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	75.0	87.5	100.0	100.0
	Mean	100.0	100.0	100.0	95.0	92.5	95.0	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

YES

NO

NO

b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%)
2. Enter percent effluent corresponding to the LC<sub>50</sub> below:

 $LC_{50} =$ 

N/A% effluent

95 % confidence limits:

Method of  $LC_{50}$  calculation:

- 3. If you answered NO to 1.a) enter (P) otherwise enter (F) P
- 4. Enter response to item 3 on DMR Form, parameter TEM3D
- 5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
- 6. Enter response to item 5 on DMR Form, parameter TFM3D

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

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

**Contact: David Sartain** 

Analyst: Briggs, Rose, Callahan

Sample Collected From:

Date 10/23/15 To:

Time 2000

Date 10/24/15 Date 10/25/15 Time 2000 Time 1345

Test Begin Test End

Date 10/27/15

Time 1520

Parameter		D.O.			l'emperatur	<b>e</b>		Alkalinity		Nesi-11. Kabupatèn	Hardness			pH	
Dilut/Time	Ohrs:	24hrs	48hrs	Ohrs	24hrs	48hrs	0hrs	24hrs	48hrs	Ohrs .	24hrs	48hrs	Ohrs	24hrs	48hrs
0	8.2	8.4	7.6	25.4	25.3	25.6	32.0			40.0			7.3	7.3	7.0
32.0	7.9	8.0	7.5	25.4	25.3	25.6							6.9	7.1	6.9
45.0	7.8	7.9	7.3	25.4	25.3	25.6							6.9	7.0	7.0
50.0	7.8	7.8	7.3	25.4	25.3	25.6							6.9	7.0	7.0
56.0	7.7	7.8	7.2	25.4	25.3	25.6							6.9	7.0	7.0
75.0	7.8	7.7	7.1	25.4	25.3	25.6							6.8	7.0	7.0
100.0	7.5	7.6	7.1	25.4	25.3	25.6	28.0			568.0			6.7	6.9	7.0

<sup>\*</sup>This Form is to be submitted with each DMR.

Alkalinity and hardness to be reported as mg/l CaCO<sub>3</sub>

# APPENDIX F REPORT QUALITY ASSURANCE FORM



# **Bio-Analytical Laboratories**

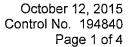
3240 Spurgin Road Post Office Box 527 Doyline, LA 71023 (318) 745-2772 1-800-259-1246 Fax: (318) 745-2773

# REPORT QUALITY ASSURANCE FORM

Client: El Dorado Chemical -007
Project#: X 5870
Chain of Custody Documents Checked by: RC 11/2/15 Technician/Date
Raw Data Documents Checked by: Rechnician/Date
Statistical Analysis Package Checked by: E6 10/28/15
Quality Manager/Date  Quality Control Data Checked by: E68 11 3/15
Quality Manager/Date  Report Checked by: E66 11/10/15
Quality Manager/Date
I certify that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information contained in this document, to the best of my knowledge, is true, accurate and complete.
Dreid Bargop, Bo 11/10/15
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.

Report Rev. 3.0





El Dorado Chemical Company ATTN: Mr. Eddie Pearson 4500 North West Avenue El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on October 5, 2015. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

This report is intended for the sole use of the client listed above. Assessment of the data requires access to the entire document.

This report has been reviewed by the Laboratory Director or a qualified designee.

Overbey æboratory Directør

This document has been distributed to the following:

PDF cc: El Dorado Chemical Company ATTN: Mr. David Sartain

dsartain@edc-ark.com

El Dorado Chemical Company

ATTN: Mr. Kelly Olivier kolivier@edc-ark.com

El Dorado Chemical Company ATTN: Ms. Vee Ann Poole vapoole@edc-ark.com

GBMc & Associates, Inc. ATTN: Ms. Amanda Gallagher agallagher@gbmcassoc.com

El Dorado Water Utilities ATTN: Mr. John Peppers johnp@eldoradowater.com

Lion Oil Company ATTN: Lab lab\_water@lionoil.com

GBMc & Associates, Inc. ATTN: Ms. Emily Edward eedwards@gbmcassoc.com Great Lakes Chemical Corporation ATTN: Mr. Marshall Johnson marshall.johnson@chemtura.com

