

December 18, 2017

Test Results of
Fourth Quarter
Acute 48 hour
Biomonitoring Testing
for
Outfall 001
Van Buren, AR South Plant

Control No. 218627-1

Prepared for:

Ms. Kim Redo
Van Buren Municipal Utilities
2806 Bryan Road
Van Buren, AR 72956

Prepared by:

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

Van Buren Municipal Utilities
ATTN: Ms. Kim Redo
2806 Bryan Road
Van Buren, AR 72956

Re: Acute 48 hour Biomonitoring utilizing *Pimephales promelas* (Fathead Minnow) and *Daphnia pulex*
Outfall 001 - Van Buren, AR South Plant
Client NPDES Permit No. AR0021482 AFIN#17-00062

Dear Ms. Kim Redo:

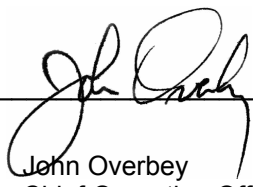
This report is the analytical results and supporting information for the samples submitted to American Interplex Corporation (AIC). The following results are applicable only to the sample identified by the control number referenced above. Accurate assessment of the data requires access to the entire document. Each section of the report has been reviewed and approved by the appropriate Chief Operating Officer 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 29% effluent, and the LC-50 value was >29% effluent; the sample, therefore, **PASSED** at low flow of 22% effluent for lethal effects.

Acute *Daphnia pulex* Survival Test: The No Observable Effects Concentration (NOEC) for survival was 29% effluent, and the LC-50 value was >29% effluent; the sample, therefore, **PASSED** at low flow of 22% effluent for lethal effects.

AMERICAN INTERPLEX CORPORATION



John Overbey
Chief Operating Officer

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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 Dec 6, 2017 at 1700 to Dec 8, 2017 at 0830.

The *Pimephales promelas* test was conducted from Dec 6, 2017 at 1700 to Dec 8, 2017 at 0900.

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: AR0021482 AFIN#17-00062
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: Outfall 001
December 5, December 6
 - b. Chemical Data:

Analysis	Sample 1	Sample 2
Dissolved oxygen (mg/l)	8.6	6.8
pH (standard units)	7.9	7.3
Alkalinity (mg/l as CaCO ₃)	52	53
Hardness (mg/l as CaCO ₃)	51	45
Conductivity (umhos/cm)	910	900
Residual Chlorine (mg/l)	0.060	<0.05

2. Dilution Water Samples: 218480
 a. Dates Collected/Prepared: NA
 b. Chemical Data:

Analysis	Sample 1	Sample 2
Dissolved oxygen (mg/l)	8.7	8.3
pH (standard units)	8.1	8.2
Alkalinity (mg/l as CaCO ₃)	61	61
Hardness (mg/l as CaCO ₃)	81	81
Conductivity (umhos/cm)	310	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	Dec 6, 2017 at 1700	Dec 6, 2017 at 1700
Test Terminated	Dec 8, 2017 at 0900	Dec 8, 2017 at 0830
Feeding	None required	None required
Age of Test Organisms	8 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 ₃)	SM 2320 B
Hardness (mg/l as CaCO ₃)	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: Nov 21, 2017 at 1655 to Nov 23, 2017 at 1005

Pimephales promelas: Nov 21, 2017 at 1335 to Nov 23, 2017 at 1000

c. Synthetic moderately hard dilution water used

Organism	LC50	Warning Limits
<i>Daphnia pulex</i>	1.78 g/l	1.25-2.38 g/l
<i>Pimephales promelas</i>	6.82 g/l	5.74-8.31 g/l

2. Chemical and Physical Analyses

Analysis	% Recovery	Relative % Difference
Alkalinity	97.6	0.438
Hardness	97.5	0.464
pH	101	0.0363
Conductivity	98.6	0.0342

F. Organism History

Daphnia pulex

Date: Dec 6, 2017 at 1700

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: Dec 6, 2017 at 1700

Age: 8 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 9%, 12%, 17%, 22%, 29%. The low-flow concentration was 22%. Test results were based on survival.

