

# **BATESVILLE WASTEWATER TREATMENT PLANT**

500 River Bank Road

Batesville, Arkansas 72501

Office (870) 698-2442 Fax (870) 698-2443

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## **Introduction:**

Objective: To test for toxicity in the effluent discharge.

NPES Permit Number: AR0020702

Testing Requirements: Acute 48-hour static renewal definitive toxicity test using (*Daphnia pulex*) & (*Pimephales promelas*)

Plant Location: River Bank Road, Batesville, Arkansas

Contract Lab:

American Interplex Corporation

8600 Kanis Road

Little Rock, Arkansas 72204-2322

(501) 224-5060

Tests Conducted: December 10, 2012 through December 12, 2012.

## **Plant Operations:**

Type of Plant: Aerated Lagoon System followed by sand filters and chlorination.

Operating Schedule: 24 hours per day.

Raw and Final Products: Wastewater (domestic & industrial).

Schematic: File

Discharge Flows: December 09, 2012 1.615 MGD: December 10, 2012 and 1.599 MGD

Flow Rate Receiving Stream: Available U. S. Army Corp. of Engineers

## **Effluent and Dilution Water:**

Effluent:

- a. Source: Plant Discharge
- b. Collection (enclosed chain of custody)
- c. Sample collection: 24 hour composite flow proportion
- d. Chemical characteristics: (enclosed summary forms)



December 17, 2012

Test Results of  
Fourth Quarter  
Acute 48 hour Renewal  
Biomonitoring Testing  
for  
Plant Effluent  
Batesville, AR

Control No. 163208-1

Prepared for:

Mr. Eugene Townsley  
Batesville Wastewater Treatment Plant  
500 River Bank Road  
Batesville, AR 72501

Prepared by:

AMERICAN INTERPLEX CORPORATION  
8600 Kanis Road  
Little Rock, AR 72204-2322



Batesville Wastewater Treatment Plant  
ATTN: Mr. Eugene Townsley  
500 River Bank Road  
Batesville, AR 72501

Re: Acute 48 hour Renewal Biomonitoring utilizing *Pimephales promelas* (Fathead Minnow) and *Daphnia pulex*  
Plant Effluent - Batesville, AR  
Client NPDES Permit No. NPDES AR0020702 AFIN 32-00044

Dear Mr. Eugene Townsley:

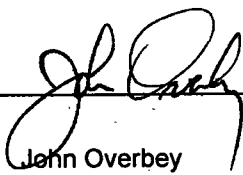
This report is the analytical results and supporting information for the samples submitted to American Interplex Corporation (AIC). The following results are applicable only to the sample identified by the control number referenced above. Accurate assessment of the data requires access to the entire document. Each section of the report has been reviewed and approved by the appropriate laboratory director or qualified designee.

Testing procedures and Quality Assurance were in accordance with "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" EPA-821-R-02-012, Fifth Edition, October 2002. Test results are summarized below:

Acute *Pimephales promelas* (Fathead Minnow) Survival Test: The No Observable Effects Concentration (NOEC) for survival was 25% effluent, and the LC-50 value was >25% effluent; the sample, therefore, **PASSED** at low flow of 19% effluent for lethal effects.

Acute *Daphnia pulex* Survival Test: The No Observable Effects Concentration (NOEC) for survival was 25% effluent, and the LC-50 value was >25% effluent; the sample, therefore, **PASSED** at low flow of 19% effluent for lethal effects.

AMERICAN INTERPLEX CORPORATION

  
\_\_\_\_\_  
John Overbey  
Laboratory Director

PDF cc: Batesville Wastewater Treatment Plant  
ATTN: Mr. Eugene Townsley  
wwsuper@cityofbatesville.com

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I. Introduction and Summary

Biomonitoring testing of 48-hour renewal definitive toxicity tests using *Daphnia pulex* and *Pimephales promelas* were performed.

The *Daphnia pulex* test was conducted from December 10, 2012 at 1620 to December 12, 2012 at 1430.

The *Pimephales promelas* test was conducted from December 10, 2012 at 1545 to December 12, 2012 at 1355.

The tests were performed in accordance with EPA-821-R-02-012. Statistical analyses were performed on the observed data.

The tests were conducted in temperature and light cycle controlled environmental chamber. The test temperature was 25 degrees C +/- 1 degree for the *Daphnia pulex* and 25 degrees C +/- 1 degree for the *Pimephales promelas*.

II. Control Acceptance Criteria

ORGANISM	CRITERIA	RESULTS	PASS/FAIL
<i>Daphnia pulex</i>	Control Survival >= 90%	100	PASS
<i>Pimephales promelas</i>	Control Survival >= 90%	100	PASS

III. Outlined Report

A. Introduction

1. Permit Number: NPDES AR0020702 AFIN 32-00044
2. Test Requirements: 48-hour renewal definitive toxicity test using:  
*Daphnia pulex*  
*Pimephales promelas*

B. Source of Effluent/Dilution Water

1. Effluent Samples:
  - a. Sampling Point: Plant Effluent  
December 10
  - b. Chemical Data:

Analysis	Sample 1	Sample 2
Dissolved oxygen (mg/l)	7.7	7.9
pH (standard units)	8.9	8.9
Alkalinity (mg/l as CaCO <sub>3</sub> )	140	130
Hardness (mg/l as CaCO <sub>3</sub> )	140	130
Conductivity (umhos/cm)	730	730
Residual Chlorine (mg/l)	<0.05	<0.05

2. Dilution Water Samples: Synthetic Moderately Hard Water #3941

a. Dates Collected/Prepared: December 3 through December 17, 2012

b. Chemical Data:

Analysis	Sample 1	Sample 2
Dissolved oxygen (mg/l)	8.2	7.9
pH (standard units)	7.9	7.9
Alkalinity (mg/l as CaCO <sub>3</sub> )	58	58
Hardness (mg/l as CaCO <sub>3</sub> )	83	83
Conductivity (umhos/cm)	290	300
Residual Chlorine (mg/l)	<0.05	<0.05

C. Test Methods

1. Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (Fifth Ed.), EPA-821-R-02-012, 48-hour acute definitive test.

a. Endpoints:

Death; the criteria employed to establish death are:

- i. No movement
- ii. No reaction to gentle prodding

Criteria	<i>Pimephales promelas</i>	<i>Daphnia pulex</i>
Type and Volume of Test Chamber	500 ml disposable beaker	30 ml disposable beaker
Volume of Sample	250 ml	25 ml
Organisms per chamber	8	8
Replicates per dilution	5	5
Test Temperature	25 deg. C	25 deg. C
Test Initiated	December 10, 2012 at 1545	December 10, 2012 at 1620
Test Terminated	December 12, 2012 at 1355	December 12, 2012 at 1430
Feeding	None required	None required
Age of Test Organisms	6 days	<24 hours

2. Chemical Methods Employed:

Analysis	Method
Dissolved oxygen (mg/l)	SM 4500-O C
pH (standard units)	SM 4500-H+ B
Alkalinity (mg/l as CaCO <sub>3</sub> )	SM 2320 B
Hardness (mg/l as CaCO <sub>3</sub> )	EPA 200.7
Conductivity (umhos/cm)	EPA 120.1
Residual Chlorine (mg/l)	SM 4500-CL- F
Temperature (deg.C)	EPA 170.1

**D. Test Organisms**

1. Scientific Name

*Daphnia pulex*  
*Pimephales promelas*

2. Acclimation of test organisms:

*Daphnia pulex*

Organisms were obtained from in-house cultures. The organisms were raised in moderately hard reconstituted water.

*Pimephales promelas*

Organisms were obtained from in-house cultures. The organisms were raised in moderately hard reconstituted water.

**E. Quality Assurance**

1. Toxicity Tests

a. Reference Toxicant: Sodium Chloride

b. Date of test:

*Daphnia pulex*: December 5, 2012 at 1220 to December 7, 2012 at 1315

*Pimephales promelas*: December 4, 2012 at 1500 to December 6, 2012 at 1315

c. Synthetic moderately hard dilution water used

Organism	LC50	Warning Limits
<i>Daphnia pulex</i>	2.43 g/l	1.22-2.43 g/l
<i>Pimephales promelas</i>	7.16 g/l	6.30-7.81 g/l

2. Chemical and Physical Analyses

Analysis	% Recovery	Relative % Difference
Alkalinity	NA	0.00
Hardness	102	2.63
pH	101	0.267
Conductivity	102	0.660

**F. Organism History**

*Daphnia pulex*

Date: December 10, 2012 at 1620

Age: <24 hours

Source: In-house culture

Water Chemistry Record:

Alkalinity: 57-64 mg/l

Hardness: 80-100 mg/l

Temperature: 25 deg.C

*Pimephales promelas* (Fathead minnow)

Date: December 10, 2012 at 1545

Age: 6 days

Source: In-house culture

Water Chemistry Record:

Alkalinity: 57-64 mg/l

Hardness: 80-100 mg/l

Temperature: 25 deg.C

IV. Results Summary

*Daphnia pulex* and *Pimephales promelas* are exposed in a static renewal system to different concentrations of effluent and dilution water. Effluent dilutions for this test were 8%, 11%, 14%, 19%, 25%. The low-flow concentration was 19%. Test results were based on survival.

*Daphnia pulex*

The *Daphnia pulex* test was conducted from December 10, 2012 at 1620 to December 12, 2012 at 1430.

Statistical analyses:

NOEC = 25%

LC50 = >25%

Concentration	24 hour % Survival	48 hour % Survival
Control	100	100
8%	100	100
11%	100	100
14%	100	100
19%	100	100
25%	100	100

*Pimephales promelas*

The *Pimephales promelas* test was conducted from December 10, 2012 at 1545 to December 12, 2012 at 1355.

Statistical analyses:

NOEC = 25%

LC50 = >25%

Concentration	24 hour % Survival	48 hour % Survival
Control	100	100
8%	100	100
11%	100	100
14%	100	100
19%	100	100
25%	100	100



Appendix: A1

*Daphnia pulex*  
Survival Data

Number of organisms per chamber: 8  
Volume of test chamber: 30 ml

Age of organisms: <24 hours  
Volume of test solution: 25 ml

Effluent Concentration		Number of Survivors		% Survival	CV %
		24 Hours	48 Hours		
Control	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
8%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
11%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
14%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
19%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
25%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		

CV = Coefficient of variance = standard deviation X 100/mean

Appendix: A1

*Pimephales promelas*  
Survival Data

Number of organisms per chamber: 8  
Volume of test chamber: 500 ml

Age of organisms: 6 days  
Volume of test solution: 250 ml

Effluent Concentration		Number of Survivors		% Survival	CV %
		24 Hours	48 Hours		
Control	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
8%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
11%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
14%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
19%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
25%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		