El Dorado Chemical Company ATTN: Mr. Eddie Pearson epearson@edc-ark.com

Great Lakes Chemical Corporation ATTN: Mr. Jared Walton

iared.walton@chemtura.com

El Dorado Water Utilities ATTN: Mr. Jay Honeycut lab@eldoradowater.com

El Dorado Chemical Company ATTN: Mr. Les Morgan Imorgan@edc-ark.com



El Dorado Chemical Company 4500 North West Avenue El Dorado, AR 71730

## **SAMPLE INFORMATION**

### **Project Description:**

Three (3) water sample(s) received on October 5, 2015 Tri-Weekly - Permit AR0000752 P.O. No. 357042

## **Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

## Sample Identification:

Laboratory ID	Client Sample ID	Sampled Date/Time	Notes
194840-1	Outfall 010	05-Oct-2015 1000	
194840-2	Outfall 010	05-Oct-2015 1000	
194840-3	Outfall 003	05-Oct-2015 1030	

### Qualifiers:

D Result is from a secondary dilution factor

### References:

"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).

<sup>&</sup>quot;Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.

<sup>&</sup>quot;Standard Methods for the Examination of Water and Wastewaters", (SM).

<sup>&</sup>quot;American Society for Testing and Materials" (ASTM).

<sup>&</sup>quot;Association of Analytical Chemists" (AOAC).



El Dorado Chemical Company 4500 North West Avenue El Dorado, AR 71730

# **ANALYTICAL RESULTS**

AIC No. 194840-1

Sample Identification: Outfall 010 05-Oct-2015 1000

Analyte		Result	RL	Units	Qualifier		
Ammonia as N with Distillar SM 4500-NH3 B,G 1997	t <b>ion</b> Prep: 06-Oct-2015 0936 by 93	<b>0.23</b> Analyzed: 06-0	0.1 Oct-2015 1906 by 308	mg/l Batch: W53453			
Carbonaceous BOD 5-day SM 5210 B 2001	Prep: 07-Oct-2015 0824 by 271	< <b>2</b> Analyzed: 12-0	2 Oct-2015 0936 by 271	<b>mg/l</b> Batch: W53467			
Total Suspended Solids USGS 3765	Prep: 06-Oct-2015 1408 by 271	<b>15</b> Analyzed: 07-0	4 Oct-2015 1154 by 271	<b>mg/l</b> Batch: W53462			
Phosphorus EPA 200.7	Prep: 05-Oct-2015 1640 by 313	<b>0.097</b> Analyzed: 06-0	0.02 Oct-2015 1030 by 317	<b>mg/l</b> Batch: S39867			
Nitrate as N EPA 300.0	Prep: 05-Oct-2015 1524 by 07	<b>9.7</b> Analyzed: 05-0	0.5 Oct-2015 1627 by 07	mg/l Batch: C18138	D Dil: 10		

AIC No. 194840-2

Sample Identification: Outfall 010 05-Oct-2015 1000

Analyte	Result	RL	Units	Qualifier
Fecal Coliform	2.0	1	/100ml	
SM 9222 D 1997	Analyzed: 05-O	ct-2015 1538 by 21	Batch: M5440	

**AIC No.** 194840-3

Sample Identification: Outfall 003 05-Oct-2015 1030

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distilla	ation	3.1	0.5	mg/l	D
SM 4500-NH3 B,G 1997	Prep: 06-Oct-2015 0936 by 93	Analyzed: 06-Oct-	2015 1944 by 308	Batch: W53453	Dil: 5

www.AmericanInterplex.com



El Dorado Chemical Company 4500 North West Avenue El Dorado, AR 71730

# **DUPLICATE RESULTS**

					RPD				
Analyte		AIC No.	Result	RPD	Limit	Preparation Date	Analysis Date	Dil	Qual
Total Suspended Solids		194822-1	8.0 mg/l			06Oct15 1408 by 271	07Oct15 1154 by 271		
	Batch: W53462	Duplicate	8.8 mg/l	9.52	20.0	06Oct15 1409 by 271	07Oct15 1154 by 271		
Total Suspended Solids		194823-1	16 mg/l			06Oct15 1408 by 271	07Oct15 1154 by 271		
·	Batch: W53462	Duplicate	16 mg/l	2.47	20.0	06Oct15 1409 by 271	07Oct15 1154 by 271		
Carbonaceous BOD 5-day		194840-1	< 2 mg/l			07Oct15 0824 by 271	12Oct15 0936 by 271		
·	Batch: W53467	Duplicate	< 2 mg/l	0.00	20.0	07Oct15 1703 by 271	12Oct15 0938 by 271		

