

City of Berryville

Public Works Department

P.O. Box 227

305 East Madison

Berryville, Arkansas 72616

Office of the Director, Kirby Murray

Phone: 870-423-4074

Fax: 870-423-4501

E-mail: kirbymurray@gmail.com

September 26, 2013

Arkansas Department of Environmental Quality
Enforcement Section
5301 Northshore Dr.
N. Little Rock, AR
72118-5317

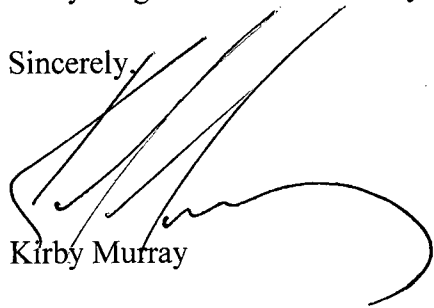
RE: Permit No.: AR0021792. AFIN No.: 08-00034, 3rd Quarter Biomonitoring Results

To Whom It May Concern:

Please find the enclosed biomonitoring results, lab reports and chain of custodies.

Everything is in order and Berryville's plant has passed all tests for the 3rd quarter of 2013.

Sincerely,



Kirby Murray

c. Mr. Darrell Backs, Chief Operator



ENVIRONMENTAL TESTING & CONSULTING, INC.

2790 Whitten Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440

September 19, 2013

Mr. Darrell Backs,
City of Berryville WWTP
P.O. Box 227
1000 W. Cedarvale Road Berryville, AR 72616

Dear Permittee,

The results of this WET (Whole Effluent Toxicity) test are acceptable according to test review criteria. There were no significant deficiencies found in sample handling, test performance, or reporting. The test results are within the limits established by your NPDES permit and were entered into the permittee's records in the database.

Results: NOEL/CV = 100% Permit Limit: 100%

Report #: 13-239-0190 BERRYVILLE AR0021792

All statistical interpretations generated by CETIS - Comprehensive Environmental Toxicity Information System (v.1.8.6.1). CETIS created by Tidepool Scientific Software

Respectfully,

A handwritten signature in cursive script that reads "Connie Cook".

Connie Cook, Lab Supervisor

Enclosure(s)

CETIS Test Evaluation Report

Report Date: 18 Sep-13 09:35 (1 of 2)
 Test Code: CD 13-239-0190 | 03-0296-0844

Facility: BERRYVILLE Sample Site: Sample Code: 13-239-0190 Sample Date: 26 Aug-13 12:05 Sample Age: 27h (1 °C) Project: WET Quarterly Compliance Test (3Q)	Test Name: Ceriodaphnia 7-d Survival and Reproduction Test Organism: Ceriodaphnia dubia (Water Flea) Protocol: EPA/821/R-02-013 (2002) Start Date: 27 Aug-13 15:30 End Date: 03 Sep-13 14:00 Duration: 6d 22h Organism Age: < 24
Permitee: City of Berryville WWTP Address: P.O. Box 227 1000 W. Cedarvale Road Berryville, AR 72616 Contact: Mr. Darrell Backs Phone: 870-423-3749, 870-423-4501(fax) Email:	Laboratory: Environmental Testing and Consulting, Inc. Address: 2790 Whitten Road Memphis, TN 38133 Contact: Connie Cook, Lab Supervisor Phone: 901-213-2454 Email: ccook@etcmemphis.com

Chronic Toxicity Evaluation					
Endpoint	Parameter	C-%	IWC	Pass/Fail	Method
Reproduction	NOEL/LOEL	100/>100	99.99	Pass	Dunnett Multiple Comparison Test

Test Acceptability Criteria				
Endpoint	Attribute	Test Stat	Limits	Pass/Fail
6d Survival Rate	Control CV	0	N/A - 0.4	Pass
6d Survival Rate	Control Resp	1	0.8 - N/A	Pass
Reproduction	Control CV	0.1615	N/A - 0.4	Pass
Reproduction	Control Resp	18.1	15 - N/A	Pass
Reproduction	PMSD	0.1772	0.13 - 0.47	Pass

CETIS Test Evaluation Report

Report Date: 18 Sep-13 09:35 (2 of 2)
 Test Code: CD 13-239-0190 | 03-0296-0844

6d Survival Rate Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	10	1	1	1	1	1	0	0	0.0%	0.0%
32		10	1	1	1	1	1	0	0	0.0%	0.0%
42		10	1	1	1	1	1	0	0	0.0%	0.0%
56		10	1	1	1	1	1	0	0	0.0%	0.0%
75		10	1	1	1	1	1	0	0	0.0%	0.0%
100		10	1	1	1	1	1	0	0	0.0%	0.0%

Reproduction Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	10	18.1	17.01	19.19	15	23	0.9244	2.923	16.15%	0.0%
32		10	17.1	15.74	18.46	11	23	1.149	3.635	21.26%	5.53%
42		10	17	16.19	17.81	14	21	0.6831	2.16	12.71%	6.08%
56		10	16.2	14.51	17.89	9	23	1.428	4.517	27.88%	10.5%
75		10	16.9	15.98	17.82	13	20	0.781	2.47	14.61%	6.63%
100		10	17.2	16.29	18.11	14	21	0.7717	2.44	14.19%	4.97%

CETIS Summary Report

Report Date: 18 Sep-13 09:35 (p 1 of 2)
 Test Code: CD 13-239-0190 | 03-0296-0844

Ceriodaphnia 7-d Survival and Reproduction Test Environmental Testing and Consulting, Inc.

