

12/13/2022

City of Marion Water Department
Mr. Jerry Kelley
PO Box 814
Marion, AR 72364

Ref: Analytical Testing
Report Number: 22-333-0391
Client Project Description: Bioassay
Quarter 4
AR0021971

Dear Mr. Kelley:

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:	<i>Daphnia pulex</i>	NOEL = 1.3 %	CV = 6.21 %
	Fathead minnow	NOEL = 1.3 %	CV = 0.00 %

Permit Limit: Critical Dilution = 1.0 %
Maximum Coefficient of Variation (CV) < 40 %

EPA Methods: 2021.0 *Daphnia pulex* Acute Toxicity Testing
2000.0 *Pimephales promelas* Acute Toxicity Testing

All statistical interpretations generated by CETIS - Comprehensive Environmental Toxicity Information System (v.1.9.1.4). CETIS created by Tidepool Scientific Software

Respectfully,



Blake Smith
Lab Supervisor

CETIS Test Evaluation Report

Report Date: 07 Dec-22 15:45 (1 of 1)
Test Code: 22-333-0391-dp | 17-4259-1514

Facility: Marion Water Department
Sample Site:
Sample Code: 22-333-0391
Sample Date: 29 Nov-22 10:40
Sample Age: 5h (1 °C)
Project: WET Quarterly Compliance Test (4Q)

Permittee: City of Marion Water Department
Address:
 PO Box 814
 Marion, AR 72364
Contact: Mr. Jerry Kelley
Phone: 901-326-2421, 870-739-5415(fax)
Email: JKelley502mbd@yahoo.com

Test Name: Daphnia pulex 48-h Acute Survival Test
Organism: Daphnia pulex (Water Flea)
Protocol: EPA/821/R-02-012 (2002)
Start Date: 29 Nov-22 15:30
End Date: 01 Dec-22 15:40
Duration: 48h **Organism Age:** <24

Laboratory: Waypoint Analytical Tennessee , LLC.
Address: 2790 Whitten Road
 Memphis, TN 38133
Contact: Mrs. Blake Smith, Lab Supervisor
Phone: 901-271-5200, 901-213-2440(fax)
Email: Bsmith@wpacorp.com

Comments:

Acute Toxicity Evaluation

Endpoint	Criteria	Conc-%	IWC	Decision	Method
48h Survival Rate	NOEL/LOEL	1.3/>1.3	1	Passes IWC	Steel Many-One Rank Sum Test

Test Acceptability Criteria

Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
			Lower	Upper		
48h Survival Rate	Control Resp	1	0.9	>>	Yes	Passes Acceptability Criteria

48h Survival Rate Data Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	R	5	1	1	1	1	1	0	0	0.00%	0.0%
0.42		5	0.95	0.9249	0.9751	0.875	1	0.03062	0.06847	7.21%	5.0%
0.56		5	0.8714	0.8389	0.904	0.75	1	0.03969	0.08875	10.18%	12.86%
0.75		5	0.95	0.9249	0.9751	0.875	1	0.03062	0.06847	7.21%	5.0%
1		5	0.9	0.8795	0.9205	0.875	1	0.025	0.0559	6.21%	10.0%
1.3		5	0.85	0.8116	0.8884	0.75	1	0.04677	0.1046	12.30%	15.0%

CETIS Summary Report

Report Date: 07 Dec-22 15:45 (p 1 of 1)
 Test Code: 22-333-0391-dp | 17-4259-1514

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 00-9869-1008	Test Type: Survival (48h)	Analyst: Chase M. Featherston
Start Date: 29 Nov-22 15:30	Protocol: EPA/821/R-02-012 (2002)	Diluent: 20% DMW
Ending Date: 01 Dec-22 15:40	Species: Daphnia pulex	Brine: Not Applicable
Duration: 48h	Source: In-House Culture	Age: <24
Sample ID: 08-1008-8477	Code: 22-333-0391	Client: City of Marion Water Department
Sample Date: 29 Nov-22 10:40	Material: POTW Effluent	Project: WET Quarterly Compliance Test (4Q)
Receipt Date: 29 Nov-22 12:40	Source: Marion Water Department (AR0021971)	
Sample Age: 5h (1 °C)	Station:	

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	22-333-0391	30 Nov-22 10:40	30 Nov-22 13:35	30 Nov-22 00:00	1

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
03-7284-6372	48h Survival Rate	Steel Many-One Rank Sum Test	1.3	> 1.3	n/a	76.92	10.7%

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
03-7284-6372	48h Survival Rate	Control Resp	1	0.9	>>	Yes	Passes Acceptability Criteria