# **LABORATORY CONTROL SAMPLE RESULTS**

	Spike									
Analyte	Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	1 mg/l	102	80.0-120			W53453	06Oct15 0939 by 93	06Oct15 1841 by 308		
Carbonaceous BOD 5-day	200 mg/l	98.1	84.5-115			W53467	07Oct15 1703 by 271	12Oct15 0935 by 271		
Phosphorus	5 mg/l	99.5	85.0-115			S39867	05Oct15 1553 by 313	06Oct15 1006 by 317		
Nitrate as N	4 mg/l	98.6	90.0-110			C18138	05Oct15 1321 by 07	05Oct15 1354 by 07		

# **MATRIX SPIKE SAMPLE RESULTS**

		Spike							
Analyte	Sample	Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	194824-1	1 mg/l	102	80.0-120	W53453	06Oct15 0939 by 93	06Oct15 1844 by 308		
	194824-1	1 mg/l	102	80.0-120	W53453	06Oct15 0939 by 93	06Oct15 1846 by 308		
	Relative Pe	rcent Difference:	0.0892	25.0	W53453				
Phosphorus	194788-1	5 mg/l	102	75.0-125	S39867	05Oct15 1553 by 313	06Oct15 1009 by 317		
	194788-1	5 mg/l	94.9	75.0-125	S39867	05Oct15 1553 by 313	06Oct15 1012 by 317		
	Relative Pe	rcent Difference:	3.18	20.0	S39867	•			
Nitrate as N	194836-1	4 mg/l	103	80.0-120	C18138	05Oct15 1321 by 07	05Oct15 1512 by 07		
	194836-1	4 mg/l	104	80.0-120	C18138	05Oct15 1321 by 07	05Oct15 1537 by 07		
	Relative Pe	rcent Difference:	1.01	10.0	C18138				

# **LABORATORY BLANK RESULTS**

				QC			
Analyte	Result	RL	PQL	Sample	Preparation Date	Analysis Date	Qual
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W53453-1	06Oct15 0939 by 93	06Oct15 1839 by 308	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W53467-1	07Oct15 1703 by 271	12Oct15 0934 by 271	
Total Suspended Solids	< 4 mg/l	4	4	W53462-1	06Oct15 1409 by 271	07Oct15 1154 by 271	
Phosphorus	< 0.02 mg/l	0.02	0.02	S39867-1	05Oct15 1553 by 313	06Oct15 1003 by 317	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C18138-1	05Oct15 1321 by 07	05Oct15 1329 by 07	
Fecal Coliform	< 1 /100ml	1	1	M5440-1		05Oct15 1539 by 21	



# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

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Phone 870-312-1397 Fax:						Ву:	7	,						By:				Date/Time		
ſ		Mr. Eddie Pearson						<b>- ,</b>								J.	17	3~		1420
Report Address to: 4500 North West Avenue						Comr	nents:				1				<u> </u>	<del>Z '                                   </del>				
	El Dorado, AR 71730																			
	epearson@edc-ark.com																•			

FORM 0060



This report contains the analytical results and supporting information for samples submitted on October 26, 2015. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

This report is intended for the sole use of the client listed above. Assessment of the data requires access to the entire document.

This report has been reviewed by the Laboratory Director or a qualified designee.

**Deputy Laboratory Director** 

This document has been distributed to the following:

PDF cc: El Dorado Chemical Company ATTN: Mr. David Sartain dsartain@edc-ark.com

> El Dorado Chemical Company ATTN: Mr. Eddie Pearson epearson@edc-ark.com



#### **SAMPLE INFORMATION**

### **Project Description:**

Two (2) water sample(s) received on October 26, 2015 006 Weekly / 007 Weekly P.O. No. 357042

#### **Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

#### Sample Identification:

Laboratory ID	Client Sample ID	Sampled Date/Time Notes
195545-1	006	23-Oct-2015 2000
195545-2	007	23-Oct-2015 2015

#### Qualifiers:

D Result is from a secondary dilution factor

#### References:

"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).

<sup>&</sup>quot;Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.