Batch ID: 19-2020-5933	Test Type: Reproduction-Survival (7d)	Analyst: Ava Davis
Start Date: 27 Aug-13 15:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Perrier Water
Ending Date: 03 Sep-13 14:00	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 22h	Source: In-House Culture	Age: < 24

Sample ID: 10-9850-1153	Code: 13-239-0190	Client: City of Berryville WWTP
Sample Date: 26 Aug-13 12:05	Material: POTW Effluent	Project: WET Quarterly Compliance Test (3Q)
Receive Date: 27 Aug-13 09:06	Source: BERRYVILLE (AR0021792)	
Sample Age: 27h (1 °C)	Station:	

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	13-239-0190	28 Aug-13 12:05	29 Aug-13 08:35	29 Aug-13 00:00	1
2	13-239-0190	29 Aug-13 12:05	30 Aug-13 08:27	31 Aug-13 00:00	1

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
14-5296-5776	6d Survival Rate	100	>100	NA	NA	1	Fisher Exact/Bonferroni-Holm Test
07-7924-4541	Reproduction	100	>100	NA	17.7%	1	Dunnett Multiple Comparison Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
14-5296-5776	6d Survival Rate	Control CV	0	NL - 0.4	Yes	Passes Acceptability Criteria
07-7924-4541	Reproduction	Control CV	0.1615	NL - 0.4	Yes	Passes Acceptability Criteria
14-5296-5776	6d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
07-7924-4541	Reproduction	Control Resp	18.1	15 - NL	Yes	Passes Acceptability Criteria
07-7924-4541	Reproduction	PMSD	0.1772	0.13 - 0.47	Yes	Passes Acceptability Criteria

6d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	10	1	1	1	1	1	0	0	0.0%	0.0%
32		10	1	1	1	1	1	0	0	0.0%	0.0%
42		10	1	1	1	1	1	0	0	0.0%	0.0%
56		10	1	1	1	1	1	0	0	0.0%	0.0%
75		10	1	1	1	1	1	0	0	0.0%	0.0%
100		10	1	1	1	1	1	0	0	0.0%	0.0%

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	10	18.1	16.01	20.19	15	23	0.9244	2.923	16.15%	0.0%
32		10	17.1	14.5	19.7	11	23	1.149	3.635	21.26%	5.53%
42		10	17	15.45	18.55	14	21	0.6831	2.16	12.71%	6.08%
56		10	16.2	12.97	19.43	9	23	1.428	4.517	27.88%	10.5%
75		10	16.9	15.13	18.67	13	20	0.781	2.47	14.61%	6.63%
100		10	17.2	15.45	18.95	14	21	0.7717	2.44	14.19%	4.97%

CETIS Summary Report

Report Date: 18 Sep-13 09:35 (p 2 of 2)
 Test Code: CD 13-239-0190 | 03-0296-0844

Ceriodaphnia 7-d Survival and Reproduction Test											Environmental Testing and Consulting, Inc.
6d Survival Rate Detail											
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1	1	1	1	1	1	1	1	1	1
32		1	1	1	1	1	1	1	1	1	1
42		1	1	1	1	1	1	1	1	1	1
56		1	1	1	1	1	1	1	1	1	1
75		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1
Reproduction Detail											
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	16	18	22	17	15	15	18	21	23	16
32		17	18	19	17	11	23	14	13	18	21
42		16	16	18	15	15	21	19	18	18	14
56		19	15	9	17	15	19	23	21	14	10
75		16	13	20	16	16	14	17	17	20	20
100		20	17	19	16	14	18	14	15	18	21

CETIS Measurement Report

Report Date: 18 Sep-13 09:35 (p 1 of 8)
Test Code: CD 13-239-0190 | 03-0296-0844

Ceriodaphnia 7-d Survival and Reproduction Test		Environmental Testing and Consulting, Inc.	
Sample ID: 10-9850-1153	Code: 13-239-0190	Client: City of Berryville WWTP	
Sample Date: 26 Aug-13 12:05	Material: POTW Effluent	Project: WET Quarterly Compliance Test (3Q)	
Receive Date: 27 Aug-13 09:06	Source: BERRYVILLE (AR0021792)		
Sample Age: 27h (1 °C)	Station:		

CETIS Measurement Report

Report Date: 18 Sep-13 09:35 (p 2 of 8)
 Test Code: CD 13-239-0190 | 03-0296-0844

Ceriodaphnia 7-d Survival and Reproduction Test				Environmental Testing and Consulting, Inc.			
Alkalinity (CaCO3)-mg/L							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	63				
0	Lab Water	2	60				
0	Lab Water	3	62				
0	Lab Water	4	60				
0	Lab Water	5	62				
0	Lab Water	6	63				
0	Lab Water	7	61				
Total Residual Chlorine-mg/L							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	0				
100			0				
0	Lab Water	2	0				
100			0				
0	Lab Water	3	0				
100			0				
0	Lab Water	4	0				
100			0				
0	Lab Water	5	0				
100			0				
0	Lab Water	6	0				
100			0				
0	Lab Water	7	0				
100			0				
Conductivity-µS/cm							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	171				
100			1682				
0	Lab Water	2	171				
100			1583				
0	Lab Water	3	179				
100			1615				
0	Lab Water	4	181				
100			1589				
0	Lab Water	5	181				
100			1603				
0	Lab Water	6	186				
100			1710				
0	Lab Water	7	183				
100			1603				

CETIS Measurement Report

Report Date: 18 Sep-13 09:35 (p 3 of 8)
 Test Code: CD 13-239-0190 | 03-0296-0844

Ceriodaphnia 7-d Survival and Reproduction Test Environmental Testing and Consulting, Inc.