48h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	R	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0	L	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.42		5	0.9500	0.8650	1.0000	0.8750	1.0000	0.0306	0.0685	7.21%	5.00%
0.56		5	0.8714	0.7612	0.9816	0.7500	1.0000	0.0397	0.0888	10.18%	12.86%
0.75		5	0.9500	0.8650	1.0000	0.8750	1.0000	0.0306	0.0685	7.21%	5.00%
1		5	0.9000	0.8306	0.9694	0.8750	1.0000	0.0250	0.0559	6.21%	10.00%
1.3		5	0.8500	0.7201	0.9799	0.7500	1.0000	0.0468	0.1046	12.30%	15.00%

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	R	1.0000	1.0000	1.0000	1.0000	1.0000
0	L	1.0000	1.0000	1.0000	1.0000	1.0000
0.42		1.0000	0.8750	1.0000	1.0000	0.8750
0.56		0.8750	0.7500	0.8750	0.8571	1.0000
0.75		1.0000	1.0000	1.0000	0.8750	0.8750
1		1.0000	0.8750	0.8750	0.8750	0.8750
1.3		0.8750	0.7500	0.8750	0.7500	1.0000

48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	R	8/8	7/7	7/7	7/7	8/8
0	L	8/8	8/8	8/8	7/7	8/8
0.42		8/8	7/8	7/7	8/8	7/8
0.56		7/8	6/8	7/8	6/7	7/7
0.75		7/7	8/8	6/6	7/8	7/8
1		8/8	7/8	7/8	7/8	7/8
1.3		7/8	6/8	7/8	6/8	7/7

CETIS Measurement Report

Report Date: 07 Dec-22 15:45 (p 1 of 3)
Test Code: 22-333-0391-dp | 17-4259-1514

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee , LLC.

Batch ID: 00-9869-1008	Test Type: Survival (48h)	Analyst: Chase M. Featherston
Start Date: 29 Nov-22 15:30	Protocol: EPA/821/R-02-012 (2002)	Diluent: 20% DMW
Ending Date: 01 Dec-22 15:40	Species: Daphnia pulex	Brine: Not Applicable
Duration: 48h	Source: In-House Culture	Age: <24

Sample ID: 08-1008-8477	Code: 22-333-0391	Client: City of Marion Water Department
Sample Date: 29 Nov-22 10:40	Material: POTW Effluent	Project: WET Quarterly Compliance Test (4Q)
Receipt Date: 29 Nov-22 12:40	Source: Marion Water Department (AR0021971)	
Sample Age: 5h (1 °C)	Station:	

CETIS Measurement Report

Report Date: 07 Dec-22 15:45 (p 2 of 3)
Test Code: 22-333-0391-dp | 17-4259-1514

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Total Residual Chlorine-mg/L

Conc-%	Code	1	2
0	R	1	0
0	L	0	0
0.42			
0.56			
0.75			
1			
1.3		1	1

Conductivity-µS/cm

Conc-%	Code	1	2
0	R	498.4	404.7
0	L	184.5	176.1
0.42			
0.56			
0.75			
1			
1.3		443.7	495.4

Final Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	8.1	8.1
0	L	8.1	8
0.42		7.8	8.2
0.56		7.9	8.3
0.75		7.8	8.4
1		7.7	8.4
1.3		7.7	8.4

Initial Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	10.5	8.3
0	L	8.1	8.2
0.42		10.4	8.7
0.56		10.4	8.8
0.75		10.5	9.3
1		9.9	9
1.3		9.8	9.2

Final pH-Units

Conc-%	Code	1	2
0	R	8.1	8.2
0	L	8.1	8.2
0.42		8.2	8.3
0.56		8.1	8.3
0.75		8.1	8
1		8.1	8.2
1.3		8.1	8.3

CETIS Measurement Report

Report Date: 07 Dec-22 15:45 (p 3 of 3)
Test Code: 22-333-0391-dp | 17-4259-1514

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Initial pH-Units

Conc-%	Code	1	2
0	R	8	8.1
0	L	8.1	8
0.42		8.1	8.1
0.56		8	8.2
0.75		8	8.1
1		8	8.2
1.3		8	8.1

Final Temperature-°C

Conc-%	Code	1	2
0	R	24.2	24.1
0	L	24.2	24
0.42		24.1	24
0.56		24.1	24
0.75		24	24.1
1		24	24
1.3		24.1	24.1

Initial Temperature-°C

Conc-%	Code	1	2
0	R	26.6	25
0	L	23.8	24
0.42		26.3	24.9
0.56		25.3	25.1
0.75		26.8	25.1
1		26.7	24.9
1.3		26.7	24.5

CETIS Test Evaluation Report

Report Date: 07 Dec-22 15:45 (1 of 1)
Test Code: 22-333-0391-fh | 12-5123-4750

Facility: Marion Water Department
Sample Site:
Sample Code: 22-333-0391
Sample Date: 29 Nov-22 10:40
Sample Age: 5h (1 °C)
Project: WET Quarterly Compliance Test (4Q)