<sup>&</sup>quot;Standard Methods for the Examination of Water and Wastewaters", (SM).

<sup>&</sup>quot;American Society for Testing and Materials" (ASTM).

<sup>&</sup>quot;Association of Analytical Chemists" (AOAC).



### **ANALYTICAL RESULTS**

**AIC No.** 195545-1

Sample Identification: 006 23-Oct-2015 2000

Analyte		Result	RL	Units	Qualifier
Total Dissolved Solids SM 2540 C 1997	Prep: 27-Oct-2015 1544 by 271	<b>400</b> Analyzed: 28-0	10 Oct-2015 1559 by 271	<b>mg/l</b> Batch: W53720	
Ammonia as N with Distill SM 4500-NH3 B,G 1997	<b>ation</b> Prep: 27-Oct-2015 0947 by 93	<b>10</b> Analyzed: 27-0	1 Oct-2015 1911 by 93	<b>mg/l</b> Batch: W53715	D Dil: 10
Total Suspended Solids USGS 3765	Prep: 27-Oct-2015 1418 by 271	<b>790</b> Analyzed: 28-0	20 Oct-2015 1204 by 271	<b>mg/l</b> Batch: W53718	
Oil and Grease EPA 1664A	Prep: 28-Oct-2015 0837 by 280	< <b>5</b> Analyzed: 28-0	5 Oct-2015 1123 by 280	<b>mg/l</b> Batch: B9735	

**AIC No.** 195545-2

Sample Identification: 007 23-Oct-2015 2015

Analyte		Result	RL	Units	Qualifier
Total Dissolved Solids SM 2540 C 1997	Prep: 27-Oct-2015 1544 by 271	<b>520</b> Analyzed: 28-0	10 Oct-2015 1559 by 271	<b>mg/l</b> Batch: W53720	
Ammonia as N with Distilla SM 4500-NH3 B,G 1997	<b>ation</b> Prep: 27-Oct-2015 0947 by 93	<b>6.6</b> Analyzed: 27-0	1 Oct-2015 1916 by 93	<b>mg/l</b> Batch: W53715	D Dil: 10
Total Suspended Solids USGS 3765	Prep: 27-Oct-2015 1418 by 271	<b>110</b> Analyzed: 28-0	4 Oct-2015 1204 by 271	<b>mg/l</b> Batch: W53718	
Oil and Grease EPA 1664A	Prep: 28-Oct-2015 0837 by 280	< <b>5</b> Analyzed: 28-0	5 Oct-2015 1123 by 280	<b>mg/l</b> Batch: B9735	



# **DUPLICATE RESULTS**

					RPD				
Analyte		AIC No.	Result	RPD RPD	Limit	Preparation Date	Analysis Date	_ Dil	Qual
Total Suspended Solids		195528-1	48 mg/l			27Oct15 1418 by 271	28Oct15 1204 by 271		
·	Batch: W53718	Duplicate	48 mg/l	1.67	20.0	27Oct15 1425 by 271	28Oct15 1204 by 271		
Total Suspended Solids		195533-3	94 mg/l			27Oct15 1418 by 271	28Oct15 1204 by 271		
	Batch: W53718	Duplicate	95 mg/l	0.847	20.0	27Oct15 1425 by 271	28Oct15 1204 by 271		
Total Dissolved Solids		195575-1	440 mg/l			27Oct15 1544 by 271	28Oct15 1559 by 271		
	Batch: W53720	Duplicate	450 mg/l	1.78	10.0	27Oct15 1545 by 271	28Oct15 1559 by 271		
Total Dissolved Solids		195575-2	430 mg/l			27Oct15 1544 by 271	28Oct15 1559 by 271		
	Batch: W53720	Duplicate	420 mg/l	3.29	10.0	27Oct15 1545 by 271	28Oct15 1559 by 271		

### LABORATORY CONTROL SAMPLE RESULTS

	Spike					•				
Analyte	Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	1 mg/l	111	80.0-120			W53715	27Oct15 0948 by 93	27Oct15 1857 by 93		
Oil and Grease	40 mg/l	104	78.0-114			B9735	28Oct15 0837 by 280	28Oct15 1123 by 280		
·	40 mg/l	104	78.0-114	0.962	20.0	B9735	28Oct15 0837 by 280	28Oct15 1123 by 280		