Daphnia pulex

The *Daphnia pulex* test was conducted from Dec 6, 2017 at 1700 to Dec 8, 2017 at 0830.

Statistical analyses:

NOEC = 29%

LC50 = >29%

Concentration	24 hour % Survival	48 hour % Survival
Control	100	100
9%	100	100
12%	100	100
17%	100	100
22%	100	100
29%	100	97.5

Pimephales promelas

The *Pimephales promelas* test was conducted from Dec 6, 2017 at 1700 to Dec 8, 2017 at 0900.

Statistical analyses:

NOEC = 29%

LC50 = >29%

Concentration	24 hour % Survival	48 hour % Survival
Control	100	100
9%	100	100
12%	100	100
17%	100	100
22%	100	100
29%	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		
9%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
12%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
17%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
22%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
29%	rep. A	8	8	97.5	5.73
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	7		
	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: 8 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		
9%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
12%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
17%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
22%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
29%	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	9%	1	1.00000	1.39310
2	9%	2	1.00000	1.39310
2	9%	3	1.00000	1.39310
2	9%	4	1.00000	1.39310
2	9%	5	1.00000	1.39310
3	12%	1	1.00000	1.39310
3	12%	2	1.00000	1.39310
3	12%	3	1.00000	1.39310
3	12%	4	1.00000	1.39310
3	12%	5	1.00000	1.39310
4	17%	1	1.00000	1.39310
4	17%	2	1.00000	1.39310
4	17%	3	1.00000	1.39310
4	17%	4	1.00000	1.39310
4	17%	5	1.00000	1.39310
5	22%	1	1.00000	1.39310
5	22%	2	1.00000	1.39310
5	22%	3	1.00000	1.39310
5	22%	4	1.00000	1.39310
5	22%	5	1.00000	1.39310
6	29%	1	1.00000	1.39310
6	29%	2	1.00000	1.39310
6	29%	3	1.00000	1.39310
6	29%	4	0.87500	1.20940
6	29%	5	1.00000	1.39310

Appendix A2: Statistics

Daphnia pulex

Shapiro - Wilk's Test for Normality		Transform: Arc Sin(Square Root(Y))
<p>D = 0.027 W = 0.4161 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	9%	27.50	16.00	5.00	
3	12%	27.50	16.00	5.00	
4	17%	27.50	16.00	5.00	
5	22%	27.50	16.00	5.00	
6	29%	25.00	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	9%	1	1.00000	1.39310	
2	9%	2	1.00000	1.39310	
2	9%	3	1.00000	1.39310	
2	9%	4	1.00000	1.39310	
2	9%	5	1.00000	1.39310	
3	12%	1	1.00000	1.39310	
3	12%	2	1.00000	1.39310	
3	12%	3	1.00000	1.39310	
3	12%	4	1.00000	1.39310	
3	12%	5	1.00000	1.39310	
4	17%	1	1.00000	1.39310	
4	17%	2	1.00000	1.39310	
4	17%	3	1.00000	1.39310	
4	17%	4	1.00000	1.39310	
4	17%	5	1.00000	1.39310	
5	22%	1	1.00000	1.39310	
5	22%	2	1.00000	1.39310	
5	22%	3	1.00000	1.39310	
5	22%	4	1.00000	1.39310	
5	22%	5	1.00000	1.39310	
6	29%	1	1.00000	1.39310	
6	29%	2	1.00000	1.39310	
6	29%	3	1.00000	1.39310	
6	29%	4	1.00000	1.39310	
6	29%	5	1.00000	1.39310	