Permittee: City of Marion Water Department
Address:
 PO Box 814
 Marion, AR 72364

Contact: Mr. Jerry Kelley
Phone: 901-326-2421, 870-739-5415(fax)
Email: JKelley502mbd@yahoo.com

Test Name: Fathead Minnow 48-h Acute Survival Test
Organism: Pimephales promelas (Fathead Minnow)
Protocol: EPA/821/R-02-012 (2002)
Start Date: 29 Nov-22 15:28
End Date: 01 Dec-22 15:51
Duration: 48h **Organism Age:** <24

Laboratory: Waypoint Analytical Tennessee , LLC.
Address: 2790 Whitten Road
 Memphis, TN 38133

Contact: Mrs. Blake Smith, Lab Supervisor
Phone: 901-271-5200, 901-213-2440(fax)
Email: Bsmith@wpacorp.com

Comments:

Acute Toxicity Evaluation

Endpoint	Criteria	Conc-%	IWC	Decision	Method
48h Survival Rate	NOEL/LOEL	1.3/>1.3	1	Passes IWC	Steel Many-One Rank Sum Test

Test Acceptability Criteria

Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
			Lower	Upper		
48h Survival Rate	Control Resp	1	0.9	>>	Yes	Passes Acceptability Criteria

48h Survival Rate Data Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	R	5	1	1	1	1	1	0	0	0.00%	0.0%
0.42		5	0.95	0.9249	0.9751	0.875	1	0.03062	0.06847	7.21%	5.0%
0.56		5	0.95	0.9249	0.9751	0.875	1	0.03062	0.06847	7.21%	5.0%
0.75		5	0.975	0.9545	0.9955	0.875	1	0.025	0.0559	5.73%	2.5%
1		5	1	1	1	1	1	0	0	0.00%	0.0%
1.3		5	1	1	1	1	1	0	0	0.00%	0.0%

CETIS Summary Report

Report Date: 07 Dec-22 15:45 (p 1 of 1)
 Test Code: 22-333-0391-fh | 12-5123-4750

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 19-3861-0020	Test Type: Survival (48h)	Analyst: Chase M. Featherston
Start Date: 29 Nov-22 15:28	Protocol: EPA/821/R-02-012 (2002)	Diluent: 20% DMW
Ending Date: 01 Dec-22 15:51	Species: Pimephales promelas	Brine: Not Applicable
Duration: 48h	Source: Aquatic Biosystems, CO	Age: <24
Sample ID: 08-1008-8477	Code: 22-333-0391	Client: City of Marion Water Department
Sample Date: 29 Nov-22 10:40	Material: POTW Effluent	Project: WET Quarterly Compliance Test (4Q)
Receipt Date: 29 Nov-22 12:40	Source: Marion Water Department (AR0021971)	
Sample Age: 5h (1 °C)	Station:	

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	22-333-0391	30 Nov-22 10:40	30 Nov-22 13:35	30 Nov-22 00:00	1

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
07-1234-9647	48h Survival Rate	Steel Many-One Rank Sum Test	1.3	> 1.3	n/a	76.92	7.53%

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
07-1234-9647	48h Survival Rate	Control Resp	1	0.9	>>	Yes	Passes Acceptability Criteria

48h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	R	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0	L	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.42		5	0.9500	0.8650	1.0000	0.8750	1.0000	0.0306	0.0685	7.21%	5.00%
0.56		5	0.9500	0.8650	1.0000	0.8750	1.0000	0.0306	0.0685	7.21%	5.00%
0.75		5	0.9750	0.9056	1.0000	0.8750	1.0000	0.0250	0.0559	5.73%	2.50%
1		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
1.3		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	R	1.0000	1.0000	1.0000	1.0000	1.0000
0	L	1.0000	1.0000	1.0000	1.0000	1.0000
0.42		1.0000	1.0000	1.0000	0.8750	0.8750
0.56		1.0000	0.8750	1.0000	0.8750	1.0000
0.75		0.8750	1.0000	1.0000	1.0000	1.0000
1		1.0000	1.0000	1.0000	1.0000	1.0000
1.3		1.0000	1.0000	1.0000	1.0000	1.0000

48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	R	8/8	8/8	8/8	8/8	8/8
0	L	8/8	8/8	8/8	8/8	8/8
0.42		8/8	8/8	8/8	7/8	7/8
0.56		8/8	7/8	8/8	7/8	8/8
0.75		7/8	8/8	8/8	8/8	8/8
1		8/8	8/8	8/8	8/8	8/8
1.3		8/8	8/8	8/8	8/8	8/8