CV = Coefficient of variance = standard deviation X 100/mean

Appendix A2: Statistics

*Daphnia pulex*

Transformation of Data				Transform: Arc Sin(Square Root(Y))
Group	Identification	Rep	Value	Transformed
1	Control	1	1.00000	1.39310
1	Control	2	1.00000	1.39310
1	Control	3	1.00000	1.39310
1	Control	4	1.00000	1.39310
1	Control	5	1.00000	1.39310
2	8%	1	1.00000	1.39310
2	8%	2	1.00000	1.39310
2	8%	3	1.00000	1.39310
2	8%	4	1.00000	1.39310
2	8%	5	1.00000	1.39310
3	11%	1	1.00000	1.39310
3	11%	2	1.00000	1.39310
3	11%	3	1.00000	1.39310
3	11%	4	1.00000	1.39310
3	11%	5	1.00000	1.39310
4	14%	1	1.00000	1.39310
4	14%	2	1.00000	1.39310
4	14%	3	1.00000	1.39310
4	14%	4	1.00000	1.39310
4	14%	5	1.00000	1.39310
5	19%	1	1.00000	1.39310
5	19%	2	1.00000	1.39310
5	19%	3	1.00000	1.39310
5	19%	4	1.00000	1.39310
5	19%	5	1.00000	1.39310
6	25%	1	1.00000	1.39310
6	25%	2	1.00000	1.39310
6	25%	3	1.00000	1.39310
6	25%	4	1.00000	1.39310
6	25%	5	1.00000	1.39310

Appendix A2: Statistics

*Daphnia pulex*

Shapiro - Wilk's Test for Normality		Transform: Arc Sin(Square Root(Y))
D = 0		
W = 0		
Critical W = 0.9	(alpha = 0.01, N = 30)	
Critical W = 0.927	(alpha = 0.05, N = 30)	
Data FAIL normality test (alpha = 0.01).		

Steel's Many-One Rank Test				Transform: Arc Sin(Square Root(Y))	
Ho: Control < Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	8%	27.50	16.00	5.00	
3	11%	27.50	16.00	5.00	
4	14%	27.50	16.00	5.00	
5	19%	27.50	16.00	5.00	
6	25%	27.50	16.00	5.00	
Critical values are 1 tailed (k=5)					

Appendix A2: Statistics

*Pimephales promelas*

Transformation of Data			Transform: Arc Sin(Square Root(Y))	
Group	Identification	Rep	Value	Transformed
1	Control	1	1.00000	1.39310
1	Control	2	1.00000	1.39310
1	Control	3	1.00000	1.39310
1	Control	4	1.00000	1.39310
1	Control	5	1.00000	1.39310
2	8%	1	1.00000	1.39310
2	8%	2	1.00000	1.39310
2	8%	3	1.00000	1.39310
2	8%	4	1.00000	1.39310
2	8%	5	1.00000	1.39310
3	11%	1	1.00000	1.39310
3	11%	2	1.00000	1.39310
3	11%	3	1.00000	1.39310
3	11%	4	1.00000	1.39310
3	11%	5	1.00000	1.39310
4	14%	1	1.00000	1.39310
4	14%	2	1.00000	1.39310
4	14%	3	1.00000	1.39310
4	14%	4	1.00000	1.39310
4	14%	5	1.00000	1.39310
5	19%	1	1.00000	1.39310
5	19%	2	1.00000	1.39310
5	19%	3	1.00000	1.39310
5	19%	4	1.00000	1.39310
5	19%	5	1.00000	1.39310
6	25%	1	1.00000	1.39310
6	25%	2	1.00000	1.39310
6	25%	3	1.00000	1.39310
6	25%	4	1.00000	1.39310
6	25%	5	1.00000	1.39310

Appendix A2: Statistics

*Pimephales promelas*

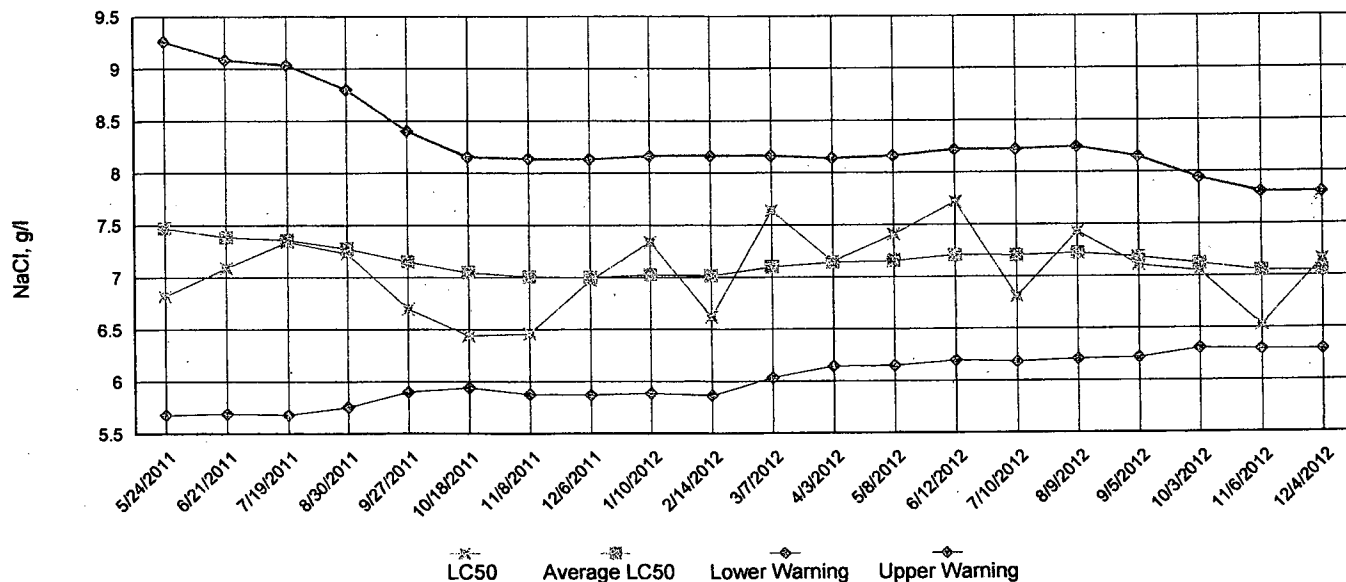
Shapiro - Wilk's Test for Normality		Transform: Arc Sin(Square Root(Y))
<p>D = 0 W = 0 Critical W = 0.9 (alpha = 0.01, N = 30) Critical W = 0.927 (alpha = 0.05, N = 30)</p> <p>Data FAIL normality test (alpha = 0.01).</p>		

Steel's Many-One Rank Test				Transform: Arc Sin(Square Root(Y))	
Ho:Control<Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	8%	27.50	16.00	5.00	
3	11%	27.50	16.00	5.00	
4	14%	27.50	16.00	5.00	
5	19%	27.50	16.00	5.00	
6	25%	27.50	16.00	5.00	
Critical values are 1 tailed (k=5)					

Appendix: A3

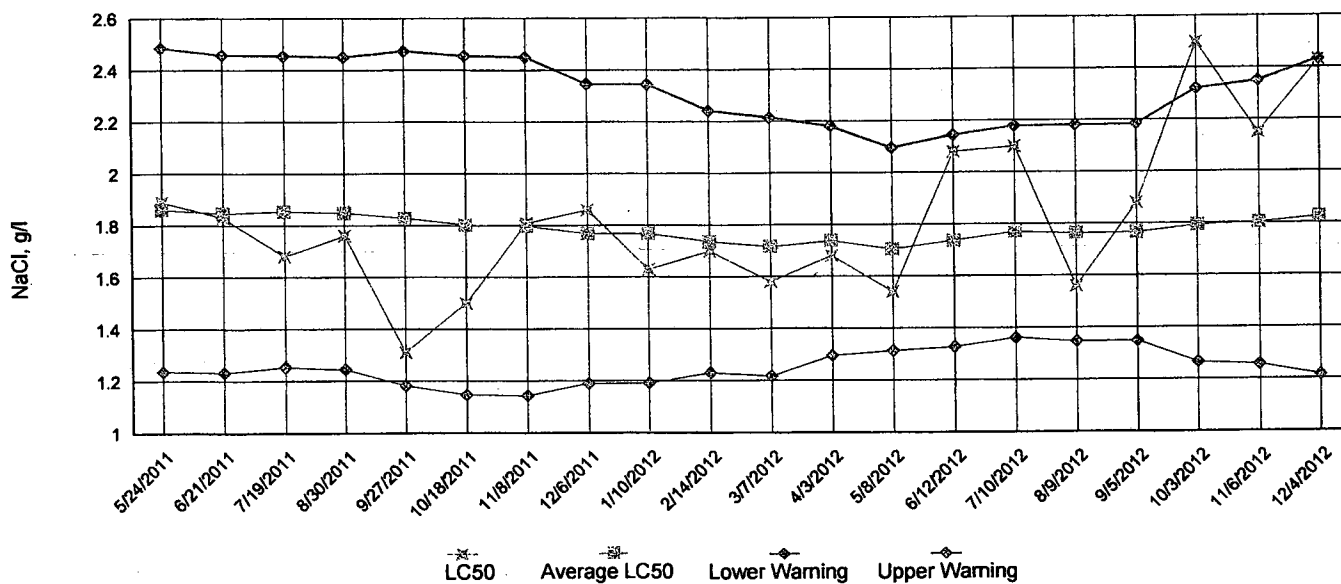
Acute Reference Toxicant, *Pimephales promelas* (Fathead Minnow)

LC50 Survival Data



Acute Reference Toxicant, *Daphnia pulex*

LC50 Survival Data



Appendix: A4

Chemical Data for  
*Pimephales promelas*  
and  
*Daphnia pulex*

Day 1		Control	8%	11%	14%	19%	25%
DO, mg/l	Initial	8.2	8.3	8.3	8.1	8.4	8.2
DO, mg/l	Final 1*	7.8	8.0	8.0	7.9	8.0	7.7
DO, mg/l	Final 2*	8.0	7.9	7.9	7.7	7.6	7.6
pH, su	Initial	7.9	8.0	8.0	8.1	8.2	8.3
pH, su	Final 1*	8.1	8.1	8.0	8.1	8.1	8.1
pH, su	Final 2*	8.1	8.0	8.0	7.9	7.9	7.9
Alkalinity, mg/l		58	NA	NA	NA	73	NA
Hardness, mg/l		83	NA	NA	NA	92	NA
Conductivity, umho/cm		290	330	340	360	380	410
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	8%	11%	14%	19%	25%
DO, mg/l	Initial	7.9	8.1	8.0	7.8	7.9	8.2
DO, mg/l	Final 1*	7.8	7.5	7.5	7.6	7.7	7.5
DO, mg/l	Final 2*	7.8	7.8	7.8	7.8	7.6	7.1
pH, su	Initial	7.9	8.0	8.0	8.1	8.2	8.3
pH, su	Final 1*	7.8	7.8	7.8	7.8	7.8	7.9
pH, su	Final 2*	7.9	7.9	7.9	8.0	8.0	8.0
Alkalinity, mg/l		58	NA	NA	NA	70	NA
Hardness, mg/l		83	NA	NA	NA	86	NA
Conductivity, umho/cm		300	340	350	360	380	410
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

\*1 data from *Pimephales promelas*

\*2 data from *Daphnia pulex*



Appendix: B

*Daphnia pulex* Survival Data

Permitee:	Batesville Wastewater Treatment Plant	Critical Dilution:	19%
NPDES No:	NPDES AR0020702 AFIN 32-00044	Sample Source:	Plant Effluent
Contact:	Mr. Eugene Townsley	Species Age:	<24 hours
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 298, 304, 307
Dilution Water:	Synthetic Moderately Hard Water #3941		
Test Initiated:	December 10, 2012 at 1620		
Test Terminated:	December 12, 2012 at 1430		

PERCENT SURVIVAL

24 hours	Control	8%	11%	14%	19%	25%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	100

48 hours	Control	8%	11%	14%	19%	25%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	100

Dunnett's Procedure or Steel's Many-One Rank Test as appropriate. Is the mean survival at 48 hours significantly different (p=0.05) than the control survival for the % effluent corresponding to:

- |                       |           |         |          |
|-----------------------|-----------|---------|----------|
| a) Low Flow 19%:      | _____ Yes | _____ X | _____ No |
| b) 1/2 Low Flow (NA): | _____ Yes | _____   | _____ No |

If you answered No to 1a) enter [0], otherwise enter [1]: 0

Enter response to item 2 on the DMR Form, parameter #TEM3D:

NOEL *Daphnia pulex* lethality #TOM3D: 25%

Coefficient of variation for *Daphnia pulex* survival #TQM3D: 0

Enter percent effluent corresponding to LC-50 below.

LC-50 effluent: >25%  
Method of LC-50 calculation: NA

Reference Toxicity Test Performed on December 5, 2012 at 1220 to December 7, 2012 at 1315:

LC-50 effluent: 2.43 g/l  
Warning Limits: 1.22 to 2.43 g/l

Appendix: B

*Daphnia pulex* Chemical Parameters Chart

Permittee:	Batesville Wastewater Treatment Plant	Critical Dilution:	19%
NPDES No:	NPDES AR0020702 AFIN 32-00044	Sample Source:	Plant Effluent
Contact:	Mr. Eugene Townsley	Species Age:	<24 hours
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 298, 304, 307
Dilution Water:	Synthetic Moderately Hard Water #3941		
Test Initiated:	December 10, 2012 at 1620		
Test Terminated:	December 12, 2012 at 1430		

Day 1		Control	8%	11%	14%	19%	25%
DO, mg/l	Initial	8.2	8.3	8.3	8.1	8.4	8.2
DO, mg/l	Final	8.0	7.9	7.9	7.7	7.6	7.6
pH, su	Initial	7.9	8.0	8.0	8.1	8.2	8.3
pH, su	Final	8.1	8.0	8.0	7.9	7.9	7.9
Alkalinity, mg/l		58	NA	NA	NA	73	NA
Hardness, mg/l		83	NA	NA	NA	92	NA
Conductivity, umho/cm		290	330	340	360	380	410
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	8%	11%	14%	19%	25%
DO, mg/l	Initial	7.9	8.1	8.0	7.8	7.9	8.2
DO, mg/l	Final	7.8	7.8	7.8	7.8	7.6	7.1
pH, su	Initial	7.9	8.0	8.0	8.1	8.2	8.3
pH, su	Final	7.9	7.9	7.9	8.0	8.0	8.0
Alkalinity, mg/l		58	NA	NA	NA	70	NA
Hardness, mg/l		83	NA	NA	NA	86	NA
Conductivity, umho/cm		300	340	350	360	380	410
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Appendix: B

*Pimephales promelas* Survival Data

Permittee:	Batesville Wastewater Treatment Plant	Critical Dilution:	19%
NPDES No:	NPDES AR0020702 AFIN 32-00044	Sample Source:	Plant Effluent
Contact:	Mr. Eugene Townsley	Species Age:	6 days
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 298, 304, 307
Dilution Water:	Synthetic Moderately Hard Water #3941		
Test Initiated:	December 10, 2012 at 1545		
Test Terminated:	December 12, 2012 at 1355		

PERCENT SURVIVAL

24 hours	Control	8%	11%	14%	19%	25%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	100

48 hours	Control	8%	11%	14%	19%	25%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	100

Dunnett's Procedure or Steel's Many-One Rank Test as appropriate. Is the mean survival at 48 hours significantly different ( $p=0.05$ ) than the control survival for the % effluent corresponding to:

- |                       |           |                 |
|-----------------------|-----------|-----------------|
| a) Low Flow 19%:      | _____ Yes | <u>  X  </u> No |
| b) 1/2 Low Flow (NA): | _____ Yes | _____ No        |

If you answered No to 1a) enter [0], otherwise enter [1]:           0          

Enter response to item 2 on the DMR Form, parameter #TEM6C.

NOEL *Pimephales promelas* lethality #TOM6C:           25%          

Coefficient of variation for *Pimephales promelas* survival #TQM6C:           0          

Enter percent effluent corresponding to LC-50 below.  
LC-50 effluent: >25%  
Method of LC-50 calculation: NA

Reference Toxicity Test Performed on December 4, 2012 at 1500 to December 6, 2012 at 1315:  
LC-50 effluent: 7.16 g/l  
Warning Limits: 6.30 to 7.81 g/l

Appendix: B

*Pimephales promelas* Chemical Parameters Chart

Permittee:	Batesville Wastewater Treatment Plant	Critical Dilution:	19%
NPDES No:	NPDES AR0020702 AFIN 32-00044	Sample Source:	Plant Effluent
Contact:	Mr. Eugene Townsley	Species Age:	6 days
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 298, 304, 307
Dilution Water:	Synthetic Moderately Hard Water #3941		
Test Initiated:	December 10, 2012 at 1545		
Test Terminated:	December 12, 2012 at 1355		

Day 1		Control	8%	11%	14%	19%	25%
DO, mg/l	Initial	8.2	8.3	8.3	8.1	8.4	8.2
DO, mg/l	Final	7.8	8.0	8.0	7.9	8.0	7.7
pH, su	Initial	7.9	8.0	8.0	8.1	8.2	8.3
pH, su	Final	8.1	8.1	8.0	8.1	8.1	8.1
Alkalinity, mg/l		58	NA	NA	NA	73	NA
Hardness, mg/l		83	NA	NA	NA	92	NA
Conductivity, umho/cm		290	330	340	360	380	410
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	8%	11%	14%	19%	25%
DO, mg/l	Initial	7.9	8.1	8.0	7.8	7.9	8.2
DO, mg/l	Final	7.8	7.5	7.5	7.6	7.7	7.5
pH, su	Initial	7.9	8.0	8.0	8.1	8.2	8.3
pH, su	Final	7.8	7.8	7.8	7.8	7.8	7.9
Alkalinity, mg/l		58	NA	NA	NA	70	NA
Hardness, mg/l		83	NA	NA	NA	86	NA
Conductivity, umho/cm		300	340	350	360	380	410
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

163208

### Batesville Wastewater Treatment Plant Chain of Custody

Sampled By: Michael McDaniel

Date Sampled: 12-9-12

①

Sample ID	Date/Time Collected	Temp	Grab pH	Time/pH Analyzed	Type G C	P GL	Analysis Required	Preserve	NC
Plant Effluent	12-9-12 / 2400				C	P	Acute Biomonitoring	40C	2

COMMENT:

Effluent Flow: 11615

Acute Biomonitoring

Relinquished By:

Date/Time:

Jeffery Fuller

12-10-12 / 0700

Received By:

Date/Time:

Michael McDaniel

12-10-12 / 0730

Relinquished By:

Date/Time:

Michael McDaniel

12-10-12 / 0945

Received By:

Date/Time:

Anna Pulae

12-10-12 0945

COMMENT:

20C

163208

### Batesville Wastewater Treatment Plant Chain of Custody

Sampled By: Michael McDaniel

Date Sampled: 12-10-12

2

Sample ID	Date/Time Collected	Temp	Grab pH	Time/pH Analyzed	Type G C	P GL	Analysis Required	Preserve	NC
Plant Effluent	12-10-12 / 2400				C	P	Acute Biomonitoring	4°C	2

**COMMENT:**

Effluent Flow: 1.599

Acute Biomonitoring

**Relinquished By:**

**Date/Time:**

*[Signature]*

12/11/12 / 0700

**Received By:**

**Date/Time:**

*[Signature]*

12-11-12 / 0730

**Relinquished By:**

**Date/Time:**

*[Signature]*

12-11-12 / 0925

**Received By:**

**Date/Time:**

*[Signature]*

12-11-12 / 0925

**COMMENT:**

2°C

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
DISCHARGE MONITORING REPORT (DMR)

Form Approved  
OMB No. 2040-0004

NAME: BATESVILLE WATER UTILITIES  
ADDRESS: 500 RIVER BANK ROAD  
BATEVILLE, AR 72501

AR0020702	TX1-S
PERMIT NUMBER	DISCHARGE NUMBER
MONITORING PERIOD	
MM/DD/YYYY	MM/DD/YYYY
7/1/2012	12/31/2012

DMR Mailing ZIP CODE: 72501  
MAJOR \$  
001-SEMIANNUAL ACUTE WET TESTING  
External Outfall

FACILITY: BATESVILLE WW TREATMENT PLANT  
LOCATION: 500 RIVER BANK ROAD  
BATESVILLE, AR 72501  
ATTN: EUGENE TOWNSLEY, PLANT SUPT.

No Discharge

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
LF Pass/Fail Statre 48Hr Acute Daphnia Pulex	SAMPLE MEASUREMENT	*****	*****	*****	0	*****	*****	0		Semiannual	Compos
TEM3D 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	pass=0/fail=1		Semiannual	COMPOS
LF Pass/Fail Statre 48Hr Acute Pimephales Promela	SAMPLE MEASUREMENT	*****	*****	*****	0	*****	*****	0		Semiannual	Compos
TEM6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	pass=0/fail=1		Semiannual	COMPOS
Noel Lethal Statre 48Hr Acute D. Pulex	SAMPLE MEASUREMENT	*****	*****	*****	25	*****	*****			Semiannual	Compos
TOM3D 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	%		Semiannual	COMPOS
Noel Lethal Statre 48Hr Acute Pimephales	SAMPLE MEASUREMENT	*****	*****	*****	25	*****	*****			Semiannual	Compos
TOM6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	%		Semiannual	COMPOS
Coef Of Var Statre 48Hr Acute D. Pulex	SAMPLE MEASUREMENT	*****	*****	*****	0	*****	*****			Semiannual	Compos
TQM3D 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	%		Semiannual	COMPOS
Coef Of Var Statre 48Hr Acute Pimephales	SAMPLE MEASUREMENT	*****	*****	*****	0	*****	*****			Semiannual	Compos
TQM6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	%		Semiannual	COMPOS

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	TELEPHONE	DATE	
TYPED OR PRINTED				SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT
Eugene Townsley Superintendent		870-982-442	01/07/2013	

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

(PASS=0/FAIL=1) IF THE NOEC VALUE IS LESS THAN THE CRITICAL DILUTION, REPORT "1"; OTHERWISE, REPORT "0". TOXICITY TESTING REDUCED TO SEMIANNUAL PER MARY BARNETT'S 03/14/2012 LETTER. 32-00044

Testing by American Interplex

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NAME: BATESVILLE WATER UTILITIES

ADDRESS: 500 RIVER BANK ROAD  
BATEVILLE, AR 72501

FACILITY: BATESVILLE WW TREATMENT PLANT

LOCATION: 500 RIVER BANK ROAD  
BATESVILLE, AR 72501

ATTN: EUGENE TOWNSLEY, PLANT SUPT.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved  
OMB No. 2040-0004


AR0020702	TX2-Q
PERMIT NUMBER	DISCHARGE NUMBER
MONITORING PERIOD	
MM/DD/YYYY	MM/DD/YYYY
10/1/2012	12/31/2012

DMR Mailing ZIP CODE: 72501  
MAJOR \$

002-QUARTERLY-ACUTE TOXICITY  
External Outfall

No Discharge

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
LF Pass/Fail Statre 48Hr Acute Daphnia Pulex	SAMPLE MEASUREMENT	*****	*****	*****		*****	*****				
TEM3D 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	pass=0/fail=1		Quarterly	COMPOS
LF Pass/Fail Statre 48Hr Acute Pimephales Promela	SAMPLE MEASUREMENT	*****	*****	*****		*****	*****				
TEM6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	pass=0/fail=1		Quarterly	COMPOS
Noel Lethal Statre 48Hr Acute D. Pulex	SAMPLE MEASUREMENT	*****	*****	*****		*****	*****				
TOM3D 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	%		Quarterly	COMPOS
Noel Lethal Statre 48Hr Acute Pimephales	SAMPLE MEASUREMENT	*****	*****	*****		*****	*****				
TOM6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	%		Quarterly	COMPOS
Coef Of Var Statre 48Hr Acute D. Pulex	SAMPLE MEASUREMENT	*****	*****	*****		*****	*****				
TQM3D 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	%		Quarterly	COMPOS
Coef Of Var Statre 48Hr Acute Pimephales	SAMPLE MEASUREMENT	*****	*****	*****		*****	*****				
TQM6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	%		Quarterly	COMPOS

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	 SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	TELEPHONE	DATE	
TYPED OR PRINTED			870 698 2442	10/07/2012	
			AREA Code	NUMBER	MM/DD/YYYY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

(PASS=0 FAIL=1) REPORT PASS AS "0" OR REPORT FAIL AS "1" IN CONCENTRATION AVERAGE ABOVE. SEE PART II, CONDITION NO. 7.\* CALENDAR QUARTERS: (JAN-MAR), (APR-JUN), (JUL-SEP) & (OCT-DEC). 32-00044



NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
DISCHARGE MONITORING REPORT (DMR)

Form Approved  
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NAME: BATESVILLE WATER UTILITIES  
ADDRESS: 500 RIVER BANK ROAD  
BATEVILLE, AR 72501

AR0020702  
PERMIT NUMBER

TX1-S  
DISCHARGE NUMBER

DMR Mailing ZIP CODE: 72501  
MAJOR \$

FACILITY: BATESVILLE WW TREATMENT PLANT  
LOCATION: 500 RIVER BANK ROAD  
BATESVILLE, AR 72501

MONITORING PERIOD  
MM/DD/YYYY  
7/1/2012  
MM/DD/YYYY  
12/31/2012

001-SEMIANNUAL ACUTE WET TESTING  
External Outfall

ATTN: EUGENE TOWNSLEY, PLANT SUPT.

No Discharge

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
LF Pass/Fail Statre 48Hr Acute Daphnia Pulex	SAMPLE MEASUREMENT	*****	*****	*****	0	*****	*****	0		Semiannual	Compos
TEM3D 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	pass=0/fail=1		Semiannual	COMPOS
LF Pass/Fail Statre 48Hr Acute Pimephales Promela	SAMPLE MEASUREMENT	*****	*****	*****	0	*****	*****	0		Semiannual	Compos
TEM6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	pass=0/fail=1		Semiannual	COMPOS
Noel Lethal Statre 48Hr Acute D. Pulex	SAMPLE MEASUREMENT	*****	*****	*****	25	*****	*****			Semiannual	Compos
TOM3D 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	%		Semiannual	COMPOS
Noel Lethal Statre 48Hr Acute Pimephales	SAMPLE MEASUREMENT	*****	*****	*****	25	*****	*****			Semiannual	Compos
TOM6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	%		Semiannual	COMPOS
Coef Of Var Statre 48Hr Acute D. Pulex	SAMPLE MEASUREMENT	*****	*****	*****	0	*****	*****			Semiannual	Compos
TQM3D 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	%		Semiannual	COMPOS
Coef Of Var Statre 48Hr Acute Pimephales	SAMPLE MEASUREMENT	*****	*****	*****	0	*****	*****			Semiannual	Compos
TQM6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. 48HR MIN	*****	*****	%		Semiannual	COMPOS

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	TELEPHONE	DATE	
Eugene Townsley Superintendent TYPED OR PRINTED				SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

(PASS=0/FAIL=1) IF THE NOEC VALUE IS LESS THAN THE CRITICAL DILUTION, REPORT "1"; OTHERWISE, REPORT "0". TOXICITY TESTING REDUCED TO SEMIANNUAL PER MARY BARNETT'S 03/14/2012 LETTER. 32-00044

Testing by American Intertek

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NAME: BATESVILLE WATER UTILITIES  
 ADDRESS: 500 RIVER BANK ROAD  
 BATEVILLE, AR 72501

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
 DISCHARGE MONITORING REPORT (DMR)

Form Approved  
 OMB No. 2040-0004

AR0020702	TX2-Q
PERMIT NUMBER	DISCHARGE NUMBER
MONITORING PERIOD	
MM/DD/YYYY	MM/DD/YYYY
10/1/2012	12/31/2012

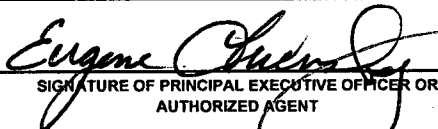
DMR Mailing ZIP CODE: 72501  
 MAJOR \$

FACILITY: BATESVILLE WW TREATMENT PLANT  
 LOCATION: 500 RIVER BANK ROAD  
 BATESVILLE, AR 72501  
 ATTN: EUGENE TOWNSLEY, PLANT SUPT.

002-QUARTERLY-ACUTE TOXICITY  
 External Outfall

No Discharge

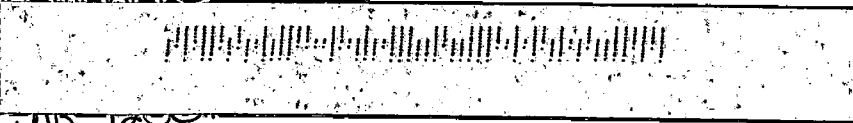
PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
LF Pass/Fail Statre 48Hr Acute Daphnia Pulex	SAMPLE MEASUREMENT	*****	*****	*****		*****	*****				
TEM3D 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon 48HR MIN	*****	*****	pass=0/fail=1		Quarterly	COMPOS
LF Pass/Fail Statre 48Hr Acute Pimephales Promela	SAMPLE MEASUREMENT	*****	*****	*****		*****	*****				
TEM6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon 48HR MIN	*****	*****	pass=0/fail=1		Quarterly	COMPOS
Noel Lethal Statre 48Hr Acute D. Pulex	SAMPLE MEASUREMENT	*****	*****	*****		*****	*****				
TOM3D 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon 48HR MIN	*****	*****	%		Quarterly	COMPOS
Noel Lethal Statre 48Hr Acute Pimephales	SAMPLE MEASUREMENT	*****	*****	*****		*****	*****				
TOM6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon 48HR MIN	*****	*****	%		Quarterly	COMPOS
Coef Of Var Statre 48Hr Acute D. Pulex	SAMPLE MEASUREMENT	*****	*****	*****		*****	*****				
TQM3D 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon 48HR MIN	*****	*****	%		Quarterly	COMPOS
Coef Of Var Statre 48Hr Acute Pimephales	SAMPLE MEASUREMENT	*****	*****	*****		*****	*****				
TQM6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon 48HR MIN	*****	*****	%		Quarterly	COMPOS

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER  Eugene Townsley Superintendent  TYPED OR PRINTED	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT  	TELEPHONE		DATE
			AREA Code	NUMBER	MM/DD/YYYY
			870	698-2442	01/07/2013

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

(PASS=0 FAIL=1) REPORT PASS AS "0" OR REPORT FAIL AS "1" IN CONCENTRATION AVERAGE ABOVE. SEE PART II, CONDITION NO. 7.\* CALENDAR QUARTERS: (JAN-MAR), (APR-JUN), (JUL-SEP) & (OCT-DEC). 32-00044

Batesville WWTID  
500 River  
Batesville, TN 38007



Arkansas Dept. of Environmental Quality  
Water Division - Enforcement Branch  
5301 North Shore Drive  
North Little Rock, AR 72118-5317