Appendix A2: Statistics

Pimephales promelas

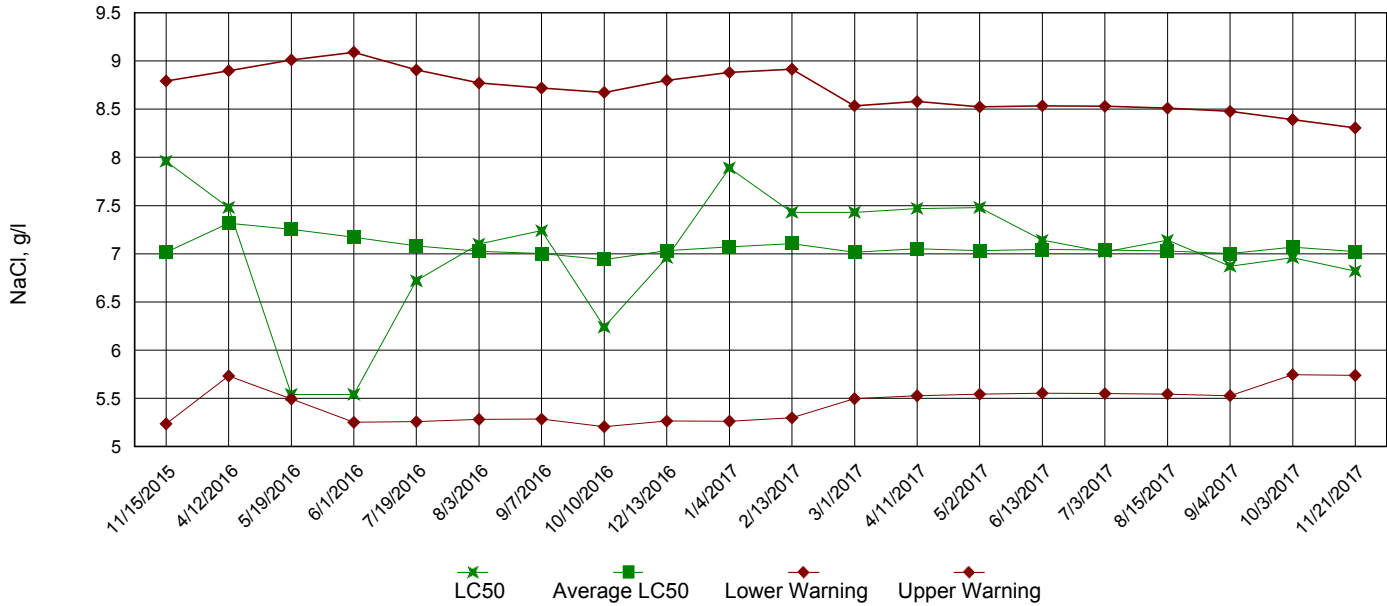
Shapiro - Wilk's Test for Normality		Transform: Arc Sin(Square Root(Y))
<p>D = 0 W = 0 Critical W = 0.9 (alpha = 0.01, N = 30) Critical W = 0.927 (alpha = 0.05, N = 30)</p> <p>Data FAIL normality test (alpha = 0.01).</p>		

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	9%	27.50	16.00	5.00	
3	12%	27.50	16.00	5.00	
4	17%	27.50	16.00	5.00	
5	22%	27.50	16.00	5.00	
6	29%	27.50	16.00	5.00	
Critical values are 1 tailed (k=5)					

Appendix: A3

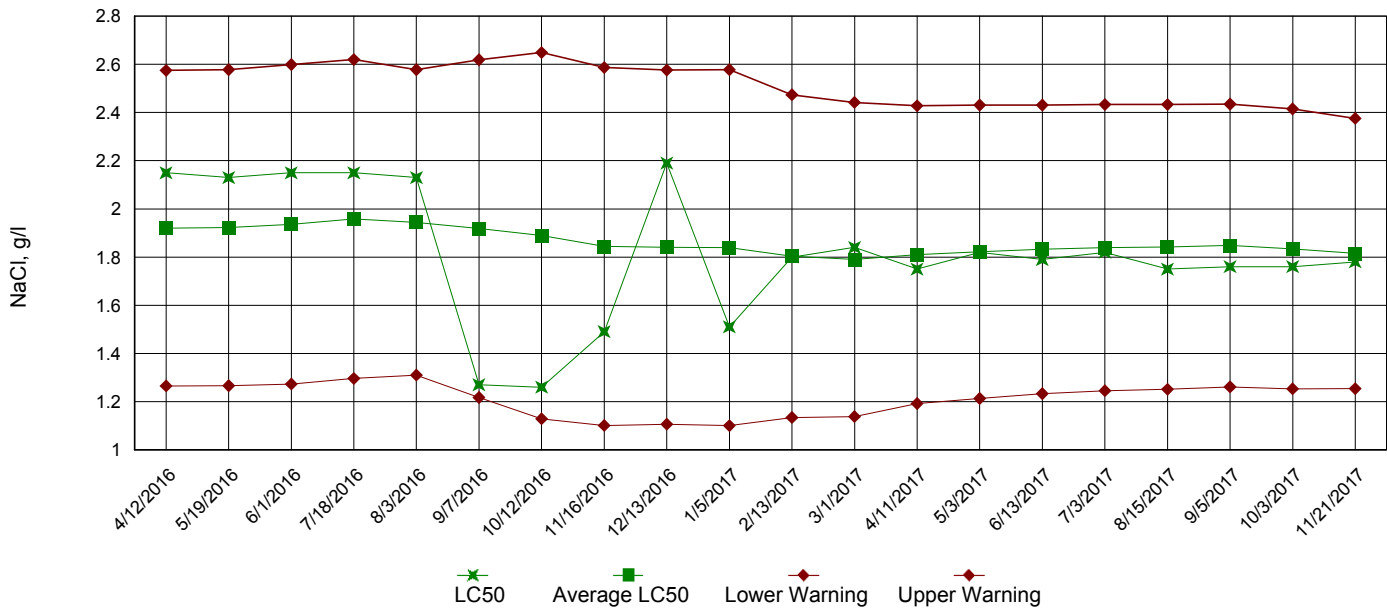
Acute Reference Toxicant, *Pimephales promelas* (Fathead Minnow)

LC50 Survival Data



Acute Reference Toxicant, *Daphnia pulex*

LC50 Survival Data



Appendix: A4

Chemical Data for
Pimephales promelas
and
Daphnia pulex

Day 1		Control	9%	12%	17%	22%	29%
DO, mg/l	Initial	8.7	8.6	8.4	8.5	8.5	8.4
DO, mg/l	Final 1*	8.9	8.7	8.5	8.7	8.7	8.6
DO, mg/l	Final 2*	8.0	8.2	8.3	8.5	8.1	8.2
pH, su	Initial	8.1	8.0	8.0	8.0	8.0	8.0
pH, su	Final 1*	8.5	8.2	8.2	8.1	8.0	7.9
pH, su	Final 2*	8.5	8.2	8.2	8.1	8.1	8.0
Alkalinity, mg/l		61	NA	NA	NA	NA	NA
Hardness, mg/l		81	NA	NA	NA	NA	NA
Conductivity, umho/cm		310	360	370	410	430	470
Residual Chlorine, mg/l		<0.05	NA	NA	NA	NA	NA

Day 2		Control	9%	12%	17%	22%	29%
DO, mg/l	Initial	8.3	8.4	8.5	8.1	8.6	8.2
DO, mg/l	Final 1*	8.1	8.4	8.4	8.2	8.4	8.3
DO, mg/l	Final 2*	8.3	8.5	8.4	8.3	8.2	8.4
pH, su	Initial	8.2	8.0	8.0	8.0	7.9	7.9
pH, su	Final 1*	8.0	8.0	8.0	8.0	7.9	7.9
pH, su	Final 2*	8.3	8.2	8.2	8.1	8.1	8.0
Alkalinity, mg/l		61	NA	NA	NA	NA	NA
Hardness, mg/l		81	NA	NA	NA	NA	NA
Conductivity, umho/cm		300	360	370	410	430	460
Residual Chlorine, mg/l		<0.05	NA	NA	NA	NA	NA

*1 data from *Pimephales promelas*

*2 data from *Daphnia pulex*

Appendix: B

Daphnia pulex Survival Data

Permittee:	Van Buren Municipal Utilities	Critical Dilution:	22%
NPDES No:	AR0021482 AFIN#17-00062	Sample Source:	Outfall 001
Contact:	Ms. Kim Redo	Species Age:	<24 hours
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 310, 322
Dilution Water:	218480		
Test Initiated:	Dec 6, 2017 at 1700		
Test Terminated:	Dec 8, 2017 at 0830		

PERCENT SURVIVAL

24 hours	Control	9%	12%	17%	22%	29%
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	9%	12%	17%	22%	29%
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	87.5
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 22%:	_____	Yes	_____ X	No
b) 1/2 Low Flow (NA):	_____	Yes	_____	No

Pass/Fail #TEM3D. 0

NOEL *Daphnia pulex* lethality #TOM3D: 29%

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

Enter percent effluent corresponding to LC-50 below.

LC-50 effluent: >29%
Method of LC-50 calculation: NA

Reference Toxicity Test Performed on Nov 21, 2017 at 1655 to Nov 23, 2017 at 1005:

LC-50 effluent: 1.78 g/l
Warning Limits: 1.25 to 2.38 g/l

Appendix: B

Daphnia pulex Chemical Parameters Chart

Permittee:	Van Buren Municipal Utilities	Critical Dilution:	22%
NPDES No:	AR0021482 AFIN#17-00062	Sample Source:	Outfall 001
Contact:	Ms. Kim Redo	Species Age:	<24 hours
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 310, 322
Dilution Water:	218480		
Test Initiated:	Dec 6, 2017 at 1700		
Test Terminated:	Dec 8, 2017 at 0830		

Day 1		Control	9%	12%	17%	22%	29%
DO, mg/l	Initial	8.7	8.6	8.4	8.5	8.5	8.4
DO, mg/l	Final	8.0	8.2	8.3	8.5	8.1	8.2
pH, su	Initial	8.1	8.0	8.0	8.0	8.0	8.0
pH, su	Final	8.5	8.2	8.2	8.1	8.1	8.0
Alkalinity, mg/l		61	NA	NA	NA	NA	NA
Hardness, mg/l		81	NA	NA	NA	NA	NA
Conductivity, umho/cm		310	360	370	410	430	470
Residual Chlorine, mg/l		<0.05	NA	NA	NA	NA	NA

Day 2		Control	9%	12%	17%	22%	29%
DO, mg/l	Initial	8.3	8.4	8.5	8.1	8.6	8.2
DO, mg/l	Final	8.3	8.5	8.4	8.3	8.2	8.4
pH, su	Initial	8.2	8.0	8.0	8.0	7.9	7.9
pH, su	Final	8.3	8.2	8.2	8.1	8.1	8.0
Alkalinity, mg/l		61	NA	NA	NA	NA	NA
Hardness, mg/l		81	NA	NA	NA	NA	NA
Conductivity, umho/cm		300	360	370	410	430	460
Residual Chlorine, mg/l		<0.05	NA	NA	NA	NA	NA

Appendix: B

Pimephales promelas Survival Data

Permittee:	Van Buren Municipal Utilities	Critical Dilution:	22%
NPDES No:	AR0021482 AFIN#17-00062	Sample Source:	Outfall 001
Contact:	Ms. Kim Redo	Species Age:	8 days
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 310, 322
Dilution Water:	218480		
Test Initiated:	Dec 6, 2017 at 1700		
Test Terminated:	Dec 8, 2017 at 0900		

PERCENT SURVIVAL

24 hours	Control	9%	12%	17%	22%	29%
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	9%	12%	17%	22%	29%
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 22%:	_____	Yes	_____ X	No
b) 1/2 Low Flow (NA):	_____	Yes	_____	No

Pass/Fail #TEM6C: 0

NOEL *Pimephales promelas* lethality #TOM6C: 29%

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

Enter percent effluent corresponding to LC-50 below.

LC-50 effluent: >29%
Method of LC-50 calculation: NA

Reference Toxicity Test Performed on Nov 21, 2017 at 1335 to Nov 23, 2017 at 1000:

LC-50 effluent: 6.82 g/l
Warning Limits: 5.74 to 8.31 g/l

Appendix: B

Pimephales promelas Chemical Parameters Chart

Permittee:	Van Buren Municipal Utilities	Critical Dilution:	22%
NPDES No:	AR0021482 AFIN#17-00062	Sample Source:	Outfall 001
Contact:	Ms. Kim Redo	Species Age:	8 days
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 310, 322
Dilution Water:	218480		
Test Initiated:	Dec 6, 2017 at 1700		
Test Terminated:	Dec 8, 2017 at 0900		

Day 1		Control	9%	12%	17%	22%	29%
DO, mg/l	Initial	8.7	8.6	8.4	8.5	8.5	8.4
DO, mg/l	Final	8.9	8.7	8.5	8.7	8.7	8.6
pH, su	Initial	8.1	8.0	8.0	8.0	8.0	8.0
pH, su	Final	8.5	8.2	8.2	8.1	8.0	7.9
Alkalinity, mg/l		61	NA	NA	NA	NA	NA
Hardness, mg/l		81	NA	NA	NA	NA	NA
Conductivity, umho/cm		310	360	370	410	430	470
Residual Chlorine, mg/l		<0.05	NA	NA	NA	NA	NA

Day 2		Control	9%	12%	17%	22%	29%
DO, mg/l	Initial	8.3	8.4	8.5	8.1	8.6	8.2
DO, mg/l	Final	8.1	8.4	8.4	8.2	8.4	8.3
pH, su	Initial	8.2	8.0	8.0	8.0	7.9	7.9
pH, su	Final	8.0	8.0	8.0	8.0	7.9	7.9
Alkalinity, mg/l		61	NA	NA	NA	NA	NA
Hardness, mg/l		81	NA	NA	NA	NA	NA
Conductivity, umho/cm		300	360	370	410	430	460
Residual Chlorine, mg/l		<0.05	NA	NA	NA	NA	NA



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: Van Buren Municipal Utilities		PO No.		ANALYSES REQUESTED												AIC CONTROL NO: 218627	
Project Reference: South Plant		MATRIX		NO OF BOTTLES												AIC PROPOSAL NO:	
Project Manager: Kim Reda		WATER		2												Carryover: Fed Ex	
Sampled By: B. Myers		COMPOUND		✓												Received Temperature C: 1.5	
AIC No. 1 XBSPE		Date/Time Collected: 12/4-5/17		✓												Remarks: pH = 7.01 Temp = 41°C D.O. = 8.66 mg/L	
Container Type: Preservative		G = Glass NO = none S = Sulfuric acid pH2		V = VOA vials N = Nitric acid pH2												Field pH calibration on @	
Turnaround Time Requested: (Please circle) NORMAL EXPEDITED IN _____ DAYS		B = Plastic		H = HCl to pH2 B = NaOH to pH12												T = Sodium Thiosulfate Z = Zinc acetate	
Expedited results requested by: Kim Reda		S = Sulfuric acid pH2		Relinquished By: Kim Reda												Date/Time: 12/5/17	
Who should AIC contact with questions: Kim Reda		NO = none		Relinquished By: Kim Reda												Received in Lab By: [Signature]	
Phone: 499-474-0941		S = Sulfuric acid pH2		Comments: 7709 0701 5590												Date/Time: 12-6-17	
Report Attention to: Kim@vbm.com		NO = none		Buffer:												1020	
Report Address to: Kim@vbm.com		S = Sulfuric acid pH2		A = (NH ₄) ₂ SO ₄ , NH ₄ OH													
Email Address: 9/2014		NO = none															