CETIS Measurement Report

Report Date: 07 Dec-22 15:45 (p 1 of 3)
Test Code: 22-333-0391-fh | 12-5123-4750

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 19-3861-0020	Test Type: Survival (48h)	Analyst: Chase M. Featherston
Start Date: 29 Nov-22 15:28	Protocol: EPA/821/R-02-012 (2002)	Diluent: 20% DMW
Ending Date: 01 Dec-22 15:51	Species: Pimephales promelas	Brine: Not Applicable
Duration: 48h	Source: Aquatic Biosystems, CO	Age: <24

Sample ID: 08-1008-8477	Code: 22-333-0391	Client: City of Marion Water Department
Sample Date: 29 Nov-22 10:40	Material: POTW Effluent	Project: WET Quarterly Compliance Test (4Q)
Receipt Date: 29 Nov-22 12:40	Source: Marion Water Department (AR0021971)	
Sample Age: 5h (1 °C)	Station:	

CETIS Measurement Report

Report Date: 07 Dec-22 15:45 (p 2 of 3)
Test Code: 22-333-0391-fh | 12-5123-4750

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Total Residual Chlorine-mg/L

Conc-%	Code	1	2
0	R	1	0
0	L	0	0
0.42			
0.56			
0.75			
1			
1.3		1	1

Conductivity-µS/cm

Conc-%	Code	1	2
0	R	498.4	404.7
0	L	184.5	176.1
0.42			
0.56			
0.75			
1			
1.3		443.7	495.4

Final Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	7.1	8.1
0	L	8.4	8.5
0.42		7.1	8.2
0.56		7	8.3
0.75		6.9	8.2
1		7	8.2
1.3		7.2	8.4

Initial Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	10.5	8.3
0	L	8.1	8.2
0.42		10.4	8.7
0.56		10.4	8.8
0.75		10.5	9.3
1		9.9	9
1.3		9.8	9.2

Final pH-Units

Conc-%	Code	1	2
0	R	8	8.1
0	L	8	8.2
0.42		8.1	8.2
0.56		8.1	8.2
0.75		8	8.2
1		8.1	8.3
1.3		8.1	8.2

CETIS Measurement Report

Report Date: 07 Dec-22 15:45 (p 3 of 3)
Test Code: 22-333-0391-fh | 12-5123-4750

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Initial pH-Units

Conc-%	Code	1	2
0	R	8	8.1
0	L	8.1	8
0.42		8.1	8.1
0.56		8	8.2
0.75		8	8.1
1		8	8.2
1.3		8	8.1

Final Temperature-°C

Conc-%	Code	1	2
0	R	24.1	24
0	L	24.4	24.6
0.42		24.1	24.1
0.56		24	24.1
0.75		24.1	24.2
1		24.1	24.2
1.3		24.2	24

Initial Temperature-°C

Conc-%	Code	1	2
0	R	26.6	25
0	L	23.8	24
0.42		26.3	24.9
0.56		25.3	25.1
0.75		26.8	25.1
1		26.7	24.9
1.3		26.7	24.5

Additional Toxicity Test Information

1. Methods/Instrumentation used in chemical analysis:
 - Dissolved oxygen, DM 4: (SM 4500-O G-2011)
 - pH, PH 21: (SM 4500-H + B-2011)
 - Temperature, T148 & T124
 - Conductivity, C 2: (SM 2510 B-2011)
 - Alkalinity: (SM 2320 B-2011)
 - Hardness: (EPA 200.7 / SM 2340 B-2011)
 - Total Residual Chlorine: (SM 4500-CL G-2011)
 - Reported value of “0” indicates result below detection limit of 0.02 mg/L
 - Reported value of “1” indicates result above detection limit of 0.02mg/L
 - EPA Acute Manual Edition and Date: EPA-821-R-02-012, OCT 2002 (Fifth edition)
 - EPA Chronic Manual Edition and Date: EPA-821-R-02-013, OCT 2002 (Fourth edition)
2. Laboratory
 - Incubator Temperature: 25± 1°C
 - Incubator ID: BIO Thermometer ID: 120554
 - Sample Temperature: 25± 3°C
 - Sample Temperatures are read after the organisms have been transferred and counted.
 - Depending on temperature of laboratory and time spent on organisms the temperature of the sample may drop below limits. However, the organisms are maintained at 25± 3°C
 - Light Cycle: 16 hours light/ 8 hours dark
 - Light intensity: 50-100 foot-candles, average
 - Control (Dilution) Water: Dilute mineral water made with 20 % Perrier in Nanopure (20%DMW)
 - Maintained in the incubator at 25± 1°C
 - Pretreatment: none
3. Method 2021.0 *Daphnia pulex* Acute Toxicity Testing
 - Test chambers: 30 mL disposable plastic beakers
 - Volume per chamber: 25 mL
 - Number of organisms per chamber: 8
 - Number of replicates: 5
 - Food: *Daphnia pulex* are fed 0.15mL *Raphidocelis subcapitata* (Algae) and YTC solution while holding prior to testing.
 - Acclimation of organisms: In house cultures are raised at 25°C. Purchased organisms are allowed to reach 25°C prior to use.
4. Method 2000.0 *Pimephales promelas* (Fathead minnow) Acute Toxicity Testing
 - Test chambers: 20 oz. Disposable plastic cups
 - Volume per chamber: 250 mL
 - Average number of organisms per chamber: 8
 - Number of replicates per concentration: 5
 - Food: Fathead minnows are fed 0.15mL *Artemia* brine shrimp hatched in laboratory during holding, prior to test twice daily
 - Acclimation of organisms: Dilution water is added until organisms are contained in a culture media that consists of 80% dilution water. Organisms are allowed to reach 25°C prior to use.
5. Reference Toxicity
 - Reference toxicity tests are performed monthly on each method performed by the laboratory.
 - Potassium Chloride is used as the reference toxicity chemical for vertebrate species
 - Current chemical ID: CS 6169894
 - Sodium Chloride is used as the reference toxicity chemical for invertebrate species
 - Current chemical ID: CS 6171713
6. 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