### **MATRIX SPIKE SAMPLE RESULTS**

		Spike							
Analyte	Sample	Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	195542-1	1 mg/l	101	80.0-120	W53715	27Oct15 0948 by 93	27Oct15 1900 by 93		<del></del>
	195542-1	1 mg/l	102	80.0-120	W53715	27Oct15 0948 by 93	27Oct15 1902 by 93		
	Relative Pe	rcent Difference:	0.623	25.0	W53715				

				QC			
Analyte	Result	RL	PQL	. Sample	Preparation Date	Analysis Date	Qual
Total Dissolved Solids	< 10 mg/l	10	10	W53720-1	27Oct15 1545 by 271	28Oct15 1559 by 271	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W53715-1	27Oct15 0948 by 93	27Oct15 1855 by 93	
Total Suspended Solids	< 4 mg/l	4	4	W53718-1	27Oct15 1425 by 271	28Oct15 1204 by 271	
Oil and Grease	< 5 mg/l	5	5	B9735-1	28Oct15 0837 by 280	28Oct15 1123 by 280	



# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

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This report contains the analytical results and supporting information for the sample submitted on October 26, 2015. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

This report is intended for the sole use of the client listed above. Assessment of the data requires access to the entire document.

This report has been reviewed by the Laboratory Director or a qualified designee.

Jøhn Overbey æboratory Directør

This document has been distributed to the following:

PDF cc: E

El Dorado Chemical Company ATTN: Mr. David Sartain dsartain@edc-ark.com

El Dorado Chemical Company ATTN: Mr. Eddie Pearson epearson@edc-ark.com



#### **SAMPLE INFORMATION**

### **Project Description:**

Four (4) water sample(s) received on October 26, 2015 006 P.O. No. 357042

#### **Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

#### Sample Identification:

Laboratory ID	Client Sample ID	Sampled Date/Time	Notes
195543-1	006-1, -2, -3, -4	24-Oct-2015 1800	

#### Qualifiers:

D Result is from a secondary dilution factor

#### **Case Narrative:**

A proportional composite of four (4) samples was prepared.

#### References:

"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).

www.AmericanInterplex.com

"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.

<sup>&</sup>quot;Standard Methods for the Examination of Water and Wastewaters", (SM).

<sup>&</sup>quot;American Society for Testing and Materials" (ASTM).

<sup>&</sup>quot;Association of Analytical Chemists" (AOAC).



# **ANALYTICAL RESULTS**

**AIC No.** 195543-1

Sample Identification: 006-1, -2, -3, -4 24-Oct-2015 1800

Analyte		Result	RL	Units	Qualifier
Zinc EPA 200.7	Prep: 27-Oct-2015 1047 by 235	<b>1.2</b> Analyzed: 27-0	0.004 Oct-2015 1552 by 317	mg/l Batch: S39998	D Dil: 2
Cadmium EPA 200.8	Prep: 27-Oct-2015 1047 by 235	<b>1.3</b> Analyzed: 27-0	0.2 Oct-2015 1532 by 235	<b>ug/l</b> Batch: S39998	
Lead EPA 200.8	Prep: 27-Oct-2015 1047 by 235	<b>36</b> Analyzed: 27-0	0.5 Oct-2015 1532 by 235	<b>ug/l</b> Batch: S39998	



# **LABORATORY CONTROL SAMPLE RESULTS**

	Spike									
Analyte	Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Cadmium	0.05 mg/l	103	85.0-115	•		S39998	27Oct15 1048 by 235	27Oct15 1336 by 235		
Lead	0.05 mg/l	101	85.0-115			S39998	27Oct15 1048 by 235	27Oct15 1336 by 235		
Zinc	0.05 mg/l	104	85.0-115			S39998	27Oct15 1048 by 235	27Oct15 1336 by 235		

# **MATRIX SPIKE SAMPLE RESULTS**

	Spike				•			
Analyte	Sample Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Cadmium	195445-1 0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1342 by 235	·	
	195445-1 0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1347 by 235		
	Relative Percent Difference:	0.317	20.0	S39998				
Lead	195445-1 0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1342 by 235		
	195445-1 0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1347 by 235		
	Relative Percent Difference:	0.125	20.0	S39998				
Zinc	195445-1 0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1342 by 235		
	195445-1 0.05 mg/l	102	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1347 by 235		
	Relative Percent Difference:	1.36	20.0	S39998				