Final Dissolved Oxygen-mg/L								
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	Lab Water	1	9.2					
32			9.2					
42			9.2					
56			9.2					
75			9.1					
100			9					
0	Lab Water	2	9					
32			9					
42			8.9					
56			8.9					
75			8.9					
100			8.7					
0	Lab Water	3	8.8					
32			8.7					
42			8.6					
56			8.8					
75			8.3					
100			8.6					
0	Lab Water	4	8.5					
32			8.9					
42			8.9					
56			8.6					
75			8.7					
100			8.9					
0	Lab Water	5	9.5					
32			9.5					
42			9.5					
56			9.4					
75			9.3					
100			9.3					
0	Lab Water	6	8.9					
32			9.3					
42			9.2					
56			9.2					
75			9					
100			9					

CETIS Measurement Report

Report Date: 18 Sep-13 09:35 (p 4 of 8)
 Test Code: CD 13-239-0190 | 03-0296-0844

Ceriodaphnia 7-d Survival and Reproduction Test						Environmental Testing and Consulting, Inc.	
Initial Dissolved Oxygen-mg/L							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	9.2				
32			9.2				
42			9.1				
56			9.2				
75			9.1				
100			9.1				
0	Lab Water	2	9.5				
32			9.6				
42			9.3				
56			9.1				
75			9.1				
100			8.8				
0	Lab Water	3	9.3				
32			9.1				
42			9				
56			9.1				
75			9.2				
100			9.1				
0	Lab Water	4	8.9				
32			9				
42			9				
56			8.9				
75			9.1				
100			9.2				
0	Lab Water	5	9				
32			8.9				
42			8.9				
56			9				
75			8.9				
100			8.9				
0	Lab Water	6	9.5				
32			9.5				
42			9.5				
56			9.5				
75			9.5				
100			9.3				
0	Lab Water	7	9.4				
32			9.4				
42			9.4				
56			9.4				
75			9.4				
100			9.2				
Hardness (CaCO3)-mg/L							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	93				
0	Lab Water	2	89				
0	Lab Water	3	90				
0	Lab Water	4	91				
0	Lab Water	5	88				
0	Lab Water	6	90				
0	Lab Water	7	91				

CETIS Measurement Report

Report Date: 18 Sep-13 09:35 (p 5 of 8)
 Test Code: CD 13-239-0190 | 03-0296-0844

Ceriodaphnia 7-d Survival and Reproduction Test				Environmental Testing and Consulting, Inc.			
Final pH-Units							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	7.6				
32			7.6				
42			7.8				
56			7.9				
75			7.9				
100			8				
0	Lab Water	2	7.5				
32			7.6				
42			7.5				
56			7.9				
75			7.9				
100			7.9				
0	Lab Water	3	7.4				
32			7.9				
42			7.7				
56			7.8				
75			7.9				
100			7.9				
0	Lab Water	4	7.3				
32			7.8				
42			7.9				
56			7.7				
75			7.8				
100			7.8				
0	Lab Water	5	8.3				
32			8.3				
42			8.3				
56			8.2				
75			8.2				
100			8.2				
0	Lab Water	6	8.1				
32			8				
42			8				
56			8				
75			8				
100			8				

CETIS Measurement Report

Report Date: 18 Sep-13 09:35 (p 6 of 8)
 Test Code: CD 13-239-0190 | 03-0296-0844

Ceriodaphnia 7-d Survival and Reproduction Test				Environmental Testing and Consulting, Inc.			
Initial pH-Units							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	8.1				
32			7.7				
42			7.8				
56			7.8				
75			7.8				
100			7.8				
0	Lab Water	2	8.3				
32			7.8				
42			7.8				
56			7.8				
75			7.8				
100			7.8				
0	Lab Water	3	8.1				
32			8				
42			8				
56			8				
75			8.1				
100			8.1				
0	Lab Water	4	8.1				
32			8.1				
42			8.1				
56			8.1				
75			8				
100			8				
0	Lab Water	5	7.9				
32			8				
42			8				
56			8				
75			7.9				
100			7.9				
0	Lab Water	6	7.4				
32			7.1				
42			7.3				
56			7.3				
75			7.4				
100			7.4				
0	Lab Water	7	8				
32			7.6				
42			7.6				
56			7.6				
75			7.6				
100			7.6				

CETIS Measurement Report

Report Date: 18 Sep-13 09:35 (p 8 of 8)
 Test Code: CD 13-239-0190 | 03-0296-0844

Ceriodaphnia 7-d Survival and Reproduction Test				Environmental Testing and Consulting, Inc.			
Initial Temperature-°C							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	2	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	3	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	4	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	5	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	6	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	7	23				
32			23				
42			23				
56			23				
75			23				
100			23				