02608

City of Marion Water Department
 Mr. Jerry Kelley
 PO Box 814
 Marion , AR 72364

Project Bioassay
 Information :

Report Date : 12/13/2022

Report Number : **22-333-0391**

REPORT OF ANALYSIS

Received : 11/29/2022

Lab No : **95516**

Matrix: **Aqueous**

Sample ID : **Outfall 001 - Composite 1**

Sampled: **11/29/2022 10:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO ₃)	127	mg/L	1	1	12/01/22 10:06	JBC	2320B-2011
Calcium	12.1	mg/L	0.100	1	12/13/22 00:46	JTR	EPA-200.7
Hardness as CaCO ₃ (SM-2340B)	43.1	mg/L	0.100	1	12/13/22 00:46		EPA-200.7
Magnesium	3.12	mg/L	0.100	1	12/13/22 00:46	JTR	EPA-200.7

Lab No : **95517**

Matrix: **Aqueous**

Sample ID : **Receiving Water**

Sampled: **11/29/2022 10:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO ₃)	130	mg/L	1	1	12/01/22 10:06	JBC	2320B-2011
Calcium	46.5	mg/L	0.100	1	12/13/22 00:51	JTR	EPA-200.7
Hardness as CaCO ₃ (SM-2340B)	182	mg/L	0.100	1	12/13/22 00:51		EPA-200.7
Magnesium	15.9	mg/L	0.100	1	12/13/22 00:51	JTR	EPA-200.7

Lab No : **95518**

Matrix: **Aqueous**

Sample ID : **Outfall 001 - Composite 2**

Sampled: **11/30/2022 10:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO ₃)	121	mg/L	1	1	12/01/22 10:06	JBC	2320B-2011
Calcium	12.1	mg/L	0.100	1	12/13/22 00:57	JTR	EPA-200.7
Hardness as CaCO ₃ (SM-2340B)	42.9	mg/L	0.100	1	12/13/22 00:57		EPA-200.7
Magnesium	3.07	mg/L	0.100	1	12/13/22 00:57	JTR	EPA-200.7

**Qualifiers/
Definitions**

DF Dilution Factor
 MQL Method Quantitation Limit

L Limit Exceeded

02608

City of Marion Water Department
Mr. Jerry Kelley
PO Box 814
Marion , AR 72364

Project Bioassay
Information :

Report Date : 12/13/2022

Report Number : **22-333-0391**

REPORT OF ANALYSIS

Received : 11/29/2022

Lab No : **95519**

Matrix: **Aqueous**

Sample ID : **Receiving Water**

Sampled: **11/30/2022 10:40**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO ₃)	128	mg/L	1	1	12/01/22 10:06	JBC	2320B-2011
Calcium	47.8	mg/L	0.100	1	12/13/22 01:02	JTR	EPA-200.7
Hardness as CaCO ₃ (SM-2340B)	187	mg/L	0.100	1	12/13/22 01:02		EPA-200.7
Magnesium	16.5	mg/L	0.100	1	12/13/22 01:02	JTR	EPA-200.7

**Qualifiers/
Definitions**

DF Dilution Factor
MQL Method Quantitation Limit

L Limit Exceeded



#1

Kit ID:	168314
Initiated By:	Sydney Andres
Initiated Date:	10/5/2021
Project Comment	Bioassay

CHAIN-OF-CUSTODY

 22-333-0391
 02608
 City of Marion Water Department 11-29-2022
 Bioassay 13:11:42