				QC			
Analyte	Result	RL	PQL	Sample	Preparation Date	Analysis Date	Qual
Cadmium	< 0.0002 mg/l	0.0002	0.0002	S39998-1	27Oct15 1048 by 235	27Oct15 1321 by 235	•
Lead	< 0.0005 mg/l	0.0005	0.0005	S39998-1	27Oct15 1048 by 235	27Oct15 1321 by 235	
Zinc	< 0.002 mg/l	0.002	0.002	S39998-1	27Oct15 1048 by 235	27Oct15 1321 by 235	



# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

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This report contains the analytical results and supporting information for the sample submitted on October 26, 2015. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

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This report has been reviewed by the Laboratory Director or a qualified designee.

Jøhn Overbey Laboratory Directør

This document has been distributed to the following:

PDF cc:

El Dorado Chemical Company

ATTN: Mr. David Sartain dsartain@edc-ark.com

El Dorado Chemical Company ATTN: Mr. Eddie Pearson epearson@edc-ark.com



#### SAMPLE INFORMATION

#### **Project Description:**

Four (4) water sample(s) received on October 26, 2015 007 P.O. No. 357042

#### **Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

#### Sample Identification:

Laboratory ID	Client Sample ID	Sampled Date/Time	Notes
195539-1	007-1, 2, 3, 4	24-Oct-2015 1815	

#### **Case Narrative:**

A proportional composite of four (4) samples was prepared.

#### References:

"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).

"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.

<sup>&</sup>quot;Standard Methods for the Examination of Water and Wastewaters", (SM).

<sup>&</sup>quot;American Society for Testing and Materials" (ASTM).

<sup>&</sup>quot;Association of Analytical Chemists" (AOAC).



### **ANALYTICAL RESULTS**

**AIC No.** 195539-1

**Sample Identification:** 007-1, 2, 3, 4 24-Oct-2015 1815

Analyte		Result	RL	Units	Qualifier
<b>Lead</b> EPA 200.8	Prep: 27-Oct-2015 1047 by 235	<b>2.4</b> Analyzed: 27-Oc	0.5 ct-2015 1526 by 235	<b>ug/l</b> Batch: S39998	
<b>Zinc</b> EPA 200.8	Prep: 27-Oct-2015 1047 by 235	83 Analyzed: 27-Od	2 ct-2015 1526 by 235	<b>ug/l</b> Batch: S39998	



### LABORATORY CONTROL SAMPLE RESULTS

	Spike									
Analyte	Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Lead	0.05 mg/l	101	85.0-115	-		S39998	27Oct15 1048 by 235	27Oct15 1336 by 235		
Zinc	0.05 mg/l	104	85.0-115			S39998	27Oct15 1048 by 235	27Oct15 1336 by 235		

# **MATRIX SPIKE SAMPLE RESULTS**

,	;	Spike							
Analyte	Sample	Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Lead	195445-1	0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1342 by 235		
	195445-1	0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1347 by 235		
	Relative Perce	ent Difference:	0.125	20.0	S39998				
Zinc	195445-1	0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1342 by 235		
		0.05 mg/l ent Difference:	102 1.36	75.0-125 20.0	S39998 S39998	27Oct15 1048 by 235	27Oct15 1347 by 235		

				QC			
Analyte	Result	RL	PQL	Sample	Preparation Date	Analysis Date	Qual
Lead	< 0.0005 mg/l	0.0005	0.0005	S39998-1	27Oct15 1048 by 235	27Oct15 1321 by 235	
Zinc	< 0.002 mg/l	0.002	0.002	S39998-1	27Oct15 1048 by 235	27Oct15 1321 by 235	



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This report contains the analytical results and supporting information for samples submitted on October 26, 2015. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

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This report has been reviewed by the Laboratory Director or a qualified designee.

John Overbey aboratory Director

This document has been distributed to the following:

PDF cc:

El Dorado Chemical Company ATTN: Mr. David Sartain dsartain@edc-ark.com

El Dorado Chemical Company ATTN: Mr. Eddie Pearson epearson@edc-ark.com



### **SAMPLE INFORMATION**

## **Project Description:**

Two (2) water sample(s) received on October 26, 2015 AR0000752 006/007 Stormwater Outfall P.O. No. 357042

#### Receipt Details:

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

#### Sample Identification:

Laboratory ID	Client Sample ID	Sampled Date/Time	Notes
195547-1	Outfall 006	26-Oct-2015 0815	
195547-2	Outfall 007	26-Oct-2015 0830	

## **Qualifiers:**

D Result is from a secondary dilution factor

#### References:

"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).

<sup>&</sup>quot;Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.

<sup>&</sup>quot;Standard Methods for the Examination of Water and Wastewaters", (SM).

<sup>&</sup>quot;American Society for Testing and Materials" (ASTM).

<sup>&</sup>quot;Association of Analytical Chemists" (AOAC).



# **ANALYTICAL RESULTS**

AIC No. 195547-1

Sample Identification: Outfall 006 26-Oct-2015 0815

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distilla		12	0.1	mg/l	D
SM 4500-NH3 B,G 1997	Prep: 27-Oct-2015 0947 by 93	Analyzed: 27-0	ct-2015 1919 by 93	Batch: W53715	Dil: 10
Total Suspended Solids USGS 3765	Prep: 27-Oct-2015 1418 by 271	<b>320</b> Analyzed: 28-0	10 oct-2015 1204 by 271	<b>mg/l</b> Batch: W53718	
Oil and Grease EPA 1664A	Prep: 28-Oct-2015 0837 by 280	< <b>5</b> Analyzed: 28-0	5 oct-2015 1123 by 280	<b>mg/l</b> Batch: B9735	

AIC No. 195547-2

Sample Identification: Outfall 007 26-Oct-2015 0830

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distilla SM 4500-NH3 B.G 1997	tion Prep: 27-Oct-2015 0947 by 93	11 Analyzed: 27-0	0.1 Oct-2015 1921 by 93	mg/l Batch: W53715	D Dil: 10
Total Suspended Solids USGS 3765	Prep: 27-Oct-2015 1418 by 271	14	4 Oct-2015 1204 by 271	<b>mg/l</b> Batch: W53718	<b>5</b> 11. 10
Oil and Grease EPA 1664A	Prep: 28-Oct-2015 0837 by 280	< <b>5</b> Analyzed: 28-0	5 Oct-2015 1123 by 280	<b>mg/l</b> Batch: B9735	



## **DUPLICATE RESULTS**

Analyte		AIC No.	Decult	DDD	RPD	Duamanatian Data	Amalonia Data	Б.:	0 - 1
Analyte		AIC NO.	Result	RPD	Limit	Preparation Date	Analysis Date	Dil	Qual
Total Suspended Solids		195528-1	48 mg/l	W	-	27Oct15 1418 by 271	28Oct15 1204 by 271		
	Batch: W53718	Duplicate	48 mg/l	1.67	20.0	27Oct15 1425 by 271	28Oct15 1204 by 271		
Total Suspended Solids		195533-3	94 mg/l			27Oct15 1418 by 271	28Oct15 1204 by 271		
	Batch: W53718	Duplicate	95 mg/l	0.847	20.0	27Oct15 1425 by 271	28Oct15 1204 by 271		

### **LABORATORY CONTROL SAMPLE RESULTS**

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	1 mg/l	111	80.0-120			W53715	27Oct15 0948 by 93	27Oct15 1857 by 93	-	
Oil and Grease	40 mg/l 40 mg/l	104 104	78.0-114 78.0-114	0.962	20.0	B9735 B9735	28Oct15 0837 by 280 28Oct15 0837 by 280	28Oct15 1123 by 280 28Oct15 1123 by 280		

#### **MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	195542-1	1 mg/l	101	80.0-120	W53715	27Oct15 0948 by 93	27Oct15 1900 by 93	-	
	195542-1	1 mg/l	102	80.0-120	W53715	27Oct15 0948 by 93	27Oct15 1902 by 93		
	Relative Pe	rcent Difference:	0.623	25.0	W53715				

Analyte	Result	RL	PQL.	QC Sample	Preparation Date	Analysis Date	Qual
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W53715-1	27Oct15 0948 by 93	27Oct15 1855 by 93	-
Total Suspended Solids	< 4 mg/l	4	4	W53718-1	27Oct15 1425 by 271	28Oct15 1204 by 271	
Oil and Grease	< 5 mg/l	5	5	B9735-1	28Oct15 0837 by 280	28Oct15 1123 by 280	



# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

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