CETIS Test Evaluation Report

Report Date: 18 Sep-13 09:35 (1 of 2)
 Test Code: FH 13-239-0190 | 05-5185-0430

Facility: BERRYVILLE Sample Site: Sample Code: 13-239-0190 Sample Date: 26 Aug-13 12:05 Sample Age: 27h (1 °C) Project: WET Quarterly Compliance Test (3Q)	Test Name: Fathead Minnow 7-d Larval Survival and Growth Test Organism: Pimephales promelas (Fathead Minnow) Protocol: EPA/821/R-02-013 (2002) Start Date: 27 Aug-13 15:00 End Date: 03 Sep-13 16:00 Duration: 7d 1h Organism Age: < 24
Permitee: City of Berryville WWTP Address: P.O. Box 227 1000 W. Cedarvale Road Berryville, AR 72616 Contact: Mr. Darrell Backs Phone: 870-423-3749, 870-423-4501(fax) Email:	Laboratory: Environmental Testing and Consulting, Inc. Address: 2790 Whitten Road Memphis, TN 38133 Contact: Connie Cook, Lab Supervisor Phone: 901-213-2454 Email: ccook@etcmemphis.com

Chronic Toxicity Evaluation					
Endpoint	Parameter	C-%	IWC	Pass/Fail	Method
7d Survival Rate	NOEL/LOEL	100/>100	99.99	Pass	Dunnett Multiple Comparison Test
Mean Dry Weight-mg	NOEL/LOEL	100/>100	99.99	Pass	Dunnett Multiple Comparison Test

Test Acceptability Criteria				
Endpoint	Attribute	Test Stat	Limits	Pass/Fail
7d Survival Rate	Control CV	0.1728	N/A - 0.4	Pass
7d Survival Rate	Control Resp	0.825	0.8 - N/A	Pass
Mean Dry Weight-mg	Control CV	0.1096	N/A - 0.4	Pass
Mean Dry Weight-mg	Control Resp	0.26	0.25 - N/A	Pass

CETIS Test Evaluation Report

Report Date: 18 Sep-13 09:35 (2 of 2)
 Test Code: FH 13-239-0190 | 05-5185-0430

7d Survival Rate Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	5	0.825	0.7718	0.8782	0.625	1	0.06374	0.1425	17.28%	0.0%
32		5	0.925	0.8833	0.9667	0.75	1	0.05	0.1118	12.09%	-12.12%
42		5	0.975	0.9541	0.9959	0.875	1	0.025	0.0559	5.73%	-18.18%
56		5	0.9	0.8791	0.9209	0.875	1	0.025	0.0559	6.21%	-9.09%
75		5	0.95	0.9244	0.9756	0.875	1	0.03062	0.06847	7.21%	-15.15%
100		5	0.95	0.9244	0.9756	0.875	1	0.03062	0.06847	7.21%	-15.15%

Mean Dry Weight-mg Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	5	0.26	0.2494	0.2706	0.2125	0.2875	0.01275	0.0285	10.96%	0.0%
32		5	0.2975	0.2805	0.3145	0.2375	0.3625	0.02031	0.04541	15.27%	-14.42%
42		5	0.2825	0.2625	0.3025	0.2125	0.35	0.02391	0.05347	18.93%	-8.65%
56		5	0.285	0.2694	0.3006	0.225	0.325	0.01871	0.04183	14.68%	-9.62%
75		5	0.2925	0.2748	0.3102	0.225	0.3375	0.02114	0.04727	16.16%	-12.5%
100		5	0.3125	0.2935	0.3315	0.2625	0.375	0.02271	0.05078	16.25%	-20.19%

CETIS Summary Report

Report Date: 18 Sep-13 09:35 (p 1 of 2)
 Test Code: FH 13-239-0190 | 05-5185-0430

Fathead Minnow 7-d Larval Survival and Growth Test Environmental Testing and Consulting, Inc.

Batch ID: 05-8078-9987	Test Type: Growth-Survival (7d)	Analyst: Ava Davis
Start Date: 27 Aug-13 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Perrier Water
Ending Date: 03 Sep-13 16:00	Species: Pimephales promelas	Brine: Not Applicable
Duration: 7d 1h	Source: Aquatox, AR	Age: < 24

Sample ID: 10-9850-1153	Code: 13-239-0190	Client: City of Berryville WWTP
Sample Date: 26 Aug-13 12:05	Material: POTW Effluent	Project: WET Quarterly Compliance Test (3Q)
Receive Date: 27 Aug-13 09:06	Source: BERRYVILLE (AR0021792)	
Sample Age: 27h (1 °C)	Station:	

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	13-239-0190	28 Aug-13 12:05	29 Aug-13 08:35	29 Aug-13 00:00	1
2	13-239-0190	29 Aug-13 12:05	30 Aug-13 08:27	31 Aug-13 00:00	1

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
08-8697-0130	7d Survival Rate	100	>100	NA	17.5%	1	Dunnett Multiple Comparison Test
13-2124-6292	Mean Dry Weight-mg	100	>100	NA	26.0%	1	Dunnett Multiple Comparison Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
08-8697-0130	7d Survival Rate	Control CV	0.1728	NL - 0.4	Yes	Passes Acceptability Criteria
13-2124-6292	Mean Dry Weight-mg	Control CV	0.1096	NL - 0.4	Yes	Passes Acceptability Criteria
08-8697-0130	7d Survival Rate	Control Resp	0.825	0.8 - NL	Yes	Passes Acceptability Criteria
13-2124-6292	Mean Dry Weight-mg	Control Resp	0.26	0.25 - NL	Yes	Passes Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	5	0.825	0.648	1	0.625	1	0.06374	0.1425	17.28%	0.0%
32		5	0.925	0.7862	1	0.75	1	0.05	0.1118	12.09%	-12.12%
42		5	0.975	0.9056	1	0.875	1	0.025	0.0559	5.73%	-18.18%
56		5	0.9	0.8306	0.9694	0.875	1	0.025	0.0559	6.21%	-9.09%
75		5	0.95	0.865	1	0.875	1	0.03062	0.06847	7.21%	-15.15%
100		5	0.95	0.865	1	0.875	1	0.03062	0.06847	7.21%	-15.15%