Company Name	Company Number	Client Project Manager/Contact	Purchase Order Number
City of Marion Water Department	02608	City of Marion Water Department	
Site Name	Project Number	<input type="checkbox"/> RUSH – Additional charges apply <input type="checkbox"/> Special Detection Limits(s) Date Results Needed	Method of Shipment <input type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Courier <input type="checkbox"/> Client Drop Off Other
Bioassay Quarter 4 A 11/27-28/2022			
LIMS Project ID	Project Manager Phone #	Project Manager Email	Site/Facility ID #
Marion - Bioassay	(870) 739-5413	jshempert.waterdept@yahoo.com	

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
11-29-22	10:40 am	Outfall 001 - Composite 1	Aqueous	C	1	Plastic - Pint	HNO3 - Nitric Acid	hardness
11-29-22	10:40 am	Outfall 001 - Composite 1	Aqueous	C	1	Plastic - Pint	NONE	Alkalinity
11-29-22	10:40 am	Outfall 001 - Composite 1	Aqueous	C	1	Plastic - Quart	NONE	48 hr bioassay - renewal
11-29-22	10:00 am	Receiving Water	Aqueous		2	Plastic - Gallon	NONE	Dilution Water
11-29-22	10:00 am	Receiving Water	Aqueous		1	Plastic - Pint	HNO3 - Nitric Acid	Hardness
11-29-22	10:00 am	Receiving Water	Aqueous		1	Plastic - Pint	NONE	Alkalinity

For Laboratory Use Only			Sampled by (Name - Print)		Client Remarks/Comments				
Ice	Custody Seals	Lab Comments	Jerry W Kelley						
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Relinquished by: (SIGNATURE)		Date	Time	Received by: (SIGNATURE)	Date	Time
			Jerry W Kelley				Richard Welch	11/29/22	11:15
			Relinquished by: (SIGNATURE)		Date	Time	Received by: (SIGNATURE)	Date	Time
			Richard Welch						
Blank/Cooler Temp			Relinquished by: (SIGNATURE)		Date	Time	Received by: (SIGNATURE)	Date	Time
101.0c	F99		Richard Welch		11/29/22	12:40	Richard Welch	11/29/22	12:40



Kit ID:	168315
Initiated By:	Sydney Andres
Initiated Date:	10/5/2021
Project Comment	Bioassay

CHAIN-OF-CUSTODY



City of Marion Water Department
 Bioassay / 11/29/22

22-333-0391
 02608
 11-29-2022
 13:11:42

Company Name	Company Number	Client Project Manager/Contact	Purchase Order Number
City of Marion Water Department	02608	Mr. Jim Shempert	
Site Name	Project Number	<input type="checkbox"/> RUSH – Additional charges apply <input type="checkbox"/> Special Detection Limits(s) Date Results Needed	Method of Shipment <input type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Courier <input type="checkbox"/> Client Drop Off Other
Bioassay Quarterly 4 B - 11/28-29/2022			
LIMS Project ID	Project Manager Phone #	Project Manager Email	Site/Facility ID #
Marion - Bioassay	(870) 739-5413	jshempert.waterdept@yahoo.com	

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
11-30-22	10:40a	Outfall 001 - Composite 2	Aqueous	C	1	Plastic - Pint	HNO3 - Nitric Acid	hardness
11-30-22	10:40a	Outfall 001 - Composite 2	Aqueous	C	1	Plastic - Pint	NONE	Alkalinity
11-30-22	10:40a	Outfall 001 - Composite 2	Aqueous	C	1	Plastic - Quart	NONE	48 hr bioassay - renewal
11-30-22	9:30a	Receiving Water	Aqueous		2	Plastic - Gallon	NONE	Dilution Water
11-30-22	9:30a	Receiving Water	Aqueous		1	Plastic - Pint	HNO3 - Nitric Acid	Hardness
11-30-22	9:30a	Receiving Water	Aqueous		1	Plastic - Pint	NONE	Alkalinity

For Laboratory Use Only			Sampled by (Name - Print)		Client Remarks/Comments				
Ice	Custody Seals	Lab Comments	Jerry W. Kelley						
			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time			
<input checked="" type="checkbox"/> N	<input checked="" type="checkbox"/> N		Jerry W. Kelley				Richard Welch	11:50	11-30-22
Blank/Cooler Temp			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time			
F99 New 1.0c			Richard Welch				Richard Welch	1:35	11-30-22

NAME: Marion Water Dept.
 ADDRESS:

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

PERMIT NUMBER	DISCHARGE NUMBER
AR0021971	

FACILITY:
 LOCATION:
 ATTN:

