

# 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

June 1, 2012

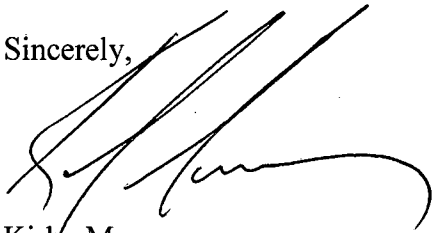
Arkansas Department of Environmental Quality  
Water Enforcement Division  
5301 Northshore Dr.  
N. Little Rock, AR  
72118-5317

RE: Permit No.: AR0021792. AFIN No.: 08-00034, 2nd Quarter Biomonitoring Results

To Whom It May Concern:

Please find the enclosed biomonitoring results and lab reports. Everything is in order and Berryville's plant has passed all tests for the second quarter of 2012.

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

May 15, 2012

Mr. Darrell Backs,  
City of Berryville WWTP  
P.O. Box 227  
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: CV/NOEL > 100% Permit Limit: 100%

Report #: 12-115-0100 BERRYVILLE\_AR - AR0021792

All statistical interpretations generated by CETIS - Comprehensive Environmental Toxicity Information System (v.1.025A). CETIS created by Tidepool Scientific Software

Respectfully,

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Connie Cook, Manager, Biological Sciences

Enclosure(s)

cc

Report Date: 15 May-12 10:25 AM

Link: 05-5672-2937/CD115-0100

## CETIS Test Evaluation

<b>Facility:</b> BERRYVILLE_AR - AR0021792 (AR0021792)	<b>Test Title:</b> Ceriodaphnia 7-d Survival and Reproduction Test
<b>Sample Site:</b>	<b>Organism:</b> Ceriodaphnia dubia (Water Flea)
<b>Sample Code:</b> 12-115-0100	<b>Protocol:</b> EPA/821/R-02-013 (2002)
<b>Sample Date:</b> 23 Apr-12 12:05 PM	<b>Start Date:</b> 24 Apr-12 02:50 PM
<b>Sample Age:</b> 27 Hours (1 °C)	<b>End Date:</b> 30 Apr-12 01:25 PM
<b>Project:</b> WET Quarterly Compliance Test (2Q)	<b>Test Duration:</b> 5 Days 22 Hours

<b>Permitee:</b> City of Berryville WWTP	<b>Laboratory:</b> Environmental Testing and Consulting, Inc.
<b>Address:</b> P.O. Box 227 1000 W. Cedarvale Road Berryville, AR 72616	<b>Address:</b> 2790 Whitten Road Memphis, TN 38133
<b>Contact:</b> Mr. Darrell Backs	<b>Contact:</b> Ms. Connie Cook
<b>Phone:</b> 870-423-3749, 870-423-4501(fax)	<b>Phone:</b> 901-213-2454, 901-213-2440(fax)
<b>Email:</b>	<b>Email:</b> ccook@etcmemphis.com

## Comments

## Chronic Toxicity Evaluation

Endpoint	Parameter	Conc-%	IWC	Pass/Fail
Reproduction	ChV	100	99.99	Passed

## Test Acceptability

Endpoint	Attribute	Estimate	Criteria	Pass/Fail
Reproduction	Control CV	0.17458391	N/A - 0.4	Passed
Reproduction	Control Response	17.3	15 - N/A	Passed
6d Proportion Survived		1	0.799 - N/A	Passed
Reproduction	MSDp	0.19157684	0.13 - 0.47	Passed

## 6d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
32		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
42		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
56		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
75		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

## Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	10	17.3000	11.0000	21.0000	0.95510	3.02030	17.46%
32		10	18.3000	9.00000	24.0000	1.40673	4.44847	24.31%
42		10	17.3000	9.00000	20.0000	1.19304	3.77271	21.81%
56		10	15.4000	10.0000	20.0000	0.96839	3.06232	19.89%
75		10	15.8000	12.0000	19.0000	0.82731	2.61619	16.56%
100		10	16.9000	13.0000	20.0000	0.60461	1.91195	11.31%