Mean Dry Weight-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	5	0.26	0.2246	0.2954	0.2125	0.2875	0.01275	0.0285	10.96%	0.0%
32		5	0.2975	0.2411	0.3539	0.2375	0.3625	0.02031	0.04541	15.27%	-14.42%
42		5	0.2825	0.2161	0.3489	0.2125	0.35	0.02391	0.05347	18.93%	-8.65%
56		5	0.285	0.2331	0.3369	0.225	0.325	0.01871	0.04183	14.68%	-9.62%
75		5	0.2925	0.2338	0.3512	0.225	0.3375	0.02114	0.04727	16.16%	-12.5%
100		5	0.3125	0.2495	0.3755	0.2625	0.375	0.02271	0.05078	16.25%	-20.19%

CETIS Summary Report

Report Date: 18 Sep-13 09:35 (p 2 of 2)
 Test Code: FH 13-239-0190 | 05-5185-0430

Fathead Minnow 7-d Larval Survival and Growth Test						Environmental Testing and Consulting, Inc.
7d Survival Rate Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Water	0.625	0.875	0.875	1	0.75
32		1	0.75	1	0.875	1
42		1	1	1	0.875	1
56		0.875	0.875	0.875	0.875	1
75		1	0.875	1	0.875	1
100		1	0.875	1	0.875	1
Mean Dry Weight-mg Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Water	0.2625	0.2625	0.2125	0.275	0.2875
32		0.3625	0.2875	0.3125	0.2375	0.2875
42		0.3125	0.2875	0.2125	0.25	0.35
56		0.325	0.275	0.325	0.275	0.225
75		0.2625	0.325	0.3375	0.3125	0.225
100		0.375	0.2625	0.3125	0.35	0.2625

CETIS Measurement Report

Report Date: 18 Sep-13 09:35 (p 1 of 8)
Test Code: FH 13-239-0190 | 05-5185-0430

Fathead Minnow 7-d Larval Survival and Growth Test		Environmental Testing and Consulting, Inc.	
Sample ID: 10-9850-1153	Code: 13-239-0190	Client: City of Berryville WWTP	
Sample Date: 26 Aug-13 12:05	Material: POTW Effluent	Project: WET Quarterly Compliance Test (3Q)	
Receive Date: 27 Aug-13 09:06	Source: BERRYVILLE (AR0021792)		
Sample Age: 27h (1 °C)	Station:		

CETIS Measurement Report

Report Date: 18 Sep-13 09:35 (p 2 of 8)
 Test Code: FH 13-239-0190 | 05-5185-0430

Fathead Minnow 7-d Larval Survival and Growth Test							Environmental Testing and Consulting, Inc.		
Alkalinity (CaCO3)-mg/L									
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes	
0	Lab Water	1	63						
0	Lab Water	2	60						
0	Lab Water	3	62						
0	Lab Water	4	60						
0	Lab Water	5	62						
0	Lab Water	6	63						
0	Lab Water	7	61						
Total Residual Chlorine-mg/L									
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes	
0	Lab Water	1	0						
100			0						
0	Lab Water	2	0						
100			0						
0	Lab Water	3	0						
100			0						
0	Lab Water	4	0						
100			0						
0	Lab Water	5	0						
100			0						
0	Lab Water	6	0						
100			0						
0	Lab Water	7	0						
100			0						
Conductivity-µS/cm									
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes	
0	Lab Water	1	171						
100			1682						
0	Lab Water	2	171						
100			1583						
0	Lab Water	3	179						
100			1615						
0	Lab Water	4	181						
100			1589						
0	Lab Water	5	181						
100			1603						
0	Lab Water	6	186						
100			1710						
0	Lab Water	7	183						
100			1603						

CETIS Measurement Report

Report Date: 18 Sep-13 09:35 (p 3 of 8)
 Test Code: FH 13-239-0190 | 05-5185-0430

Fathead Minnow 7-d Larval Survival and Growth Test				Environmental Testing and Consulting, Inc.			
Final Dissolved Oxygen-mg/L							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	9.6				
32			9.6				
42			9.4				
56			9.3				
75			9.2				
100			9.2				
0	Lab Water	2	9.1				
32			9.3				
42			9.2				
56			9				
75			9				
100			9.1				
0	Lab Water	3	9.3				
32			9				
42			9				
56			9.2				
75			8.9				
100			8.7				
0	Lab Water	4	9.2				
32			9				
42			9				
56			8.9				
75			8.7				
100			8.7				
0	Lab Water	5	9.6				
32			9.6				
42			9.6				
56			9.5				
75			9.4				
100			9.4				
0	Lab Water	6	9.1				
32			9.3				
42			9.2				
56			9.2				
75			9.2				
100			9.2				
0	Lab Water	7	9.4				
32			9.5				
42			9.5				
56			9.5				
75			9.3				
100			9.4				

CETIS Measurement Report

Report Date: 18 Sep-13 09:35 (p 5 of 8)
 Test Code: FH 13-239-0190 | 05-5185-0430

Fathead Minnow 7-d Larval Survival and Growth Test				Environmental Testing and Consulting, Inc.			
Final pH-Units							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	8				
32			7.6				
42			7.8				
56			7.9				
75			8				
100			8				
0	Lab Water	2	8				
32			7.9				
42			7.9				
56			7.8				
75			7.9				
100			7.9				
0	Lab Water	3	7.9				
32			8				
42			8				
56			8				
75			7.9				
100			8				
0	Lab Water	4	8				
32			8.1				
42			8				
56			8.1				
75			8.1				
100			8.1				
0	Lab Water	5	8				
32			7.8				
42			7.8				
56			7.8				
75			7.9				
100			7.9				
0	Lab Water	6	8.1				
32			7.8				
42			7.9				
56			7.9				
75			7.9				
100			7.9				
0	Lab Water	7	8.2				
32			7.9				
42			7.9				
56			7.9				
75			7.9				
100			7.9				

CETIS Measurement Report

Report Date: 18 Sep-13 09:35 (p 6 of 8)
 Test Code: FH 13-239-0190 | 05-5185-0430

Fathead Minnow 7-d Larval Survival and Growth Test				Environmental Testing and Consulting, Inc.			
Initial pH-Units							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	8.1				
32			7.7				
42			7.8				
56			7.8				
75			7.8				
100			7.8				
0	Lab Water	2	8.3				
32			7.8				
42			7.8				
56			7.8				
75			7.8				
100			7.8				
0	Lab Water	3	8.1				
32			8				
42			8				
56			8				
75			8.1				
100			8.1				
0	Lab Water	4	8.1				
32			8.1				
42			8.1				
56			8.1				
75			8				
100			8				
0	Lab Water	5	7.9				
32			8				
42			8				
56			8				
75			7.9				
100			7.9				
0	Lab Water	6	7.4				
32			7.1				
42			7.3				
56			7.3				
75			7.4				
100			7.4				
0	Lab Water	7	8				
32			7.6				
42			7.6				
56			7.6				
75			7.6				
100			7.6				

CETIS Measurement Report

Report Date: 18 Sep-13 09:35 (p 7 of 8)
 Test Code: FH 13-239-0190 | 05-5185-0430

Fathead Minnow 7-d Larval Survival and Growth Test				Environmental Testing and Consulting, Inc.			
Final Temperature-°C							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	2	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	3	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	4	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	5	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	6	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	7	23				
32			23				
42			23				
56			23				
75			23				
100			23				

CETIS Measurement Report

Report Date: 18 Sep-13 09:35 (p 8 of 8)
 Test Code: FH 13-239-0190 | 05-5185-0430

Fathead Minnow 7-d Larval Survival and Growth Test				Environmental Testing and Consulting, Inc.			
Initial Temperature-°C							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0			Lab Water	2	23		
32	23						
42	23						
56	23						
75	23						
100	23						
0	Lab Water	3			23		
32			23				
42			23				
56			23				
75			23				
100			23				
0			Lab Water	4	23		
32	23						
42	23						
56	23						
75	23						
100	23						
0	Lab Water	5			23		
32			23				
42			23				
56			23				
75			23				
100			23				
0			Lab Water	6	23		
32	23						
42	23						
56	23						
75	23						
100	23						
0	Lab Water	7			23		
32			23				
42			23				
56			23				
75			23				
100			23				



ENVIRONMENTAL TESTING & CONSULTING, INC.

www.etcmemphis.com

2790 Whitten Road

Memphis, Tennessee 38133

(901) 213-2400

Fax (901) 213-2440

"A Laboratory Management Partner"

03308

City of Berryville

Mr. Darrell Backs

P.O. Box 227

Berryville, AR 72616

Project WWTP Bioassay

Information :

Report Date : 9/19/2013

Report Number : 13-239-0190

REPORT OF ANALYSIS

Received : 8/27/2013

Lab No : 93840

Matrix: Aqueous

Sample ID : Outfall 001

Sampled: 8/26/2013 12:05

Test	Results	Units	ML	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	333	mg/L	1	1	09/03/13 09:05	CJR	2320B
Total Calcium	22.5	mg/L	0.100	1	09/04/13 14:34	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	79.0	mg/L	0.100	1	09/04/13 14:34		EPA-200.7
Total Magnesium	5.55	mg/L	0.100	1	09/04/13 14:34	BKN	EPA-200.7

Lab No : 94376

Matrix: Aqueous

Sample ID : Outfall 001

Sampled: 8/28/2013 12:05

Test	Results	Units	ML	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	295	mg/L	1	1	09/03/13 09:05	CJR	2320B
Total Calcium	22.2	mg/L	0.100	1	09/04/13 14:38	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	78.5	mg/L	0.100	1	09/04/13 14:38		EPA-200.7
Total Magnesium	5.60	mg/L	0.100	1	09/04/13 14:38	BKN	EPA-200.7

Lab No : 94612

Matrix: Aqueous

Sample ID : Outfall 001

Sampled: 8/29/2013 12:05

Test	Results	Units	ML	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	281	mg/L	1	1	09/03/13 09:05	CJR	2320B
Total Calcium	23.8	mg/L	0.100	1	09/04/13 14:42	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	83.6	mg/L	0.100	1	09/04/13 14:42		EPA-200.7
Total Magnesium	5.87	mg/L	0.100	1	09/04/13 14:42	BKN	EPA-200.7

Qualifiers/ Definitions

* Outside QC limit
ML Method Quantitation Limit

DF Dilution Factor

Environmental Testing and Consulting, Inc.
2790 Whitten Road
Memphis, TN 38133

Additional Toxicity Test Information

1. Methods/Instrumentation used in chemical analysis:
 - Dissolved oxygen: 4500-O G YSI MODEL - 58
 - pH: 4500-H + B JENCO METER 6072
 - Temperature: 2550 B JENCO METER 6072
 - Conductivity: 2510 B CORNING METER 441
 - Alkalinity: 2320 B
 - Hardness: 200.7
 - Total Residual Chlorine: 4500-Cl G - REPORTED VALUE OF "0" INDICATES RESULT BELOW DETECTION LIMIT OF 0.02 mg/L
 - EPA Acute/Chronic Manual Edition and Date: EPA-821-R-02-012
 - OCT 2002 (Fifth edition)

2. Laboratory
 - Temperature: Average - 25 C Range - 23 - 26
 - Light Cycle: 16 hours light/ 8 hours dark
 - Light intensity: 100 foot-candles, average
 - Control Water: Dilute mineral water made with 20 % Perrier in Nanopure
 - Dilution Water: Laboratory control water
 - Pretreatment: none

3. Method 1002.0
 - Test chambers: 30 mL disposable plastic beakers
 - Volume per chamber: 15 mL
 - Number of organisms per chamber: 1
 - Number of replicates: 10
 - Food: Laboratory culture of Selenastrum algae and YCT solution

4. Method 1000.0
 - Test chambers: 20 oz. Disposable plastic cups
 - Volume per chamber: 200 mL
 - Average number of organisms per chamber: 8
 - Number of replicates per concentration: 5
 - Food: Artemia brine shrimp hatched in laboratory
 - Acclimation of organisms: Organisms are allowed to reach test temperature. Dilution water is added at half-hour intervals until organisms are contained in a culture media that consists of 80% dilution water.

5. Indicate below any other relevant information that may aid in the evaluation of this report. Include any deviations from EPA methodology that were necessary for these tests as well as any sample manipulations which were performed, such as aeration, dechlorination with sodium thiosulfate, etc. and the justification for such manipulations or deviations. Attach additional pages as needed.
 - None



City of Berryville
WWTP Bioassay

13-239-0190
03308
08-27-2013
09:34:00

$Cl_2 = 0.16$

①

City of Berryville		Customer Number 03308		Telephone (870) 423-3749		RUSH	ICE	
Site Name Quarterly Biosassay			Project Comment				FID Number	
Project Berryville - Bioassay			Project Number		PO Number			
Project Manager / Contact Mr. Darrell Backs				E-mail chiefop@hbeark.com				
Sample ID	Container Type	Collected Date / Time	# Cont	Preservative	Grab / Comp	Matrix	Analyses	
C1- Outfall 001	Plastic - Pint	8-26-13 12:05	1	NONE	(Comp)	Aqueous	Alkalinity	
C1- Outfall 001	Plastic - Gallon	8-26-13 12:05	2	NONE	(Comp)	Aqueous	Bioassay	
C1- Outfall 001	Plastic - Pint	8-26-13 12:05	1	HNO3 - Nitric Acid	(Comp)	Aqueous	Hardness	
C2- Outfall 001	Plastic - Pint		1	NONE		Aqueous	Alkalinity	
C2- Outfall 001	Plastic - Gallon		2	NONE		Aqueous	Bioassay	
C2- Outfall 001	Plastic - Pint		1	HNO3 - Nitric Acid		Aqueous	Hardness	
C3- Outfall 001	Plastic - Pint		1	NONE		Aqueous	Alkalinity	

Sampled By DB	Method of Shipment FEDEX	Blank / Cooler Temperature 10°C	Remarks
Relinquished By (sign) Darrell Backs	Date / Time 8-26-13 13:10	Received By (sign) D. Sharp	Date / Time 1:00 8-26-13
Relinquished By (sign)	Date / Time	Received By (sign)	Date / Time
Relinquished By (sign)	Date / Time	Received by Lab (sign) PP	Date / Time 8/27/13-0906



ENVIRONMENTAL TESTING & CONSULTING, INC.

www.etc-memphis.com

2790 Whitten Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440

$CL_2 = 0.01$

2



13-239-0190
03308
08-27-2013
09:34:00

City of Berryville
WWTP Bioassay / 8/27/13/8/29/13

Company Name City of Berryville				Customer Number 03308		Telephone (870) 423-3749		RUSH	ICE
Site Name Quarterly Biosassay				Project Comment				FID Number	
Project Berryville - Bioassay				Project Number		PO Number			
Project Manager / Contact Mr. Darrell Backs					E-mail chiefop@hbeark.com				
Sample ID	Container Type	Collected Date / Time	# Cont	Preservative	Grab / Comp	Matrix	Analyses		
C1- Outfall 001	Plastic - Pint		1	NONE		Aqueous	Alkalinity		
C1- Outfall 001	Plastic - Gallon		2	NONE		Aqueous	Bioassay		
C1- Outfall 001	Plastic - Pint		1	HNO3 - Nitric Acid		Aqueous	Hardness		
C2- Outfall 001	Plastic - Pint	8-28-13 12:05	1	NONE	(comp)	Aqueous	Alkalinity		
C2- Outfall 001	Plastic - Gallon	8-28-13 12:05	2	NONE	(comp)	Aqueous	Bioassay		
C2- Outfall 001	Plastic - Pint	8-28-13 12:05	1	HNO3 - Nitric Acid	(comp)	Aqueous	Hardness		
C3- Outfall 001	Plastic - Pint		1	NONE		Aqueous	Alkalinity		

Sampled By D.B.	Method of Shipment FEDRY	Blank / Cooler Temperature 1°C	Remarks	
Relinquished By (sign) Darrell Backs	Date / Time 8-28-13 12:30	Received By (sign) [Signature]	Date / Time 8/28/13 12:30	
Relinquished By (sign)	Date / Time	Received By (sign)	Date / Time	
Relinquished By (sign)	Date / Time	Received by Lab (sign) [Signature]	Date / Time 8/29/13-0835	



ENVIRONMENTAL TESTING & CONSULTING, INC.

www.etcmemphis.com

2790 Whitten Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440



City of Berryville
WWTP Bioassay / 8/27/13/8/29/13/8/30/13

13-239-0190
03308
08-27-2013
09:34:00

$CL_2 = 0.00$

(3)

Company Name City of Berryville				Customer Number 03308		Telephone (870) 423-3749		RUSH	ICE
Site Name Quarterly Biosassay			Project Comment					FID Number	
Project Berryville - Bioassay			Project Number		PO Number				
Project Manager / Contact Mr. Darrell Backs				E-mail chiefop@hbeark.com					
Sample ID	Container Type	Collected Date / Time	# Cont	Preservative	Grab / Comp	Matrix	Analyses		
C1- Outfall 001	Plastic - Pint		1	NONE		Aqueous	Alkalinity		
C1- Outfall 001	Plastic - Gallon		2	NONE		Aqueous	Bioassay		
C1- Outfall 001	Plastic - Pint		1	HNO3 - Nitric Acid		Aqueous	Hardness		
C2- Outfall 001	Plastic - Pint		1	NONE		Aqueous	Alkalinity		
C2- Outfall 001	Plastic - Gallon		2	NONE		Aqueous	Bioassay		
C2- Outfall 001	Plastic - Pint		1	HNO3 - Nitric Acid		Aqueous	Hardness		
C3- Outfall 001	Plastic - Pint	8-29-13 12:05	1	NONE	Comp	Aqueous	Alkalinity		

Sampled By DB	Method of Shipment FEDRY	Blank / Cooler Temperature 1°C	Remarks
Relinquished By (sign) Darrell Backs	Date / Time 8-29-13 13:40	Received By (sign) M. [Signature]	Date / Time 8-29-13 15:41
Relinquished By (sign)	Date / Time	Received By (sign)	Date / Time
Relinquished By (sign)	Date / Time	Received by Lab (sign) AR [Signature]	Date / Time 8/30/13 0827



ENVIRONMENTAL TESTING & CONSULTING, INC.

www.ETCmemphis.com

2790 Whitten Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440



13-239-0190
03308
08-27-2013
09:34:00

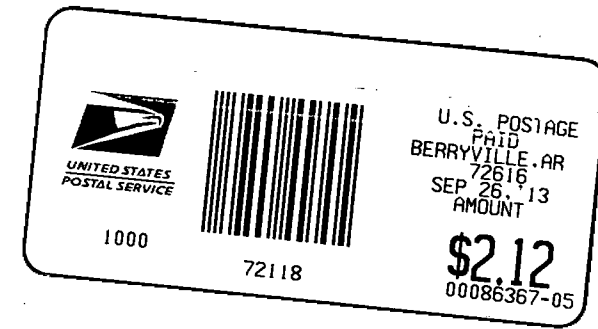
City of Berryville
WWTP Bioassay / 8/27/13/8/29/13/8/30/13

3

Company Name City of Berryville				Customer Number 03308		Telephone (870) 423-3749		RUSH	ICE
Site Name Quarterly Biosassay			Project Comment					FID Number	
Project Berryville - Bioassay			Project Number		PO Number				
Project Manager / Contact Mr. Darrell Backs				E-mail chiefop@hbeark.com					
Sample ID	Container Type	Collected Date / Time	# Cont	Preservative	Grab / Comp	Matrix	Analyses		
C3- Outfall 001	Plastic - Gallon	8-29-13 12 05	3	NONE	(Comp)	Aqueous	Bioassay		
C3- Outfall 001	Plastic - Pint	8-29-13 12 05	1	HNO3 - Nitric Acid	(Comp)	Aqueous	Hardness		

Sampled By DB	Method of Shipment FEDEX	Blank / Cooler Temperature 1°C	Remarks
Relinquished By (sign)	Date / Time	Received By (sign)	Date / Time
Relinquished By (sign)	Date / Time	Received By (sign)	Date / Time
Relinquished By (sign)	Date / Time	Received by Lab (sign) BRO	Date / Time 8/30/13-0827

Kirby Murray, P.W. Director
City of Berryville, P.O. Box 227
Berryville, AR 72616



Arkansas Department of Environmental Quality
Enforcement Section
5301 Northshore Dr.
N. Little Rock, AR
72118-5317

ATTN:
Biomonitoring