MONITORING PERIOD

YEAR	MONTH	DAY	TO	YEAR	MONTH	DAY

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION			NO EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM			
P/F STATRE 48 HR ACUTE DAPHNIA PULEX M3D 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****	*****	*****	0	*****	(9A)	0	QTRLY COMP24
	PERMIT REQUIREMENT							PASS=0 FAIL=1		
P/F STATRE 48 HR ACUTE PIMEPHALES PROMELAS M6C 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****	*****	*****	0	*****	(9A)	0	QTRLY COMP24
	PERMIT REQUIREMENT							PASS=0 FAIL=1		
NOEL LETHAL STATRE 48 HR ACUTE D. PULEX 43D 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****	*****	*****	1.3	*****	(23)	0	QTRLY COMP24
	PERMIT REQUIREMENT							PER-CENT		
NOEL LETHAL STATRE 48 HR ACUTE PIMEPHALES M6C 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****	*****	*****	1.3	*****	(23)	0	QTRLY COMP24
	PERMIT REQUIREMENT							PER-CENT		
COEF OF VAR STATRE 48 HR ACUTE D. PULEX M3D 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****	*****	*****	6.2	*****	(23)	0	QTRLY COMP24
	PERMIT REQUIREMENT							PER-CENT		
COEF OF VAR STATRE 48 HR ACUTE PIMEPHALES M6C 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****	*****	*****	0.0	*****	(23)	0	QTRLY COMP24
	PERMIT REQUIREMENT							PER-CENT		

Waypoint Analytical, LLC.

48 HOUR RENEWAL DAILY READINGS SHEET

SAMPLE ID: Marion
 REPORT #: 22-333-0391
 DATE START: 11/29/22
 ORGANISM 1: Daphnia pulex
 ORGANISM 2: Fathead Minnow

pH	DAY 1	DAY 2	AFTER - DAY 1	AFTER - DAY 2	AFTER - DAY 1	AFTER - DAY 2
	INITIAL	INITIAL	Daphnia pulex	Daphnia pulex	Fathead Minnow	Fathead Minnow
CONTROL	8.1	8.0	8.1	8.2	8.0	8.3
R	8.0	8.1	8.1	8.2	8.0	8.1
1	8.1	8.1	8.2	8.3	8.1	8.2
2	8.0	8.2	8.1	8.3	8.1	8.2
3	8.0	8.1	8.1	8.0	8.0	8.2
4	8.0	8.2	8.1	8.2	8.1	8.3
5	8.0	8.1	8.1	8.3	8.1	8.2
DO mg/L	DAY 1	DAY 2	AFTER - DAY 1	AFTER - DAY 2	AFTER - DAY 1	AFTER - DAY 2
	INITIAL	INITIAL	Daphnia pulex	Daphnia pulex	Fathead Minnow	Fathead Minnow
CONTROL	8.1	8.2	8.1	8.0	8.4	8.5
R	10.5	8.3	8.1	8.1	7.1	8.1
1	10.4	8.7	7.8	8.2	7.1	8.2
2	10.4	8.8	7.9	8.3	7.0	8.3
3	10.5	9.3	7.8	8.4	6.9	8.2
4	9.9	9.0	7.7	8.4	7.0	8.2
5	9.8	9.2	7.7	8.4	7.2	8.4
TEMP. (C°)	DAY 1	DAY 2	AFTER - DAY 1	AFTER - DAY 2	AFTER - DAY 1	AFTER - DAY 2
	INITIAL	INITIAL	Daphnia pulex	Daphnia pulex	Fathead Minnow	Fathead Minnow
CONTROL	23.8	24.0	24.2	24.0	24.4	24.6
R	26.6	25.0	24.2	24.1	24.1	24.0
1	26.3	24.9	24.1	24.0	24.1	24.1
2	26.3	25.1	24.1	24.0	24.0	24.1
3	26.8	25.1	24.0	24.1	24.1	24.2
4	26.7	24.9	24.0	24.0	24.1	24.2
5	26.7	24.5	24.1	24.1	24.2	24.0
ANALYST:	IM	CF	CF	UR	IM	UR
DATE:	11/29/22	11/30/22	11/30/22	12/1/22	11/30/22	12/1/22

	CONDUCTIVITY (micromhos)		CHLORINE mg/L		DL = 0.02 mg/L
	DAY 1	DAY 2	DAY 1	DAY 2	
CONTROL	184.5	176.1	20.02	20.02	DAY 1 DPD Cl2 Reagent ID 22-REAG-3901
Rec. Stream	498.4	404.7	70.02	20.02	DAY 2 DPD Cl2 Reagent ID
EFFLUENT	443.7	495.4	70.02	70.02	22-REAG-6296
ANALYST:	IM	UR	IM	CF	
DATE:	11/29/22	11/30/22	11/29/22	11/30/22	

Meter	ID
pH	PH 21
Conductivity	C 2
DO	DM 4
Temp.	T148

Tests are maintained at 25 ± 1 ° C
 Incubator ID: BIO Thermometer ID: 120554

48 HOUR SURVIVAL DATA SHEET (5 replicates)

SAMPLE ID: Marion
 REPORT #: 22-333-0391
 TEST START - DATE/TIME: 11/29/22 1530 ANALYST: CF/Im
 TEST END - DATE/TIME: 12/1/22 1540 ANALYST: UR
 TEST TYPE: RENEWAL