## CETIS Test Summary

Report Date: 15 May-12 10:25 AM

Link: 05-5672-2937/CD115-0100

Ceriodaphnia 7-d Survival and Reproduction Test				Environmental Testing and Consulting, Inc.				
<b>Test No:</b>	12-3042-0783	<b>Test Type:</b>	Reproduction-Survival (7d)	<b>Duration:</b>	5 Days 22 Hours			
<b>Start Date:</b>	24 Apr-12 02:50 PM	<b>Protocol:</b>	EPA/821/R-02-013 (2002)	<b>Species:</b>	Ceriodaphnia dubia			
<b>Ending Date:</b>	30 Apr-12 01:25 PM	<b>Dil Water:</b>	Perrier Water	<b>Source:</b>	In-House Culture			
<b>Setup Date:</b>	24 Apr-12 02:50 PM	<b>Brine:</b>	Not Applicable					
<b>Sample No:</b>	06-5302-3786	<b>Material:</b>	POTW Effluent	<b>Client:</b>	City of Berryville WWTP			
<b>Sample Date:</b>	23 Apr-12 12:05 PM	<b>Code:</b>	12-115-0100	<b>Project:</b>	WET Quarterly Compliance Test (2Q)			
<b>Receive Date:</b>	24 Apr-12 08:59 AM	<b>Source:</b>	BERRYVILLE_AR - AR0021792					
<b>Sample Age:</b>	27 Hours (1 °C)	<b>Station:</b>						
<b>Sample Renewals</b>								
<b>Renewal</b>	<b>Renewed</b>	<b>Collected</b>	<b>Received</b>	<b>Temp °C</b>	<b>Sample Code</b>			
1	26 Apr-12 12:00 AM	25 Apr-12 12:05 P	26 Apr-12 08:28	1	12-115-0100			
2	28 Apr-12 12:00 AM	26 Apr-12 12:05 P	27 Apr-12 08:47	1	12-115-0100			
<b>Comparison Summary</b>								
<b>Analysis</b>	<b>Endpoint</b>	<b>NOEL</b>	<b>LOEL</b>	<b>ChV</b>	<b>MSDp</b>	<b>Method</b>		
17-6616-2416	6d Proportion Survived	100	>100	N/A	N/A	Fisher's Exact		
01-4922-5940	Reproduction	100	>100	N/A	19.16%	Dunnett's Multiple Comparison		
<b>Test Acceptability</b>								
<b>Analysis</b>	<b>Endpoint</b>	<b>Attribute</b>	<b>Statistic</b>	<b>Acceptable Range</b>	<b>Decision</b>			
01-4922-5940	Reproduction	Control CV	0.1745839	N/A - 0.4	Passes acceptability criteria			
01-4922-5940	Reproduction	Control Response	17.3	15 - N/A	Passes acceptability criteria			
17-6616-2416	6d Proportion Survived		1	0.799 - N/A	Passes acceptability criteria			
01-4922-5940	Reproduction	MSDp	0.1915768	0.13 - 0.47	Passes acceptability criteria			
<b>6d Proportion Survived Summary</b>								
<b>Conc-%</b>	<b>Control Type</b>	<b>Reps</b>	<b>Mean</b>	<b>Minimum</b>	<b>Maximum</b>	<b>SE</b>	<b>SD</b>	<b>CV</b>
0	Lab Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
32		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
42		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
56		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
75		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
<b>Reproduction Summary</b>								
<b>Conc-%</b>	<b>Control Type</b>	<b>Reps</b>	<b>Mean</b>	<b>Minimum</b>	<b>Maximum</b>	<b>SE</b>	<b>SD</b>	<b>CV</b>
0	Lab Water	10	17.3000	11.0000	21.0000	0.95510	3.02030	17.46%
32		10	18.3000	9.00000	24.0000	1.40673	4.44847	24.31%
42		10	17.3000	9.00000	20.0000	1.19304	3.77271	21.81%
56		10	15.4000	10.0000	20.0000	0.96839	3.06232	19.89%
75		10	15.8000	12.0000	19.0000	0.82731	2.61619	16.56%
100		10	16.9000	13.0000	20.0000	0.60461	1.91195	11.31%

## CETIS Test Summary

Report Date: 15 May-12 10:25 AM


Link: 05-5672-2937/CD115-0100

6d Proportion Survived Detail											
Conc-%	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	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
32		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
42		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
56		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
75		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
Reproduction Detail											
Conc-%	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	19.00000	16.00000	17.00000	20.00000	17.00000	14.00000	19.00000	19.00000	21.00000	11.00000
32		20.00000	18.00000	16.00000	9.00000	21.00000	24.00000	18.00000	20.00000	14.00000	23.00000
42		18.00000	15.00000	20.00000	19.00000	20.00000	9.00000	20.00000	19.00000	20.00000	13.00000
56		15.00000	15.00000	10.00000	18.00000	16.00000	19.00000	12.00000	14.00000	15.00000	20.00000
75		18.00000	19.00000	17.00000	13.00000	13.00000	19.00000	16.00000	17.00000	14.00000	12.00000
100		15.00000	13.00000	16.00000	17.00000	18.00000	18.00000	20.00000	17.00000	18.00000	17.00000

# CETIS Measurement Detail

Ceriodaphnia 7-d Survival and Reproduction Test

Environmental Testing and Consulting, Inc.

Analyst: 

Approval: 

# CETIS Measurement Detail

Initial Dissolved Oxygen-mg/L								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	8.8	9.1	9.1	9	8.3	8.2	9
32		8.8	8.9	9.2	8.9	8.3	8.4	9.1
42		8.9	8.9	9.2	9	8.2	8.8	9.1
56		9.1	8.6	9.2	9.3	8.3	9.1	9.2
75		9.1	8.6	9.2	9.3	8.4	8.7	9.2
100		9	9.3	9.1	9.4	8.4	8.8	9.3

Initial pH								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	7.9	7.7	7.7	7.9	7.8	8.2	8.1
32		7.8	7.7	7.7	7.9	7.7	8.3	8
42		7.9	7.7	7.8	7.8	7.7	8	8
56		8	7.8	7.8	7.9	7.8	7.9	8
75		8	7.9	7.8	7.8	7.8	8.1	8
100		8.1	7.9	7.9	7.8	7.9	7.9	8

Initial Temperature-°C								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	23	23	23	23	23	24	23
32		23	23	23	23	23	24	23
42		23	23	23	23	23	23	23
56		23	23	23	23	23	23	23
75		23	23	23	23	23	23	23
100		23	23	23	23	23	23	23

Final Dissolved Oxygen-mg/L								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	8.5	8.3	8.6	9	8.6	8.6	
32		8.6	8.4	8.7	9.1	8.6	8.6	
42		8.8	8.6	8.8	9.1	8.6	8.6	
56		8.8	8.7	8.8	9.1	8.6	8.5	
75		8.9	8.8	8.8	9.2	8.6	8.6	
100		8.9	8.6	8.9	9.1	8.6	8.6	

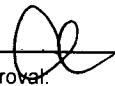
Final pH								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	7.6	7.6	7.9	7.7	8.4	8.9	
32		7.7	7.7	8.2	7.9	8.4	8.5	
42		8	7.9	8.3	8.1	8.4	8.4	
56		8.2	8.2	8.5	8.2	8.5	8.4	
75		8.4	8.4	8.5	8.4	8.6	8.5	
100		8.6	8.6	8.6	8.5	8.7	8.5	

Final Temperature-°C								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	23	23	23	23	23	23	
32		23	23	23	23	23	23	
42		23	23	23	23	23	23	
56		23	23	23	23	23	23	
75		23	23	23	23	23	23	
100		23	23	23	23	23	23	

Alkalinity (CaCO3)-mg/L								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	59	59	61	58	62	59	61

# CETIS Measurement Detail

Total Residual Chlorine-mg/L								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	0	0	0	0	0	0	0
100		0	0	0	0	0	0	0

Conductivity-µmhos								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	175	175	179	180	179	174	181
100		1460	1599	1411	1392	1475	1441	1373

Hardness (CaCO3)-mg/L								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	92	92	91	89	90	92	90



## CETIS Test Evaluation

Report Date: 15 May-12 10:26 AM

Link: 09-6833-8692/FH115-0100

<b>Facility:</b> BERRYVILLE_AR - AR0021792 (AR0021792)	<b>Test Title:</b> Fathead Minnow 7-d Larval Survival and Growth Test
<b>Sample Site:</b>	<b>Organism:</b> Pimephales promelas (Fathead Minnow)
<b>Sample Code:</b> 12-115-0100	<b>Protocol:</b> EPA/821/R-02-013 (2002)
<b>Sample Date:</b> 23 Apr-12 12:05 PM	<b>Start Date:</b> 24 Apr-12 03:10 PM
<b>Sample Age:</b> 27 Hours (1 °C)	<b>End Date:</b> 01 May-12 02:00 PM
<b>Project:</b> WET Quarterly Compliance Test (2Q)	<b>Test Duration:</b> 6 Days 22 Hours
<b>Permittee:</b> City of Berryville WWTP	<b>Laboratory:</b> Environmental Testing and Consulting, Inc.
<b>Address:</b> P.O. Box 227 1000 W. Cedarvale Road Berryville, AR 72616	<b>Address:</b> 2790 Whitten Road Memphis, TN 38133
<b>Contact:</b> Mr. Darrell Backs	<b>Contact:</b> Ms. Connie Cook
<b>Phone:</b> 870-423-3749, 870-423-4501(fax)	<b>Phone:</b> 901-213-2454, 901-213-2440(fax)
<b>Email:</b>	<b>Email:</b> ccook@etcmemphis.com

## Comments

## Chronic Toxicity Evaluation

Endpoint	Parameter	Conc-%	IWC	Pass/Fail
Mean Dry Weight-mg	ChV	100	99.99	Passed
7d Proportion Survived		100	99.99	Passed

## Test Acceptability

Endpoint	Attribute	Estimate	Criteria	Pass/Fail
Mean Dry Weight-mg	Control CV	0.04072601	N/A - 0.4	Passed
Mean Dry Weight-mg	Control Response	0.55749950	0.25 - N/A	Passed
7d Proportion Survived		0.975	0.799 - N/A	Passed

## 7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
32		5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
42		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
56		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
75		5	0.92500	0.75000	1.00000	0.05000	0.11180	12.09%
100		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

## Mean Dry Weight-mg Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	5	0.55750	0.52500	0.58749	0.01015	0.02270	4.07%
32		5	0.52000	0.43750	0.73750	0.05750	0.12858	24.73%
42		5	0.65000	0.55000	0.71250	0.03400	0.07603	11.70%
56		5	0.56250	0.38750	0.80000	0.06846	0.15309	27.22%
75		5	0.61000	0.53750	0.76250	0.03961	0.08856	14.52%
100		5	0.60500	0.53750	0.67500	0.02325	0.05199	8.59%

## CETIS Test Summary

Report Date: 15 May-12 10:26 AM

Link: 09-6833-8692/FH115-0100

Fathead Minnow 7-d Larval Survival and Growth Test				Environmental Testing and Consulting, Inc.				
Test No:	14-4323-5034	Test Type:	Growth-Survival (7d)	Duration:	6 Days 22 Hours			
Start Date:	24 Apr-12 03:10 PM	Protocol:	EPA/821/R-02-013 (2002)	Species:	Pimephales promelas			
Ending Date:	01 May-12 02:00 PM	Dil Water:	Perrier Water	Source:	Aquatox, AR			
Setup Date:	24 Apr-12 03:10 PM	Brine:						
Sample No:	06-5302-3786	Material:	POTW Effluent	Client:	City of Berryville WWTP			
Sample Date:	23 Apr-12 12:05 PM	Code:	12-115-0100	Project:	WET Quarterly Compliance Test (2Q)			
Receive Date:	24 Apr-12 08:59 AM	Source:	BERRYVILLE_AR - AR0021792					
Sample Age:	27 Hours (1 °C)	Station:						
<b>Sample Renewals</b>								
Renewal	Renewed	Collected	Received	Temp °C	Sample Code			
1	26 Apr-12 12:00 AM	25 Apr-12 12:05 P	26 Apr-12 08:28	1	12-115-0100			
2	28 Apr-12 12:00 AM	26 Apr-12 12:05 P	27 Apr-12 08:47	1	12-115-0100			
<b>Comparison Summary</b>								
Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method		
09-4762-1392	7d Proportion Survived	100	>100	N/A	8.39%	Steel's Many-One Rank		
10-4908-2109	Mean Dry Weight-mg	100	>100	N/A	26.05%	Dunnett's Multiple Comparison		
<b>Test Acceptability</b>								
Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision			
10-4908-2109	Mean Dry Weight-mg	Control CV	0.0407260	N/A - 0.4	Passes acceptability criteria			
10-4908-2109	Mean Dry Weight-mg	Control Response	0.5574995	0.25 - N/A	Passes acceptability criteria			
09-4762-1392	7d Proportion Survived		0.975	0.799 - N/A	Passes acceptability criteria			
<b>7d Proportion Survived Summary</b>								
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
32		5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
42		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
56		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
75		5	0.92500	0.75000	1.00000	0.05000	0.11180	12.09%
100		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
<b>Mean Dry Weight-mg Summary</b>								
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	5	0.55750	0.52500	0.58749	0.01015	0.02270	4.07%
32		5	0.52000	0.43750	0.73750	0.05750	0.12858	24.73%
42		5	0.65000	0.55000	0.71250	0.03400	0.07603	11.70%
56		5	0.56250	0.38750	0.80000	0.06846	0.15309	27.22%
75		5	0.61000	0.53750	0.76250	0.03961	0.08856	14.52%
100		5	0.60500	0.53750	0.67500	0.02325	0.05199	8.59%

## CETIS Test Summary

Report Date: 15 May-12 10:26 AM

Link: 09-6833-8692/FH115-0100

7d Proportion Survived Detail						
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Water	1.00000	1.00000	1.00000	0.87500	1.00000
32		0.87500	1.00000	1.00000	1.00000	1.00000
42		1.00000	1.00000	1.00000	1.00000	1.00000
56		1.00000	1.00000	1.00000	1.00000	1.00000
75		1.00000	0.87500	1.00000	1.00000	0.75000
100		1.00000	1.00000	1.00000	1.00000	1.00000

Mean Dry Weight-mg Detail						
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Water	0.56250	0.55000	0.58749	0.52500	0.56250
32		0.45000	0.73750	0.43750	0.43750	0.53750
42		0.71250	0.71250	0.55000	0.68750	0.58750
56		0.52500	0.60000	0.80000	0.50000	0.38750
75		0.60000	0.56250	0.76250	0.53750	0.58750
100		0.67500	0.61250	0.57500	0.62500	0.53750

# CETIS Measurement Detail

Measurements: Page 1 of 3  
Report Date: 15 May-12 10:26 AM  
Link: 09-6833-8692/FH115-0100

Fathead Minnow 7-d Larval Survival and Growth Test

Environmental Testing and Consulting, Inc.

# CETIS Measurement Detail

Initial Dissolved Oxygen-mg/L								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	8.8	9.1	9.1	9	8.3	8.2	9
32		8.8	8.9	9.2	8.9	8.3	8.4	9.1
42		8.9	8.9	9.2	9	8.2	8.8	9.1
56		9.1	8.6	9.2	9.3	8.3	9.1	9.2
75		9.1	8.6	9.2	9.3	8.4	8.7	9.2
100		9	9.3	9.1	9.4	8.4	8.8	9.3

Initial pH								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	7.9	7.7	7.7	7.9	7.8	8.2	8.1
32		7.8	7.7	7.7	7.9	7.7	8.3	8
42		7.9	7.7	7.8	7.8	7.7	8	8
56		8	7.8	7.8	7.9	7.8	7.9	8
75		8	7.9	7.8	7.8	7.8	8.1	8
100		8.1	7.9	7.9	7.8	7.9	7.9	8

Initial Temperature-°C								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	23	23	23	23	23	24	23
32		23	23	23	23	23	24	23
42		23	23	23	23	23	23	23
56		23	23	23	23	23	23	23
75		23	23	23	23	23	23	23
100		23	23	23	23	23	23	23

Final Dissolved Oxygen-mg/L								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	9.3	9.4	9.1	8.4	8.5	8.4	8.2
32		9.3	9.4	9.1	8.4	8.6	8.6	8.4
42		9.3	9.2	9.1	8.4	8.5	8.7	8.2
56		9.2	9.2	9.1	8.3	8.5	8.6	8.2
75		9	9.2	9.1	8.3	8.6	8.7	8.4
100		8.9	9.1	9.1	8.2	8.5	8.3	8.5

Final pH								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	7.9	7.9	7.9	7.9	7.9	7.6	7.5
32		7.9	7.9	7.9	7.9	8	7.9	7.9
42		8	7.9	8	8	8.1	7.9	7.5
56		8.1	8	8.1	8.1	8.1	7.8	7.5
75		8.2	8	8.2	8.2	8.3	7.9	7.6
100		8.3	8.3	8.3	8.3	8.4	7.9	7.6

Final Temperature-°C								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	23	23	23	23	23	23	23
32		23	23	23	23	23	23	23
42		23	23	23	23	23	23	23
56		23	23	23	23	23	23	23
75		23	23	23	23	23	23	23
100		23	23	23	23	23	23	23

Alkalinity (CaCO3)-mg/L								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	59	59	61	58	62	59	61

# CETIS Measurement Detail

Total Residual Chlorine-mg/L								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	0	0	0	0	0	0	0
100		0	0	0	0	0	0	0

Conductivity-µmhos								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	175	175	179	180	179	174	181
100		1460	1599	1411	1392	1475	1441	1373

Hardness (CaCO3)-mg/L								
Conc-%	Control Type	1	2	3	4	5	6	7
0	Lab Water	92	92	91	89	90	92	90



# ENVIRONMENTAL TESTING & CONSULTING, INC.

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 "A Laboratory Management Partner"

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 Mr. Darrell Backs  
 P.O. Box 227  
 Berryville, AR 72616

Project WWTP Bioassay  
 Information :

Report Date : 5/15/2012

Report Number : **12-115-0100**

## REPORT OF ANALYSIS

Received : 4/24/2012

Lab No : **90447**  
 Sample ID : **Outfall 001**

Matrix: **Aqueous**  
 Sampled: **4/23/2012 12:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	<b>356</b>	mg/L	1	1	05/02/12 10:17	EWB	2320B
Total Calcium	<b>22.0</b>	mg/L	0.100	1	05/04/12 02:18	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	<b>73.7</b>	mg/L	0.100	1	05/04/12 02:18		EPA-200.7
Total Magnesium	<b>4.56</b>	mg/L	0.100	1	05/04/12 02:18	BKN	EPA-200.7

Lab No : **90985**  
 Sample ID : **Outfall 001**

Matrix: **Aqueous**  
 Sampled: **4/25/2012 12:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	<b>323</b>	mg/L	1	1	05/02/12 10:17	EWB	2320B
Total Calcium	<b>23.7</b>	mg/L	0.100	1	05/04/12 02:38	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	<b>80.3</b>	mg/L	0.100	1	05/04/12 02:38		EPA-200.7
Total Magnesium	<b>5.12</b>	mg/L	0.100	1	05/04/12 02:38	BKN	EPA-200.7

Lab No : **91187**  
 Sample ID : **Outfall 001**

Matrix: **Aqueous**  
 Sampled: **4/26/2012 12:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	<b>344</b>	mg/L	1	1	05/02/12 10:17	EWB	2320B
Total Calcium	<b>24.0</b>	mg/L	0.100	1	05/04/12 02:45	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	<b>79.9</b>	mg/L	0.100	1	05/04/12 02:45		EPA-200.7
Total Magnesium	<b>4.85</b>	mg/L	0.100	1	05/04/12 02:45	BKN	EPA-200.7

**Qualifiers/** \* Outside QC limit  
**Definitions** MQL Method Quantitation Limit

DF Dilution Factor

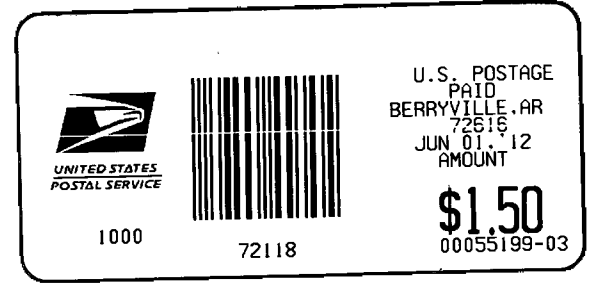
Environmental Testing and Consulting, Inc.  
2790 Whitten Road  
Memphis, TN 38133

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: 2500 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



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