TEST ORGANISM: Daphnia pulex
 ORGANISM RN: 22-REAG-0006

CONC. (% EFF)	REP NO.	NO. OF SURVIVORS		
		HOUR		
		0	24	48
CONTROL	A	8	8	8
	B	8	8 8	8
	C	8	8	8
	D	8 7	7	8 7
	E	8	8	8
RECEIVING STREAM	A	8	8	8
	B	8 7	7	7
	C	8 7	7	7
	D	8 7	7	7
	E	8	8	8
0.42	A	8	8	8
	B	8	7	7
	C	8 7	7	7
	D	8	8	8
	E	8	8	7
0.50	A	8	8	7
	B	8	7	6
	C	8	8	7
	D	8 7	7	6
	E	8 7	7	7
0.75	A	8 7	7	8 7
	B	8	8	8
	C	8 6	6	6
	D	8	8	7
	E	8	8	7
1.0	A	8	8	8
	B	8	8	7
	C	8	8	7
	D	8	8	7
	E	8	8	7
1.3	A	8	7	7
	B	8	8 8	6
	C	8	8	7
	D	8 7	8 7	6
	E	8 7	7	7
ANALYST:		CF	UR	UR
DATE:		11/29/22	11/30/22	12/1/22

WAYPOINT ANALYTICAL, LLC.
 TEST TRACEABILITY RECORD
48 HOUR DAPHNIA PULEX

SAMPLE ID: Marion REPORT # 22-333-0391

DATE START: 11/29/22 DATE END: 12/1/22

DAPHNIA PULEX REFERENCE # : 22-REAG-0006

REFERENCE NUMBERS

PARAMETER	DATE	INITIALS	TEST DAY	CONTROL WATER	ALGAE	YCT
ACUTE	<u>11/29/22</u>	<u>im/cf</u>	0	<u>22-REAG-6676</u>	<u>22-REAG-66690</u>	<u>22-REAG-6626</u>
	<u>11/30/22</u>	<u>UR</u>	24 HRS	<u>22-REAG-6711</u>	<u>22-REAG-66690</u>	<u>22-REAG-6626</u>

TEST DAY	SAMPLE LAB ID:	RECEIVING STREAM LAB ID:
0	<u>L 95516</u>	<u>95517</u>
24 HRS	<u>L 95518</u>	<u>L95519</u>

COMMENTS: Organisms are fed 0.15 mL Algae and YCT while holding prior to test set up.
 YCT is filtered with 60-micron mesh to removed additional debris
 Test conducted at 25 ± 1°C Incubator ID: BIO / Thermometer ID: 120554

ANALYST COMMENTS:

Waypoint Analytical, LLC.

48 HOUR SURVIVAL DATA SHEET (5 replicates)

SAMPLE ID: Marion
 REPORT #: 22-333-03a1
 TEST START - DATE/TIME: 11/29/22 1528 ANALYST: CF/im
 TEST END - DATE/TIME: 12/1/22 1551 ANALYST: UR
 TEST TYPE: RENEWAL

CONC. (% EFF)	REP NO.	NO. OF SURVIVORS		
		HOUR		
		0	24	48
CONTROL	A	8	8 8	8
	B	8	8	8
	C	8	8	7 8 ^{ur}
	D	8	8	8
	E	8	8	8
RECEIVING STREAM	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
0.42	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	7
	E	8	8	7
0.56	A	8	8	8
	B	8	8	7
	C	8	8	8
	D	8	7	7
	E	8	8	8
0.75	A	8	8	7
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
1.0	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
1.3	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
ANALYST:		CF	UR	UR
DATE:		11/29/22	11/30/22	12/1/22

TEST ORGANISM: Fathead minnow

ORGANISM RN: 22-REAG- 6092

WAYPOINT ANALYTICAL, LLC.
 TEST TRACEABILITY RECORD
48 HOUR FATHEAD MINNOW

SAMPLE ID: Marion REPORT # 22-333-0391

DATE START: 11/29/22 DATE END: 12/1/22

FATHEAD MINNOW REFERENCE # 22-REAG-66092

REFERENCE NUMBERS

PARAMETER	DATE	INITIALS	TEST DAY	CONTROL WATER	SAMPLE LAB ID:	RECEIVING STREAM:
ACUTE	11/29/22	MLCF	0	22-REAG-6676	L95516	L95517
	11/30/22	LR	24 HRS	22-REAG-6711	L95518	L95519

(if applicable)

COMMENTS: Fathead minnows are fed 0.15 mL Artemia brine shrimp x2 daily while holding prior to test set up.
 Test conducted at 25 ± 1°C Incubator ID: BIO / Thermometer ID: 120554

ANALYST COMMENTS: