

Bio-Analytical Laboratories' Executive Summary

Permittee: Magnolia Wastewater System
Columbia Road
Magnolia, AR

Project #: X8872

Outfall: 001 (treated domestic wastewater)

Permit #: AR0043613/ AFIN 14-00059

Contact: Tracie Love

Test Dates: July 25 – August 1, 2023

Test Type: Chronic Static Renewal Survival and Reproduction Test using *Ceriodaphnia dubia* (EPA Method 1002.0).
Chronic Static Renewal Survival and Growth Test using *Pimephales promelas* (EPA Method 1000.0).

Results:

For *Ceriodaphnia dubia*:

1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter TLP3B - 0 (**Pass**).
2. If the NOEC for reproduction is less than the critical dilution (80.0%), enter a "1"; otherwise, enter a "0" for Parameter TGP3B - 0 (**Pass**).
3. Report the NOEC value for survival, Parameter TOP3B - 100.0%.
4. Report the NOEC value for reproduction, Parameter TPP3B - 100.0%.
5. Report the largest % coefficient of variation between the control and the critical dilution, Parameter TQP3B – 26.73%.
6. PMSD Reproduction = 38.4%(13.0 – 47.0%)- moderate precision, acceptable for passing test

For *Pimephales promelas*:

1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter TLP6C - 0 (**Pass**).
2. If the NOEC for growth is less than the critical dilution (80.0%), enter a "1"; otherwise, enter a "0" for Parameter TGP6C- 0 (**Pass**).
3. Report the NOEC value for survival, Parameter TOP6C - 100.0%
4. Report the NOEC value for growth, Parameter TPP6C - 100.0%
5. Report the largest % coefficient of variation between the control and the critical dilution, Parameter TQP6C – 14.92%.
6. PMSD Biomass = 30.4% (12.0 – 30.0%)- moderate precision, acceptable for passing test

This report contains a total of 59 pages, including this page. The results in the report pertain only to the samples documented in the enclosed chain of custody documents and complies with the TNI (2009) and ADEQ standards. The chemical data in this report is for monitoring purposes only and should not be reported on discharge monitoring reports.



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**THE RESULTS OF TWO CHRONIC
DEFINITIVE TOXICITY TESTS
FOR OUTFALL 001**

AT

**MAGNOLIA WASTEWATER SYSTEM
Magnolia, Arkansas**

**NPDES #AR0043613
AFIN: 14-00059**

EPA Methods 1000.0 and 1002.0

Project X8872

Test Dates: July 25 – August 1, 2023

Report Date: August 10, 2023

Prepared for:

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1.0 Introduction

Bio-Analytical Laboratories (BAL), Doyline, Louisiana conducted two chronic definitive toxicity tests for Outfall 001 at the wastewater plant serving the city of Magnolia, Arkansas. The test organisms used were the cladoceran, *Ceriodaphnia dubia*, and the fathead minnow, *Pimephales promelas*. The purpose of this study is to determine if appropriately dilute effluent samples adversely affect the survival, reproduction and/or growth of the test organisms. Toxicity is defined as a statistically significant difference at the 95 percent confidence level between the survival, reproduction and/or growth of the test organism in the critical dilution (the effluent concentration representative of the proportion of effluent in the receiving water during critical low flow or critical mixing conditions) compared to the survival, reproduction and/or growth of the test organism in the control. The test endpoint is the No-Observed-Effect-Concentration (NOEC), the highest effluent concentration that is not significantly different from the control.

2.0 Methods and Materials

2.1 Test Methods

All methods followed were according to the latest edition of “Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms” (EPA-821-R-02-013), “Standard Methods for The Examination of Water and Wastewater” 22nd Edition (APHA 2012) and BAL’s standard operating procedure.

2.2 Test Organisms

The *Ceriodaphnia dubia* test organisms were cultured in-house at test temperature and dilution water hardness and were less than 24 hours old at test initiation. The neonates were released within the same 8-hour period. The fathead minnows were obtained from Aquatic Biosystems, Fort Collins, Colorado (ABS) and were less than 48 hours old at test initiation but hatched within the same 24-hour period. Monthly chronic reference toxicant tests were conducted in order to document organism sensitivity and demonstration of capability.

2.3 Dilution Water

Soft reconstituted water, made per method guidelines, was used as the dilution water and the control for the tests. Conductivity (SM 2510 B) and pH (SM 4500-H+ B) measurements, in umhos/cm and standard units, respectively, were checked on each lot of water prior to use to confirm water hardness.

2.4 Test Concentrations

The test concentrations used in the chronic toxicity tests were 100.0, 80.0, 56.0, 42.0 and 32.0 percent effluent and a control. The lethal and sub-lethal critical dilution was 100.0 and 80.0 percent effluent, respectively. The *Ceriodaphnia* test was conducted using 10 replicates of one animal each for a total of 10 animals per concentration. The fathead minnow test was conducted using five replicates of eight animals each for a total of 40 animals per concentration.

2.5 Sample Collection

Three composite samples of Outfall 001 were collected by city personnel on July 24, 26 and 28, 2023, at 0800 hours. Upon collection and completion of each composite, the samples were packed in ice and delivered the same day to the laboratory by hotshot service. The temperature upon arrival each of the effluent samples was 3.3, 9.4 and 1.7⁰ Celsius, respectively.

2.6 Sample Preparation

Upon arrival, the samples were logged in, given an identification number, and refrigerated unless needed. Prior to use, the samples were warmed to 25±1⁰ Celsius. Total residual chlorine levels were measured in milligrams/Liter (mg/L) with a test strip and recorded if present. Total ammonia levels were measured in mg/L using a test strip. In the minnow test, each sample was treated with an 18-watt ultraviolet light (UV) at a rate of 113 ml/minute, with an extra 100 percent dilution set up with the treated portion. This was to document any toxicity that may be due to pathogen interference. Dissolved oxygen (4500-O G) and pH (4500-H+ B) measurements were measured in mg/L and standard units, respectively, on the control and each concentration at test initiation, at test renewal and at test termination. Conductivity (2510 B) measurements in umhos/cm were also taken at test initiation and at each renewal. Alkalinity (2320 B) and hardness (2340 C) levels were measured in mg/L as CaCO₃ on the control and the undiluted effluent samples.

2.7 Monitoring of the Tests

The cladoceran test was run in a Precision^R dual-programmable, illuminated incubator at a temperature of 25±1⁰ Celsius. The fathead minnow test was run in a circulating waterbath, using a Remcor^R heated liquid circulator to keep a constant temperature of 25±1⁰ Celsius. Data-loggers were used to monitor diurnal test temperature. Test temperatures were recorded at the beginning of the day, after test renewal and at the end of the day. Light cycles and intensities were recorded twice a month.

2.8 Data Analysis

Ceriodaphnia dubia survival data was analyzed using Fisher's Exact Test, an equality test comparing concentration data to control data. Reproduction data was analyzed using Steel's Many-One Rank Test, a non-parametric test comparing concentration data to control data. Fathead minnow survival and growth data was analyzed using Dunnett's Test, a parametric test comparing concentration data to control data. Other test endpoints were obtained by approved EPA methods of analysis.

3.0 Results and Discussion

The results of the *Ceriodaphnia dubia* test can be found in Table 1. Ninety percent survival occurred in the control and in the 100.0 percent critical dilution after seven days of exposure. The average number of neonates per female after three broods in the control and in the 80.0 percent critical dilution was 19.1 and 21.8, respectively. The NOEC for survival and reproduction in this test was 100.0 percent effluent (p=.05).

The fathead minnow test results can be found in Table 2. After seven days of exposure, 97.5 percent survival occurred in the control and 92.5 percent survival occurred in the 100.0 percent critical dilution. The average weight gained per minnow in the control and in the 80.0 percent critical dilution was 0.645 and 0.695 milligram (mg), respectively. The NOEC for survival and growth in this test was 100.0 percent effluent (p=.05).

Table 1: Results of the Chronic Definitive *Ceriodaphnia dubia* Test

| Percent Effluent | Percent Survival | Sig.* | Mean # Neonates-Surviving | Mean # Neonates -Total | Sig.* |
|------------------|------------------|-------|---------------------------|------------------------|-------|
| Control | 90.0 | | 21.2 | 19.1 | |
| 32.0 | 80.0 | | 19.5 | 15.8 | |
| 42.0 | 90.0 | | 20.8 | 18.9 | |
| 56.0 | 90.0 | | 19.8 | 17.8 | |
| 80.0 | 100.0 | | 23.4 | 23.4 | |
| 100.0 | 100.0 | | 21.8 | 21.8 | |

*significant when compared to the control (p=.05). Test validity based on mean number of neonates per surviving female. NOEC value based on total mean number of neonates. +accidental death.

Table 2: Results of the Chronic Definitive Fathead Minnow Test

| Percent Effluent | Percent Survival | Sig.* | Mean Dry Weight (mg) | Sig.* |
|------------------|------------------|-------|----------------------|-------|
| Control | 97.5 | | 0.645 | |
| 32.0 | 97.5 | | 0.768 | |
| 42.0 | 92.5 | | 0.695 | |
| 56.0 | 87.5 | | 0.683 | |
| 80.0 | 92.5 | | 0.713 | |
| 100.0 | 92.5 | | 0.695 | |
| 100.0 UV | 85.0 | | 0.683 | |

*significant when compared to the control (p=.05). +Test validity based on mean dry weight per surviving larvae in the control. NOEC value based on mean dry weight per the number of larvae at the start of the test.

The monthly chronic reference toxicant tests demonstrated that the test organisms were within the acceptable sensitivity levels. The graphs of the results of the chronic reference toxicant tests can be found in Appendix D- Quality Assurance Charts.

4.0 Conclusions

The three composite samples of Outfall 001 collected from the wastewater plant serving the city of Magnolia, Arkansas, on July 24, 26 and 28, 2023, were not found to be lethally toxic to the *Ceriodaphnia dubia* test organisms or the fathead minnow test organisms in the 100.0 percent critical dilution after seven days of exposure (p=.05). Sub-lethal effects (i.e., reproduction or growth) were not noted in the 80.0 percent dilution in either test (p=.05).

5.0 References

- EPA, 2002. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Fourth Edition. EPA-821-R-02-013, Office of Water.
- EPA, 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System. EPA-833-R-00-003, Office of Wastewater Management.
- EPA, 2000. Method Guidance and Recommendations for Whole Effluent (WET) Testing. EPA-821-B-00-04, Office of Water
- APHA, 2012. Standard Methods for The Examination of Water and Wastewater. 22nd Edition.

APPENDIX A
CHAIN-OF-CUSTODY DOCUMENTS



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Laboratory Use Only:

| | | | | | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------|---|-----------------------------|-----------------------|-------------------------------------------------|---|-------------------------|--------------------|----------------------|--------------------------------------|
| Company: City of Magnolia | | Phone: (870) 234-2955 | | Analysis: | | | | | | | |
| Address: P.O. Box 666, Magnolia, AR 71753 | | Fax: (870) 234-2203 | | Chronic Ceriodaphnia | | | | | | | |
| Permit #: AR0043613/AFIN 14-00059 | | Purchase Order: | | Chronic minnow | | | | | | | |
| Sampler's Signature/Printed Name/Affiliation: <i>Jim Love / Trece Love / MWS</i> | | | | Acute minnow (fresh/marine) | | | | | | | |
| Date Start Date End | Time Start Time End | C | G | # and type of container | Sample Identification | Acute Daphnia species | | Acute Mysid | Acute Ceriodaphnia | Fecal Coliform | Project Number: <i>X8872</i> |
| <i>7/23/23 - 7/24/23</i> | <i>800 - 800</i> | X | | 8 half gallons | 001 | X | X | | | | Temp. upon arrival: <i>3.3 °C</i> |
| Relinquished by/Affiliation: <i>Jim Love / MWS</i> | | Date: <i>7/24/23</i> | | Time: <i>9:17A</i> | | Received by/Affiliation: <i>James Morado</i> | | Date: <i>7/24/23</i> | | Time: <i>1143</i> | |
| Relinquished by/Affiliation: <i>James Morado</i> | | Date: <i>7/24/23</i> | | Time: <i>11:43A</i> | | Received by/Affiliation: <i>James Morado</i> | | Date: <i>7/24/23</i> | | Time: <i>1143</i> | |
| Method of Shipment: <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Bus <input type="checkbox"/> Fed Ex <input type="checkbox"/> DHL <input type="checkbox"/> UPS <input type="checkbox"/> Client <input type="checkbox"/> Other <input type="checkbox"/> Tracking # _____ | | Comments: | | COC Rev.3.1 | | | | | | | |



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| | | | | | | | | | | | | | | | | | |
|---------------------------------------------------------------------------|------------------------|--------------------------|---|-----------------------------|-----------------------|------------------------------------------------|--|-----|--|------------------------------|--|----------------------------|--|----------------|--|------------|--|
| Company: City of Magnolia | | Phone: (870) 234-2955 | | Analysis: | | | | | | Project Number: X8872 | | | | | | | |
| Address: P.O. Box 666, Magnolia, AR 71753 | | Fax: (870) 234-2203 | | Chronic Ceriodaphnia | | | | | | Temp. upon arrival: 9.4°C | | | | | | | |
| Permit #: AR0043613/AFIN 14-00059 | | Purchase Order: | | Chronic minnow | | | | | | Therm #: 29 | | | | | | | |
| Sampler's Signature/Printed Name/Affiliation: <i>Janice Love / MWS</i> | | | | Acute minnow (fresh/marine) | | | | | | Color: <i>clear</i> | | | | | | | |
| Date Start Date End | Time Start Time End | C | G | # and type of container | Sample Identification | Acute Daphnia species | | | | | | Odor: <i>none</i> | | | | | |
| 7/25/23 - 7/26/23 | 800 - 800 | X | | 8 half gallons | 001 | Acute Mysid | | | | | | Tech: <i>AM</i> 7/26/23 | | | | | |
| Relinquished by/Affiliation: <i>Janice Love / MWS</i> | | Date: 7/26/23 | | Time: 8:39A | | Received by/Affiliation: <i>Janice Love</i> | | | | | | Date: 7/26/23 | | Time: 8:39A | | | |
| Relinquished by/Affiliation: <i>Janice Love</i> | | Date: 7/26/23 | | Time: 11:24A | | Received by/Affiliation: <i>Janice Love</i> | | | | | | Date: 7/26/23 | | Time: 11:24 | | | |
| Method of Shipment: Comments: | | Lab | | Bus | | Fed Ex | | DHL | | UPS | | Client | | Other | | Tracking # | |
| COC Rev.3.1 | | | | | | | | | | | | | | | | | |



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| | | | | | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------|---|-----------------------------|-----------------------|----------------------------------------------|-----------------------|------------------|--|----------------|--|
| Company: City of Magnolia | | Phone: (870) 234-2955 | | Analysis: | | | | | | | |
| Address: P.O. Box 666, Magnolia, AR 71753 | | Fax: (870) 234-2203 | | Chronic Ceriodaphnia | | | | | | | |
| Permit #: AR0043613/AFIN 14-00059 | | Purchase Order: | | Chronic minnow | | | | | | | |
| Sampler's Signature/Printed Name/Affiliation: <i>John Love / Trace Love / MWS</i> | | | | Acute minnow (fresh/marine) | | | | | | | |
| Date Start Date End | Time Start Time End | C | G | # and type of container | Sample Identification | | Acute Daphnia species | | | | |
| 7/27/23 - 7/28/23 | 800 - 500 | X | | 8 half gallons | 001 | | Acute Mysid | | | | |
| | | | | | | | Acute Ceriodaphnia | | | | |
| Relinquished by/Affiliation: <i>John Love / MWS</i> | | Date: 7/28/23 | | Time: 8:40A | | Received by/Affiliation: <i>John Love</i> | | Date: 7/28/23 | | Time: 8:40A | |
| Relinquished by/Affiliation: <i>John Love</i> | | Date: 7/28/23 | | Time: 11:26A | | Received by/Affiliation: <i>John Love</i> | | Date: 7/28/23 | | Time: 11:24 | |
| Method of Shipment: <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Bus <input type="checkbox"/> Fed Ex <input type="checkbox"/> DHL <input type="checkbox"/> UPS <input type="checkbox"/> Client <input type="checkbox"/> Other <input type="checkbox"/> Tracking # | | Comments: COC Rev.3.1 | | | | | | | | | |

APPENDIX B
RAW DATA SHEETS

BIO-ANALYTICAL LABORATORIES CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Project# X8872 Date start: 7/25/23 Date end: 8/1/23

Client/Contact: MAGN/Magnolia Waste Water

Address: P.O. Box 666 Magnolia AR 71753

NPDES#: AR0043613

Sample Description: 001 Dilution Water: Soft Reconstituted

Adults isolated: Date 7/25/23 Time: 2330

Neonates collected: Date 7/25/23 Time: 0700 Board: V3M14

Dissolved Oxygen Meter#: 2

pH Meter#: 3 Conductivity Meter#: 8

ORP Meter#: - Salinity Meter#: -

| Effluent | Aerate?/Minutes | Receiving Water | Aerate?/Minutes |
|-----------------|-----------------|-----------------|-----------------|
| Initial D.O. | /Final D.O. | Initial D.O. | /Final D.O. |
| (mg/L & %)/Tech | (mg/L & %)/Tech | (mg/L & %)/Tech | (mg/L & %)/Tech |

| | | | |
|--------------------------|------------------------------|----------|----------|
| 0. <u>8.9/105.1/1dm</u> | 0. <u>No/18.3/187.3/1dm</u> | 0. _____ | 0. _____ |
| 1. <u>7.8/93.4/1dm</u> | 1. <u>NO/1cm</u> | 1. _____ | 1. _____ |
| 2. <u>10.3/102.7/1cm</u> | 2. <u>1/12/9.1/99.2/1cm</u> | 2. _____ | 2. _____ |
| 3. <u>8.4/99.9/1dm</u> | 3. <u>No/1dm</u> | 3. _____ | 3. _____ |
| * <u>9.1/103.2/1dm</u> | | | |
| 4. <u>7.0/113.6/1dm</u> | 4. <u>1/12/8.6/100.1/1dm</u> | 4. _____ | 4. _____ |
| 5. <u>9.1/104.2/1dm</u> | 5. <u>1/18/8.0/96.3/1dm</u> | 5. _____ | 5. _____ |
| 6. <u>8.4/99.7/1dm</u> | 6. <u>NO/1dm</u> | 6. _____ | 6. _____ |
| 7. _____ | 7. _____ | 7. _____ | 7. _____ |

| Total Residual Chlorine (mg/L)/Tech | Dechlorinated? Amount?/Tech | Ammonia (NH3) (mg/L)/Tech | BAL Sample # Date in use |
|-------------------------------------|-----------------------------|---------------------------|--------------------------|
|-------------------------------------|-----------------------------|---------------------------|--------------------------|

| | | | |
|--------------------|------------------|--------------------|--------------------------|
| 1. <u>20.5/1dm</u> | 1. <u>No/1dm</u> | 1. <u>20.5/1dm</u> | 1. <u>C25321 7/25/23</u> |
| 2. <u>20.5/1cm</u> | 2. <u>NO/1cm</u> | 2. <u>20.5/1cm</u> | 2. <u>C25338 7/27/23</u> |
| 3. <u>20.5/1dm</u> | 3. <u>No/1dm</u> | 3. <u>20.5/1dm</u> | 3. <u>C25348 7/29/23</u> |

Comments: * dm 7/25/23
 * dm 7/29/23

LEM under supervision of AM, MV and PM EOB 8/1/23

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST-LIVE NEONATE PRODUCTION- EPA 815-101-001-002

Project# X8872 Client Magnolia Sample ID 001
 Test started: Date 1/21/03 Time 1055 Test ended: Date 1/23/03 Time 1650
 Date/Tech: Day 0 1/21/03 1 1/23/03 2 1/23/03 3 1/23/03 4 1/23/03 5 1/23/03 6 1/23/03 7 1/23/03 8 1/23/03
 Time: Day 0 1055 1 1230 2 1150 3 1430 4 1339 5 1447 6 1455 7 1650 8
 Temp. (°C): Day 0 21.2 1 21.2 2 21.4 3 24.3 4 24.4 5 24.5 6 25.1 7 24.9 8

| Conc | Day | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Number of Live |
|-------|-----|--------|--------|------|------|------|------|------|------|--------|-------|----------------|
| 0 | 1 | 0 | | | | | | | | | | 10 |
| | 2 | 0 | | | | | | | | | | 10 |
| | 3 | 0 | | X | | | | | | | | 9 |
| | 4 | 0 | 0 | | 0 | 1/2 | 1/2 | 0 | 0 | 0 | 0 | 9 |
| | 5 | 1/4 | 1/4 | | 1/3 | 2/3 | 2/4 | 1/2 | 1/5 | 1/4 | 1/4 | 9 |
| | 6 | 0 | 0 | | 2/6 | 2/4 | 0 | 2/6 | 2/9 | 2/5 | 2/9 | 9 |
| | 7 | 2/3/15 | 2/3/16 | | 3/13 | 3/4 | 3/11 | 3/10 | 3/13 | 3/13 | 3/5 | 9 |
| | 8 | | | | | | | | | | | |
| 32.1 | 1 | 0 | | | | | | | | | | 10 |
| | 2 | 0 | | | | | | | | | | 10 |
| | 3 | 0 | | | | | X | | | | | 9 |
| | 4 | 0 | 0 | 0 | 0 | 0 | | 1/1 | 1/2 | 0 | 1/3 | 9 |
| | 5 | 1/2 | 4/6 | 4/7 | 1/5 | 1/7 | | 2/6 | X | 1/6 | 2/9 | 8 |
| | 6 | 2/7 | 0 | 0 | 0 | 0 | | 0 | | 0 | 0 | 8 |
| | 7 | 3/12 | 2/7 | 2/9 | 2/10 | 2/14 | | 3/14 | | 2/3/16 | 3/15 | 8 |
| | 8 | | | | | | | | | | | |
| 42.1 | 1 | 0 | | | | | | | | | | 10 |
| | 2 | 0 | | | | | | | | | | 10 |
| | 3 | 0 | | | | | | | | | | 10 |
| | 4 | 0 | | | | 1/2 | 1/3 | | 1/2 | | | 10 |
| | 5 | 1/6 | 1/5 | 1/6 | 1/4 | X | 2/5 | 1/4 | 2/4 | 1/3 | 1/1 | 9 |
| | 6 | 0 | 0 | 0 | 0 | | 0 | 2/7 | 0 | 2/9 | 1/2/9 | 8 |
| | 7 | 2/3/16 | 2/3/15 | 2/10 | 2/9 | | 3/15 | 3/12 | 3/15 | 3/14 | 3/15 | 9 |
| | 8 | | | | | | | | | | | |
| 56.1 | 1 | 0 | | | | | | | | | | 10 |
| | 2 | 0 | | | | | | | | | | 10 |
| | 3 | 0 | X | | | | | | | | | 9 |
| | 4 | 1/2 | | 0 | 0 | 1/2 | 0 | 1/1 | 0 | 0 | 0 | 9 |
| | 5 | 2/6 | | 1/4 | 1/5 | 2/5 | 1/4 | 2/5 | 1/2 | 1/3 | 1/3 | 9 |
| | 6 | 0 | | 2/6 | 0 | 0 | 2/7 | 0 | 2/5 | 0 | 2/8 | 9 |
| | 7 | 3/12 | | 3/14 | 2/9 | 3/13 | 3/14 | 3/15 | 3/11 | 2/9 | 3/13 | 9 |
| | 8 | | | | | | | | | | | |
| 80.1 | 1 | 0 | | | | | | | | | | 10 |
| | 2 | 0 | | | | | | | | | | 10 |
| | 3 | 0 | | | | | | | | | | 10 |
| | 4 | 1/3 | 0 | 0 | 0 | 0 | 0 | 1/2 | 1/3 | 0 | 1/1 | 10 |
| | 5 | 2/9 | 2/5 | 1/7 | 1/6 | 1/5 | 1/5 | 2/7 | 2/3 | 1/3 | 2/4 | 10 |
| | 6 | 0 | 2/5 | 2/9 | 2/8 | 2/11 | 2/6 | 0 | 2/4 | 0 | 0 | 10 |
| | 7 | 3/11 | 3/12 | 3/13 | 3/11 | 3/15 | 3/14 | 3/15 | 3/15 | 2/9 | 3/13 | 10 |
| | 8 | | | | | | | | | | | |
| 100.1 | 1 | 0 | | | | | | | | | | 10 |
| | 2 | 0 | | | | | | | | | | 10 |
| | 3 | 0 | | | | | | | | | | 10 |
| | 4 | 0 | 0 | 1/1 | 0 | 1/3 | 0 | 1/2 | 1/2 | 1/2 | 0 | 10 |
| | 5 | 1/4 | 1/6 | 1/4 | 1/3 | 2/6 | 1/3 | 2/9 | 2/5 | 2/7 | 1/6 | 10 |
| | 6 | 2/12 | 0 | 0 | 2/8 | 0 | 2/6 | 0 | 0 | 0 | 2/8 | 10 |
| | 7 | 3/14 | 2/9 | 2/7 | 3/11 | 3/12 | 3/10 | 3/12 | 3/12 | 3/16 | 3/13 | 10 |
| | 8 | | | | | | | | | | | |

EDU 7/31/03
 M 7/30/03

Key: X=dead adult, Xⁿ=adult had n neonates before death, M=male.
 B/N = Brood count/#neonates

BIO-ANALYTICAL LABORATORIES CHRONIC WATER QUALITY DATA (CHR CHEM Rev. 4.0)

Project# X8872 Client Magnolia Organism C. dubia

| Date | Day 0 7/25/23 5472 | Day 1 7/26/23 | Day 2 7/27/23 | Day 3 7/28/23 | Day 4 7/29/23 | Day 5 7/30/23 5476 | Day 6 7/31/23 | Day 7 8/1/23 | Day 8 |
|-----------------------------------|--------------------------|------------------|------------------|------------------|------------------|--------------------------|------------------|-----------------|-------|
| Concentration: <u>0 soft</u> | | | | | | | | | |
| Temperature (°C) | 23.8 | 24.0 24.2 | 24.2 24.0 | 24.0 24.3 | 24.0 23.8 | 23.8 24.7 | 23.7 27.6 | 25.1 | |
| pH | 7.6 | 7.7 6.7 | 7.1 7.0 | 7.4 7.0 | 6.7 7.8 | 6.6 7.3 | 7.0 7.0 | 7.6 | |
| DO (mg/l) | 8.0 | 7.3 6.1 | 8.5 7.3 | 7.7 7.3 | 8.9 8.1 | 8.7 8.0 | 7.4 7.4 | 8.0 | |
| Cond (umhos/cm) | 250 | 245 | 280 | 265 | 165 | 205 | 230 | | |
| Concentration: <u>32.1</u> | | | | | | | | | |
| Temperature (°C) | 23.8 | 24.0 24.7 | 24.2 23.5 | 24.0 24.3 | 23.7 23.7 | 23.7 24.3 | 24.0 26.9 | 24.1 | |
| pH | 7.3 | 7.9 7.0 | 7.6 7.1 | 7.5 7.0 | 7.7 7.5 | 7.6 7.3 | 7.4 7.2 | 7.4 | |
| DO (mg/l) | 8.2 | 7.4 7.0 | 8.1 7.6 | 7.3 7.5 | 9.0 8.2 | 8.9 8.1 | 7.6 7.4 | 7.6 | |
| Cond (umhos/cm) | 270 | 285 | 300 | 310 | 300 | 305 | 300 | | |
| Concentration: <u>42.1</u> | | | | | | | | | |
| Temperature (°C) | 23.3 | 24.0 25.3 | 24.1 23.3 | 24.3 24.3 | 23.7 23.6 | 23.9 24.1 | 23.9 26.3 | 25.4 | |
| pH | 7.2 | 7.9 7.0 | 7.7 7.0 | 7.6 7.0 | 7.8 7.3 | 7.7 7.3 | 7.3 6.7 | 7.4 | |
| DO (mg/l) | 8.2 | 7.4 6.6 | 8.6 7.1 | 7.4 7.5 | 8.9 7.9 | 9.0 8.0 | 8.2 7.3 | 7.6 | |
| Cond (umhos/cm) | 276 | 290 | 305 | 315 | 310 | 320 | 299 | | |
| Prerenewal Tech Initials/Time | | 1236 15PM | 1157 10PM | 1435 AM | 1343 AM | 1452 AM | EDW 1455 | EDW 1650 | |
| Postrenewal Tech Initials/Time | 1020 AM | 1020 PM | 1020 PM | 1105 AM | 1100 AM | 1130 AM | EDW 1045 | | |

Control Alkalinity (mg/L as CaCO₃)

Control Hardness (mg/L as CaCO₃)

ID# 5472 Result 76.0 Date Tested 7/26/23 ID# 5472 Result 32.0 Date Tested 7/26/23
 ID# 5476 Result 28.0 Date Tested 8/1/23 ID# 5476 Result 40.0 Date Tested 8/1/23
 ID# _____ Result _____ Date Tested _____ ID# _____ Result _____ Date Tested _____

Sample Alkalinity (mg/L as CaCO₃)

Sample Hardness (mg/L as CaCO₃)

ID# 25321 Result 52.0 Date Tested 7/26/23 ID# 25321 Result 28.0 Date Tested 7/26/23
 ID# 25338 Result 44.0 Date Tested 7/26/23 ID# 25338 Result 32.0 Date Tested 7/26/23
 ID# 25348 Result 60.0 Date Tested 8/1/23 ID# 25348 Result 16.0 Date Tested 8/1/23

BIO-ANALYTICAL LABORATORIES CHRONIC WATER QUALITY DATA (CHR CHEM Rev.4.0)

Project# X8872 Client Magnolia

Organism C. dubia

| Date | Day 0 | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 |
|-----------------------------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------|
| Concentration: <u>56%</u> | | | | | | | | | |
| Temperature (°C) | 23.3 | 23.9 25.0 | 24.0 23.7 | 24.0 24.0 | 23.8 23.4 | 24.0 23.9 | 24.1 25.6 | 25.1 | |
| pH | 7.2 | 8.0 6.9 | 7.7 7.0 | 7.6 7.0 | 7.6 7.2 | 7.7 7.2 | 7.3 6.9 | 7.4 | |
| DO (mg/l) | 8.1 | 7.2 6.2 | 7.8 8.0 | 7.3 7.5 | 8.8 8.3 | 9.0 8.1 | 8.3 7.2 | 7.9 | |
| Cond (umhos/cm) | 300 | 290 | 315 | 330 | 330 | 335 | 310 | | |
| Concentration: <u>80%</u> | | | | | | | | | |
| Temperature (°C) | 23.2 | 23.8 24.3 | 24.0 22.3 | 24.3 24.0 | 23.8 23.5 | 24.0 23.7 | 25.6 26.9 | 24.4 | |
| pH | 7.6 | 7.9 6.7 | 7.6 6.9 | 7.5 7.0 | 7.6 7.2 | 7.7 7.1 | 7.7 7.0 | 7.6 | |
| DO (mg/l) | 8.4 | 7.4 7.1 | 8.4 8.2 | 7.3 7.5 | 8.8 8.4 | 9.1 8.2 | 8.5 7.8 | 7.9 | |
| Cond (umhos/cm) | 290 | 295 | 330 | 350 | 350 | 345 | 345 | | |
| Concentration: <u>100%</u> | | | | | | | | | |
| Temperature (°C) | 23.0 | 24.0 24.0 | 24.3 21.6 | 24.3 23.8 | 23.9 23.4 | 23.8 23.7 | 25.4 24.1 | 25.0 | |
| pH | 6.8 | 7.9 6.6 | 7.6 6.8 | 7.4 6.9 | 7.6 7.1 | 7.7 7.0 | 7.3 7.1 | 7.4 | |
| DO (mg/l) | 8.9 | 7.5 7.4 | 8.4 8.3 | 7.3 7.6 | 9.0 8.5 | 9.2 8.3 | 8.4 8.3 | 7.9 | |
| Cond (umhos/cm) | 306 | 305 | 350 | 365 | 375 | 370 | 385 | | |
| Prerenewal Tech Initials/Time | | 1236 LEM | 1157 LEM | 1435 AM | 1343 AM | 1452 AM | EDW 1455 | EDW 1650 | |
| Postrenewal Tech Initials/Time | 1020 AM | 1020 PM | 1020 PM | 1105 AM | 1100 AM | 1130 AM | EDW 1045 | | |

Control Alkalinity (mg/L as CaCO₃)

Control Hardness (mg/L as CaCO₃)

| | | | | | |
|-----------|--------------|-------------------|-----------|--------------|-------------------|
| ID# _____ | Result _____ | Date Tested _____ | ID# _____ | Result _____ | Date Tested _____ |
| ID# _____ | Result _____ | Date Tested _____ | ID# _____ | Result _____ | Date Tested _____ |
| ID# _____ | Result _____ | Date Tested _____ | ID# _____ | Result _____ | Date Tested _____ |

Sample Alkalinity (mg/L as CaCO₃)

Sample Hardness (mg/L as CaCO₃)

| | | | | | |
|-----------|--------------|-------------------|-----------|--------------|-------------------|
| ID# _____ | Result _____ | Date Tested _____ | ID# _____ | Result _____ | Date Tested _____ |
| ID# _____ | Result _____ | Date Tested _____ | ID# _____ | Result _____ | Date Tested _____ |
| ID# _____ | Result _____ | Date Tested _____ | ID# _____ | Result _____ | Date Tested _____ |

CETIS Test Data Worksheet

Report Date: 24 Jul-23 09:38 (p 1 of 2)
 Test Code/ID: 2DD461E6 / 07-6889-3414

Ceriodaphnia 7-d Survival and Reproduction Test Bio-Analytical Laboratories

Start Date: 25 Jul-23 09:37 Species: Ceriodaphnia dubia Sample Code: 3ABA3C9E
 End Date: 01 Aug-23 09:37 Protocol: EPA/821/R-02-013 (2002) Sample Source: AR0043613
 Sample Date: 24 Jul-23 09:37 Material: POTW Effluent Sample Station: 001

| Conc-% | Code | Rep | Pos | # Exposed | 1d Surv | 2d Surv | 3d Surv | 4d Surv | 5d Surv | 6d Surv | 7d Surv | 8d Surv | 2d Neo | 3d Neo | 4d Neo | 5d Neo | 6d Neo | 7d Neo | 8d Neo | Male | Notes | |
|--------|------|-----|-----|-----------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|------|-------|--|
| 56 | | 9 | 1 | | | | | | | | | | | | | | | | | | | |
| 32 | | 1 | 2 | | | | | | | | | | | | | | | | | | | |
| 56 | | 8 | 3 | | | | | | | | | | | | | | | | | | | |
| 100 | | 1 | 4 | | | | | | | | | | | | | | | | | | | |
| 42 | | 8 | 5 | | | | | | | | | | | | | | | | | | | |
| 80 | | 7 | 6 | | | | | | | | | | | | | | | | | | | |
| 42 | | 2 | 7 | | | | | | | | | | | | | | | | | | | |
| 56 | | 10 | 8 | | | | | | | | | | | | | | | | | | | |
| 56 | | 7 | 9 | | | | | | | | | | | | | | | | | | | |
| 80 | | 6 | 10 | | | | | | | | | | | | | | | | | | | |
| 0 | D | 7 | 11 | | | | | | | | | | | | | | | | | | | |
| 56 | | 2 | 12 | | | | | | | | | | | | | | | | | | | |
| 0 | D | 4 | 13 | | | | | | | | | | | | | | | | | | | |
| 0 | D | 5 | 14 | | | | | | | | | | | | | | | | | | | |
| 80 | | 4 | 15 | | | | | | | | | | | | | | | | | | | |
| 42 | | 3 | 16 | | | | | | | | | | | | | | | | | | | |
| 56 | | 5 | 17 | | | | | | | | | | | | | | | | | | | |
| 100 | | 4 | 18 | | | | | | | | | | | | | | | | | | | |
| 0 | D | 3 | 19 | | | | | | | | | | | | | | | | | | | |
| 42 | | 10 | 20 | | | | | | | | | | | | | | | | | | | |
| 42 | | 6 | 21 | | | | | | | | | | | | | | | | | | | |
| 100 | | 9 | 22 | | | | | | | | | | | | | | | | | | | |
| 32 | | 10 | 23 | | | | | | | | | | | | | | | | | | | |
| 32 | | 4 | 24 | | | | | | | | | | | | | | | | | | | |
| 80 | | 3 | 25 | | | | | | | | | | | | | | | | | | | |
| 80 | | 1 | 26 | | | | | | | | | | | | | | | | | | | |
| 80 | | 9 | 27 | | | | | | | | | | | | | | | | | | | |
| 100 | | 6 | 28 | | | | | | | | | | | | | | | | | | | |
| 42 | | 4 | 29 | | | | | | | | | | | | | | | | | | | |
| 56 | | 3 | 30 | | | | | | | | | | | | | | | | | | | |
| 32 | | 3 | 31 | | | | | | | | | | | | | | | | | | | |
| 32 | | 5 | 32 | | | | | | | | | | | | | | | | | | | |
| 0 | D | 8 | 33 | | | | | | | | | | | | | | | | | | | |
| 80 | | 10 | 34 | | | | | | | | | | | | | | | | | | | |
| 56 | | 4 | 35 | | | | | | | | | | | | | | | | | | | |
| 0 | D | 10 | 36 | | | | | | | | | | | | | | | | | | | |
| 32 | | 9 | 37 | | | | | | | | | | | | | | | | | | | |
| 42 | | 5 | 38 | | | | | | | | | | | | | | | | | | | |
| 42 | | 1 | 39 | | | | | | | | | | | | | | | | | | | |
| 100 | | 8 | 40 | | | | | | | | | | | | | | | | | | | |
| 56 | | 1 | 41 | | | | | | | | | | | | | | | | | | | |

CETIS Test Data Worksheet

Report Date: 24 Jul-23 09:38 (p 2 of 2)
 Test Code/ID: 2DD461E6 / 07-6889-3414

| Conc-% | Code | Rep | Pos | # Exposed | 1d Surv | 2d Surv | 3d Surv | 4d Surv | 5d Surv | 6d Surv | 7d Surv | 8d Surv | 2d Neo | 3d Neo | 4d Neo | 5d Neo | 6d Neo | 7d Neo | 8d Neo | Male | Notes | |
|--------|------|-----|-----|-----------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|------|-------|--|
| 0 | D | 9 | 42 | | | | | | | | | | | | | | | | | | | |
| 80 | | 5 | 43 | | | | | | | | | | | | | | | | | | | |
| 0 | D | 6 | 44 | | | | | | | | | | | | | | | | | | | |
| 56 | | 6 | 45 | | | | | | | | | | | | | | | | | | | |
| 32 | | 8 | 46 | | | | | | | | | | | | | | | | | | | |
| 32 | | 7 | 47 | | | | | | | | | | | | | | | | | | | |
| 100 | | 10 | 48 | | | | | | | | | | | | | | | | | | | |
| 80 | | 8 | 49 | | | | | | | | | | | | | | | | | | | |
| 80 | | 2 | 50 | | | | | | | | | | | | | | | | | | | |
| 0 | D | 1 | 51 | | | | | | | | | | | | | | | | | | | |
| 100 | | 2 | 52 | | | | | | | | | | | | | | | | | | | |
| 100 | | 7 | 53 | | | | | | | | | | | | | | | | | | | |
| 100 | | 3 | 54 | | | | | | | | | | | | | | | | | | | |
| 0 | D | 2 | 55 | | | | | | | | | | | | | | | | | | | |
| 32 | | 6 | 56 | | | | | | | | | | | | | | | | | | | |
| 42 | | 7 | 57 | | | | | | | | | | | | | | | | | | | |
| 100 | | 5 | 58 | | | | | | | | | | | | | | | | | | | |
| 32 | | 2 | 59 | | | | | | | | | | | | | | | | | | | |
| 42 | | 9 | 60 | | | | | | | | | | | | | | | | | | | |

7/25/03
WR
LEM

- Set #1
2,4,1,6,3,5 Parent# 1C
- Set #2
3,5,1,2,4,6 Parent# 1F
- Set #3
3,6,2,1,5,4 Parent# 2F
- Set #4
2,4,6,1,5,3 Parent# 2E
- Set #5
6,2,5,3,1,4 Parent# 1J
- Set #6
1,3,6,5,2,4 Parent# 2J
- Set #7
1,2,5,6,3,4 Parent# 2C
- Set #8
1,6,5,3,2,4 Parent# 2J
- Set #9
1,6,2,4,5,3 Parent# 1G
- Set #10
2,1,5,3,6,4 Parent# 2H

BIO-ANALYTICAL LABORATORIES
 PIMEPHALES PROMELAS SURVIVAL AND GROWTH DATA SHEET

Project# X8872 Date started: 7/25/23 Date ended 8/1/23

Client/Contact: MAGN/Magnolia Waste Water

Address P.O. Box 666 Magnolia AR 71753

NPDES# AR0043613 AFIN14-00059

Sample Description: 001 Dilution Water: Soft Reconstituted
 Test organism age: < 48hrs Vendor/ID# ABS 1230

| Day | Feeding Times | | |
|-----|----------------------------------------|-----------------|----------------|
| | Technician/Time/Amount (per replicate) | | |
| | AM | NOON | PM |
| 0 | | | |
| 1 | | | |
| 2 | AM 10505/0.10mL | PM 1240/0.1mL | PM 1700/0.10mL |
| 3 | AM 10910/0.1mL | PM 1120/0.1mL | PM 1620/0.1mL |
| 4 | AM 10935/0.1mL | MV 11230/0.10mL | MV 1712/0.10mL |
| 5 | AM 10945/0.1mL | | AM 1145/0.2mL |
| 6 | AM 11000/0.2mL | | PM 1145/0.2mL |
| | SM 10910/0.10mL | AM 11810/0.1mL | AM 11810/0.1mL |

Dissolved Oxygen Meter #: 2
 pH Meter#: 3
 ORP Meter#: -
 Conductivity Meter#: 8
 Salinity Meter #: -

| Effluent Initial DO (mg/L & %)/Tech | Aerate?/Minutes /Final DO (mg/L & %)/Tech | Receiving Water Initial DO (mg/L & %)/Tech | Aerate?/Minutes /Final DO (mg/L & %)/Tech |
|-------------------------------------|-------------------------------------------|--------------------------------------------|-------------------------------------------|
| 0. 8.9 / 105.1 / dm | 0. 4/6/8.3 / 87.3 / dm | 0. _____ | 0. _____ |
| 1. 7.8 / 93.4 / dm | 1. 4/6/9.1 / 100 | 1. _____ | 1. _____ |
| 2. 10.3 / 102.7 / dm | 2. 4/6/9.1 / 99.2 / dm | 2. _____ | 2. _____ |
| 3. 8.4 / 99.9 / dm | 3. No / dm | 3. _____ | 3. _____ |
| 4. 9.1 / 103.2 / dm | 4. 4/12/8.6 / 100.1 / dm | 4. _____ | 4. _____ |
| 5. 9.1 / 104.2 / dm | 5. 4/18/8.0 / 96.3 / dm | 5. _____ | 5. _____ |
| 6. 8.4 / 99.7 / dm | 6. No / dm | 6. _____ | 6. _____ |

| Total Residual Chlorine (mg/L)/Tech | Dechlorinated? Amount?/Tech | Ammonia (NH3) (mg/L)/Tech | BAL Sample # Date in use |
|-------------------------------------|-----------------------------|---------------------------|--------------------------|
| 1. <0.5 / dm | 1. No / dm | 1. <0.5 / dm | 1. C25321 7/25/23 |
| 2. <0.5 / dm | 2. No / dm | 2. <0.5 / dm | 2. C25338 7/27/23 |
| 3. <0.5 / dm | 3. No / dm | 3. <0.5 / dm | 3. C25348 7/29/23 |

Comments: LEM under supervision of AM, MV, PM
eam 7/27/23
ELB 8/1/23

BIO-ANALYTICAL LABORATORIES 7-DAY CHRONIC MINNOW SURVIVAL DATA- EPA 1000 OECD 210

Project# X8872

Test started: Date 7/25/23 Time 15:21

Client Magnolia

Sample ID 001

Test ended: Date 8/1/23 Time 14:30

Date/Tech: Day 0 7/25/23 1 7/26/23 2 7/27/23 3 7/28/23 4 7/29/23 5 7/30/23 6 7/31/23 7 8/1/23

Time: Day 0 15:21 1 12:05 2 11:10 3 13:45 4 12:10 5 12:18 6 11:20 7 14:30

Temp (°C) Day 0 25.3 1 25.7 2 25.6 3 25.6 4 25.6 5 25.3 6 24.9 7 27.3

| Conc. | Rep. | Day 0 | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 |
|-----------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0 Soft | 1 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 2 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 3 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 4 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 5 | 8 | 8 | 7 | 7 | 7 | 7 | 7 | 7 |
| 32% | 1 | 8 | 8 | 8 | 8 | 7 | 7 | 7 | 7 |
| | 2 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 3 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 4 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 5 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 42% | 1 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 2 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 |
| | 3 | 8 | 8 | 8 | 8 | 8 | 7 | 7 | 7 |
| | 4 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 5 | 8 | 8 | 8 | 8 | 8 | 7 | 7 | 7 |
| 56% | 1 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 7 |
| | 2 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 3 | 8 | 8 | 8 | 8 | 7 | 7 | 7 | 7 |
| | 4 | 8 | 8 | 8 | 8 | 7 | 7 | 7 | 5 |
| | 5 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 80% | 1 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 2 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 3 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 |
| | 4 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 7 |
| | 5 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 |
| 100% | 1 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 |
| | 2 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 3 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 6 |
| | 4 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 5 | 8 | 8 | 6 | 8 | 8 | 8 | 8 | 8 |

8/1/23

BIO-ANALYTICAL LABORATORIES 7-DAY CHRONIC MINNOW SURVIVAL DATA- (EPA 1000) OECD 210

Project# X8872 Test started: Date 7/26/23 Time 15:21

Client Magnolia Sample ID 001 Test ended: M Date 8/1/23 Time 14:30

Date/Tech: Day 0 7/25/23 1 7/26/23 2 7/27/23 3 7/28/23 4 7/29/23 5 7/30/23 6 7/31/23 7 8/1/23
 Time: Day 0 15:21 1 12:25 2 11:10 3 13:45 4 12:16 5 12:18 6 11:20 7 11:30
 Temp (°C) Day 0 25.3 1 25.7 2 25.6 3 25.6 4 25.6 5 25.36 6 24.4 7 27.3

| Conc. | Rep. | Day 0 | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 |
|------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| 100% UV | 1 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 6 |
| | 2 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 6 |
| | 3 | 8 | 8 | 7 | 7 | 7 | 7 | 7 | 8 F |
| | 4 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 5 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 7 |
| | 1 | | | | | | | | |
| | 2 | | | | | | | | |
| | 3 | | | | | | | | |
| | 4 | | | | | | | | |
| | 5 | | | | | | | | |
| | 1 | | | | | | | | |
| | 2 | | | | | | | | |
| | 3 | | | | | | | | |
| | 4 | | | | | | | | |
| | 5 | | | | | | | | |
| | 1 | | | | | | | | |
| | 2 | | | | | | | | |
| | 3 | | | | | | | | |
| | 4 | | | | | | | | |
| | 5 | | | | | | | | |

BIO-ANALYTICAL LABORATORIES MINNOW LARVAL GROWTH DATA SHEET (Minnow3 Rev 2.1)

Project#/Client X8872 Temp Start (°C) 80.4 Tech PM Date: 8/1/23 Time: 1430
Magnolia Temp End (°C) 106.2 Tech PM Date: 8/2/23 Time: 0850

| Conc. % | Replicate/ Pan number | Wt. of pan(g)/ Date weighed: <u>7/25/23</u> Tech: <u>cm</u> | Wt. of pan + larvae(g)/ Date <u>8/3/23</u> weighed: Tech: <u>cm</u> | Total wt. of larvae (g) | Original # of larvae at test initiation | Mean Dry wt. of larvae (mg) | Mean Dry wt. - surviving larvae (mg) Control Only* |
|---------|-----------------------|-------------------------------------------------------------|---------------------------------------------------------------------|-------------------------|-----------------------------------------|-----------------------------|----------------------------------------------------|
| 0 Soft | 1 1 | 1.1005 | 1.1059 | | | | |
| | 2 2 | 1.0874 | 1.0934 | | | | |
| | 3 3 | 1.1120 | 1.1173 | | | | |
| | 4 4 | 1.1040 | 1.1092 | | | | |
| | 5 5 | 1.1041 | 1.1080 | | | | |
| 32% | 1 6 | 1.0928 | 1.0977 | | | | |
| | 2 7 | 1.0814 | 1.0877 | | | | |
| | 3 8 | 1.0850 | 1.0919 | | | | |
| | 4 9 | 1.1161 | 1.1224 | | | | |
| | 5 10 | 1.0995 | 1.1058 | | | | |
| 42% | 1 11 | 1.0949 | 1.1017 | | | | |
| | 2 12 | 1.0930 | 1.0993 | | | | |
| | 3 13 | 1.0945 | 1.0975 | | | | |
| | 4 14 | 1.1096 | 1.1155 | | | | |
| | 5 15 | 1.0902 | 1.0960 | | | | |
| 56% | 1 16 | 1.0825 | 1.0877 | | | | |
| | 2 17 | 1.0891 | 1.0961 | | | | |
| | 3 18 | 1.1063 | 1.1115 | | | | |
| | 4 19 | 1.0958 | 1.0992 | | | | |
| | 5 20 | 1.0815 | 1.0880 | | | | |
| 80% | 1 21 | 1.0859 | 1.0921 | | | | |
| | 2 22 | 1.0897 | 1.0968 | | | | |
| | 3 23 | 1.1011 | 1.1072 | | | | |
| | 4 24 | 1.0933 | 1.0976 | | | | |
| | 5 25 | 1.10108 | 1.1116 | | | | |
| 100% | 1 26 | 1.0903 | 1.0961 | | | | |
| | 2 27 | 1.0760 | 1.0818 | | | | |
| | 3 28 | 1.0817 | 1.0872 | | | | |
| | 4 29 | 1.0692 | 1.0747 | | | | |
| | 5 30 | 1.0769 | 1.0821 | | | | |

* Test acceptance of control weight based on surviving larvae at end of test.

Calculated by: CETIS

Calculations checked by: EOB 8/4/23

BIO-ANALYTICAL LABORATORIES MINNOW LARVAL GROWTH DATA SHEET (Minnow3 Rev 2.1)

Project#/Client X8872 Magnolia Temp Start (°C) 80.6 Tech PM Date: 8/1/23 Time: MBJ
Temp End (°C) 106.2 Tech PM Date: 8/2/23 Time: 0850

| Conc. | Replicate/ Pan number | Wt. of pan(g)/ Date weighed: <u>7/25/23</u> Tech: <u>GM</u> | Wt. of pan + larvae(g)/ Date <u>8/5/23</u> weighed: Tech: <u>M</u> | Total wt. of larvae (g) | Original # of larvae at test initiation | Mean Dry wt. of larvae (mg) | Mean Dry wt. - surviving larvae (mg) Control Only* |
|-------|-----------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------|-----------------------------------------------|--------------------------------|-------------------------------------------------------------|
| 100% | 1 31 | 1.09810 | 1.1034 | | | | |
| | 2 32 | 1.0775 | 1.0814 | | | | |
| | 3 33 | 1.09177 | 1.1030 | | | | |
| | 4 34 | 1.0947 | 1.1020 | | | | |
| | 5 35 | 1.0773 | 1.0833 | | | | |
| | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | | | | | | |
| | 5 | | | | | | |
| | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | | | | | | |
| | 5 | | | | | | |
| | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | | | | | | |
| | 5 | | | | | | |
| | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | | | | | | |
| | 5 | | | | | | |

* Test acceptance of control weight based on surviving larvae at end of test.

Calculated by: CETIS

Calculations checked by: ELB 8/4/23

BIO-ANALYTICAL LABORATORIES CHRONIC WATER QUALITY DATA (CHR CHEM Rev.4.0)

Project# X8872 Client Magnolia Organism P. promelas

| Date | Day 0 7/26/23 5471 | Day 1 7/27/23 | Day 2 7/27/23 | Day 3 7/28/23 | Day 4 7/29/23 5475 | Day 5 7/30/23 | Day 6 7/31/23 | Day 7 8/1/23 | Day 8 |
|-----------------------------------|--------------------------|------------------|------------------|------------------|--------------------------|------------------|------------------|-----------------|-------|
| Concentration: | 0 soft | | | | | | | | |
| Temperature (°C) | 25.6 | 24.8 27.4 | 24.7 26.3 | 24.8 24.7 | 25.0 24.9 | 24.9 27.6 | 25.0 28.1 | 25.0 | |
| pH | 7.2 | 6.9 7.3 | 7.0 7.1 | 6.7 7.7 | 7.0 7.1 | 7.1 7.3 | 7.4 7.5 | 6.1 | |
| DO (mg/l) | 7.8 | 4.5 6.2 | 5.4 6.6 | 4.7 7.0 | 8.0 7.5 | 8.1 7.7 | 2.6 7.8 | 5.1 | |
| Cond (umhos/cm) | 205 | 285 | 315 | 290 | 190 | 200 | 205 | | |
| Concentration: | 32° | | | | | | | | |
| Temperature (°C) | 25.7 | 24.9 26.7 | 24.8 25.2 | 24.8 24.9 | 24.8 24.9 | 24.9 26.9 | 24.3 27.2 | 25.0 | |
| pH | 7.2 | 6.7 7.1 | 6.7 7.1 | 4.7 7.4 | 6.7 7.2 | 7.1 7.3 | 7.2 7.1 | 6.5 | |
| DO (mg/l) | 8.0 | 4.5 6.5 | 5.1 7.0 | 4.7 6.8 | 6.6 7.3 | 8.1 7.6 | 7.9 7.1 | 5.1 | |
| Cond (umhos/cm) | 280 | 290 | 325 | 310 | 315 | 305 | 275 | | |
| Concentration: | 42° | | | | | | | | |
| Temperature (°C) | 25.1 | 24.9 26.3 | 24.8 24.9 | 24.8 24.8 | 25.0 24.6 | 24.8 26.1 | 24.5 26.7 | 25.0 | |
| pH | 7.1 | 6.6 7.0 | 6.5 7.1 | 6.7 7.2 | 6.7 7.2 | 7.1 7.3 | 7.2 7.4 | 6.5 | |
| DO (mg/l) | 7.9 | 4.6 6.7 | 5.1 7.2 | 4.7 6.5 | 5.8 7.0 | 8.2 7.5 | 7.6 7.5 | 4.9 | |
| Cond (umhos/cm) | 280 | 290 | 330 | 315 | 330 | 335 | 290 | | |
| Prerenewal Tech Initials/Time | | EM 1205 | 1115 PM | 1350 M | 128 M | 1222 AM | 204 120 | PM 1440 | |
| Postrenewal Tech Initials/Time | 1025 AM | 1015 PM | 1025 PM | 1100 AM | 1110 AM | 1135 AM | 1044 1015 | | |

*AM
7/28/23

Control Alkalinity (mg/L as CaCO₃) Control Hardness (mg/L as CaCO₃)

ID# 5471 Result 24.0 Date Tested 7/20/23 ID# 5471 Result 48.0 Date Tested 7/20/23
 ID# 5475 Result 68.0 Date Tested 8/3/23 ID# 5475 Result 48.0 Date Tested 8/3/23
 ID# _____ Result _____ Date Tested _____ ID# _____ Result _____ Date Tested _____

Sample Alkalinity (mg/L as CaCO₃) Sample Hardness (mg/L as CaCO₃)

ID# C25321 Result 52.0 Date Tested 7/26/23 ID# C25321 Result 28.0 Date Tested 7/26/23
 ID# C25338 Result 44.0 Date Tested 7/26/23 ID# C25338 Result 32.0 Date Tested 7/26/23
 ID# C25348 Result 60.0 Date Tested 8/3/23 ID# C25348 Result 16.0 Date Tested 8/3/23

BIO-ANALYTICAL LABORATORIES CHRONIC WATER QUALITY DATA (CHR CHEM Rev.4.0)

Project# X8872 Client Magnolia

Organism P. promelas

| Date | Day 0 | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 |
|-----------------------------------|-----------|--------------|--------------|--------------|--------------|--------------|--------------|------------|-------|
| Concentration: <u>56%</u> | | | | | | | | | |
| Temperature (°C) | 24.6 | 24.9 23.8 | 24.8 24.3 | 24.8 24.6 | 25.1 24.6 | 24.9 25.6 | 24.6 26.0 | 24.6 | |
| pH | 7.1 | 6.5 6.8 | 6.5 7.0 | 6.8 7.0 | 6.7 7.0 | 6.9 7.1 | 7.2 7.3 | 6.4 | |
| DO (mg/l) | 8.0 | 4.4 6.8 | 5.1 7.4 | 4.4 6.6 | 5.7 6.8 | 8.0 7.3 | 7.9 7.5 | 5.1 | |
| Cond (umhos/cm) | 285 | 295 | 335 | 325 | 340 | 345 | 310 | | |
| Concentration: <u>80%</u> | | | | | | | | | |
| Temperature (°C) | 24.1 | 24.9 23.1 | 24.7 23.2 | 24.8 24.6 | 25.6 24.3 | 24.8 25.6 | 25.1 25.3 | 24.6 2 | |
| pH | 7.0 | 6.4 6.7 | 6.5 7.0 | 6.7 6.9 | 6.7 6.8 | 6.8 7.0 | 7.3 7.3 | 6.5 | |
| DO (mg/l) | 8.3 | 4.2 7.2 | 5.0 7.1 | 4.7 6.7 | 5.8 6.7 | 7.8 7.3 | 7.6 7.9 | 5.0 | |
| Cond (umhos/cm) | 295 | 300 | 345 | 345 | 350 | 365 | 345 | | |
| Concentration: <u>100%</u> | | | | | | | | | |
| Temperature (°C) | 23.6 | 25.0 24.4 | 24.7 21.5 | 24.8 24.6 | 25.1 24.0 | 24.8 24.7 | 24.6 24.9 | 24.4 | |
| pH | 6.8 | 6.4 6.5 | 6.4 6.9 | 6.7 6.6 | 6.7 6.8 | 6.8 7.0 | 7.3 7.2 | 6.5 | |
| DO (mg/l) | 8.5 | 4.8 7.5 | 5.2 8.4 | 4.7 6.8 | 5.6 6.6 | 7.6 7.4 | 7.3 7.6 | 5.2 | |
| Cond (umhos/cm) | 300 | 305 | 350 | 365 | 360 | 380 | 380 | | |
| Prerenewal Tech Initials/Time | | EM 1205 | 1115 PM | 1350 | 1218 M | 1222 M | EM 120 | PM 1440 | |
| Postrenewal Tech Initials/Time | 1025 M | 1015 PM | 1025 PM | 1100 M | 1110 M | 1135 M | EM 1045 | | |

Control Alkalinity (mg/L as CaCO₃)

Control Hardness (mg/L as CaCO₃)

ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____

ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____

Sample Alkalinity (mg/L as CaCO₃)

Sample Hardness (mg/L as CaCO₃)

ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____

ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____

BIO-ANALYTICAL LABORATORIES CHRONIC WATER QUALITY DATA (CHR CHEM Rev.4.0)

Project# X8872 Client Magnolia Organism P. promelas

| Date | Day 0 | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 |
|--------------------------------|--------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|--------------------------|-------|
| Concentration: <u>100% UV</u> | | | | | | | | | |
| Temperature (°C) | <u>24.9</u> | <u>25.0</u> <u>25.1</u> | <u>24.9</u> <u>24.4</u> | <u>24.7</u> <u>25.6</u> | <u>25.1</u> <u>24.7</u> | <u>24.7</u> <u>25.0</u> | <u>24.1</u> <u>23.9</u> | <u>24.4</u> | |
| pH | <u>6.8</u> | <u>6.4</u> <u>6.5</u> | <u>6.4</u> <u>6.6</u> | <u>6.5</u> <u>6.4</u> | <u>6.6</u> <u>6.5</u> | <u>6.7</u> <u>7.0</u> | <u>7.2</u> <u>7.3</u> | <u>5.6</u> | |
| DO (mg/l) | <u>8.2</u> | <u>5.2</u> <u>6.8</u> | <u>5.2</u> <u>6.2</u> | <u>5.0</u> <u>6.6</u> | <u>5.5</u> <u>6.4</u> | <u>7.4</u> <u>7.1</u> | <u>7.5</u> <u>7.6</u> | <u>6.7</u> | |
| Cond (umhos/cm) | <u>305</u> | <u>290</u> | <u>285</u> | <u>365</u> | <u>370</u> | <u>375</u> | <u>385</u> | | |
| Concentration: | | | | | | | | | |
| Temperature (°C) | | | | | | | | | |
| pH | | | | | | | | | |
| DO (mg/l) | | | | | | | | | |
| Cond (umhos/cm) | | | | | | | | | |
| Concentration: | | | | | | | | | |
| Temperature (°C) | | | | | | | | | |
| pH | | | | | | | | | |
| DO (mg/l) | | | | | | | | | |
| Cond (umhos/cm) | | | | | | | | | |
| Prerenewal Tech Initials/Time | | <u>EM</u> <u>1208</u> | <u>1115</u> <u>PM</u> | <u>1390</u> <u>AM</u> | <u>1218</u> <u>AM</u> | <u>1222</u> <u>AM</u> | <u>EM</u> <u>1120</u> | <u>1440</u> <u>PM</u> | |
| Postrenewal Tech Initials/Time | <u>1025</u> <u>AM</u> | <u>1015</u> <u>PM</u> | <u>1025</u> <u>AM</u> | <u>1100</u> <u>AM</u> | <u>1110</u> <u>AM</u> | <u>1135</u> <u>AM</u> | <u>EM</u> <u>1015</u> | | |

Control Alkalinity (mg/L as CaCO₃)

Control Hardness (mg/L as CaCO₃)

ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____

ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____

Sample Alkalinity (mg/L as CaCO₃)

Sample Hardness (mg/L as CaCO₃)

ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____

ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____
 ID# _____ Result _____ Date Tested _____

CETIS Test Data Worksheet

Report Date: 24 Jul-23 09:35 (p 1 of 1)
 Test Code/ID: 6188B1CF / 16-3634-8367

| | | | | | | | |
|-----------------------------------------------------------|-----------------|------------------|-------------------------|------------------------------------|-----------|--|--|
| Fathead Minnow 7-d Larval Survival and Growth Test | | | | Bio-Analytical Laboratories | | | |
| Start Date: | 25 Jul-23 09:35 | Species: | Pimephales promelas | Sample Code: | 30ED3C6F | | |
| End Date: | 01 Aug-23 09:35 | Protocol: | EPA/821/R-02-013 (2002) | Sample Source: | AR0043613 | | |
| Sample Date: | 24 Jul-23 09:35 | Material: | POTW Effluent | Sample Station: | 001 | | |

| Conc-% | Code | Rep | Pos | # Exposed | 1d Survival | 2d Survival | 3d Survival | 4d Survival | 5d Survival | 6d Survival | 7d Survival | Weight-mg Total | Weight-mg Tare | Pan Count | Notes |
|--------|------|-----|-----|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------|----------------|-----------|-------|
| 100 | | 1 | 1 | | | | | | | | | | | | |
| 101 | UV | 4 | 2 | | | | | | | | | | | | |
| 100 | | 2 | 3 | | | | | | | | | | | | |
| 101 | UV | 1 | 4 | | | | | | | | | | | | |
| 0 | D | 5 | 5 | | | | | | | | | | | | |
| 0 | D | 1 | 6 | | | | | | | | | | | | |
| 56 | | 1 | 7 | | | | | | | | | | | | |
| 0 | D | 2 | 8 | | | | | | | | | | | | |
| 101 | UV | 5 | 9 | | | | | | | | | | | | |
| 32 | | 2 | 10 | | | | | | | | | | | | |
| 56 | | 2 | 11 | | | | | | | | | | | | |
| 101 | UV | 2 | 12 | | | | | | | | | | | | |
| 100 | | 4 | 13 | | | | | | | | | | | | |
| 32 | | 1 | 14 | | | | | | | | | | | | |
| 0 | D | 4 | 15 | | | | | | | | | | | | |
| 32 | | 5 | 16 | | | | | | | | | | | | |
| 32 | | 3 | 17 | | | | | | | | | | | | |
| 0 | D | 3 | 18 | | | | | | | | | | | | |
| 80 | | 5 | 19 | | | | | | | | | | | | |
| 56 | | 4 | 20 | | | | | | | | | | | | |
| 100 | | 5 | 21 | | | | | | | | | | | | |
| 100 | | 3 | 22 | | | | | | | | | | | | |
| 32 | | 4 | 23 | | | | | | | | | | | | |
| 80 | | 1 | 24 | | | | | | | | | | | | |
| 101 | UV | 3 | 25 | | | | | | | | | | | | |
| 42 | | 4 | 26 | | | | | | | | | | | | |
| 56 | | 5 | 27 | | | | | | | | | | | | |
| 42 | | 1 | 28 | | | | | | | | | | | | |
| 80 | | 3 | 29 | | | | | | | | | | | | |
| 56 | | 3 | 30 | | | | | | | | | | | | |
| 80 | | 4 | 31 | | | | | | | | | | | | |
| 80 | | 2 | 32 | | | | | | | | | | | | |
| 42 | | 2 | 33 | | | | | | | | | | | | |
| 42 | | 5 | 34 | | | | | | | | | | | | |
| 42 | | 3 | 35 | | | | | | | | | | | | |

APPENDIX C
STATISTICAL ANALYSIS

CETIS Analytical Report

Report Date: 04 Aug-23 09:08 (p 1 of 2)
Test Code/ID: 2DD461E6 / 07-6889-3414

Ceriodaphnia 7-d Survival and Reproduction Test

Bio-Analytical Laboratories

| | | |
|-------------------------------|--------------------------------------------|--------------------------------------------|
| Analysis ID: 15-3845-5834 | Endpoint: 7d Survival Rate | CETIS Version: CETIS v2.1.5 |
| Analyzed: 04 Aug-23 9:08 | Analysis: STP 2xK Contingency Tables | Status Level: 1 |
| Edit Date: 04 Aug-23 8:57 | MD5 Hash: 7CAB7F2B529B5F33120A1C0A550A9723 | Editor ID: 008-522-314-5 |
| Batch ID: 00-0412-1669 | Test Type: Reproduction-Survival (2-8d) | Analyst: |
| Start Date: 23 Jul-23 10:55 | Protocol: EPA/821/R-02-013 (2002) | Diluent: Reconstituted Water |
| Ending Date: 01 Aug-23 16:50 | Species: Ceriodaphnia dubia | Brine: |
| Test Length: 9d 6h | Taxon: Branchiopoda | Source: In-House Culture Age: <24 |
| Sample ID: 09-8528-3742 | Code: X8872 | Project: WET Monthly Compliance Test (JUL) |
| Sample Date: 24 Jul-23 08:00 | Material: POTW Effluent | Source: AR0043613 |
| Receipt Date: 24 Jul-23 11:43 | CAS (PC): | Station: 001 |
| Sample Age: --- (8.3 °C) | Client: Magnolia Wastewater System | |

| Data Transform | Alt Hyp | NOEL | LOEL | TOEL | Tox Units |
|----------------|---------|------|------|------|-----------|
| Untransformed | C > T | 100 | >100 | -- | 1 |

Fisher Exact/Bonferroni-Holm Test

| Control | vs | Conc-% | Test Stat | P-Type | P-Value | Decision(α:5%) |
|----------------|----|--------|-----------|--------|---------|------------------------|
| Dilution Water | | 32 | 0.5000 | Exact | 1.0000 | Non-Significant Effect |
| | | 42 | 0.7632 | Exact | 1.0000 | Non-Significant Effect |
| | | 56 | 0.7632 | Exact | 1.0000 | Non-Significant Effect |
| | | 80 | 1.0000 | Exact | 1.0000 | Non-Significant Effect |
| | | 100 | 1.0000 | Exact | 1.0000 | Non-Significant Effect |

7d Survival Rate Frequencies

| Conc-% | Code | NR | R | NR + R | Prop NR | Prop R | %Effect |
|--------|------|----|---|--------|---------|--------|---------|
| 0 | D | 9 | 1 | 10 | 0.9000 | 0.1000 | 0.00% |
| 32 | | 8 | 2 | 10 | 0.8000 | 0.2000 | 11.11% |
| 42 | | 9 | 1 | 10 | 0.9000 | 0.1000 | 0.00% |
| 56 | | 9 | 1 | 10 | 0.9000 | 0.1000 | 0.00% |
| 80 | | 10 | 0 | 10 | 1.0000 | 0.0000 | -11.11% |
| 100 | | 10 | 0 | 10 | 1.0000 | 0.0000 | -11.11% |

7d Survival Rate Summary

| Conc-% | Code | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|--------|------|-------|--------|---------|---------|--------|--------|--------|---------|--------|---------|
| 0 | D | 10 | 0.9000 | 0.6738 | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 0.1000 | 35.14% | 0.00% |
| 32 | | 10 | 0.8000 | 0.4984 | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 0.1333 | 52.70% | 11.11% |
| 42 | | 10 | 0.9000 | 0.6738 | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 0.1000 | 35.14% | 0.00% |
| 56 | | 10 | 0.9000 | 0.6738 | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 0.1000 | 35.14% | 0.00% |
| 80 | | 10 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 | 0.00% | -11.11% |
| 100 | | 10 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 | 0.00% | -11.11% |

7d Survival Rate Detail

| Conc-% | Code | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 | Rep 7 | Rep 8 | Rep 9 | Rep 10 |
|--------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0 | D | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 32 | | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 0.0000 | 1.0000 | 1.0000 |
| 42 | | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 56 | | 1.0000 | 0.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 80 | | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 100 | | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

ELB
8/4/23

CETIS Analytical Report

Report Date: 04 Aug-23 09:08 (p 2 of 2)
 Test Code/ID: 2DD461E6 / 07-6889-3414

Ceriodaphnia 7-d Survival and Reproduction Test

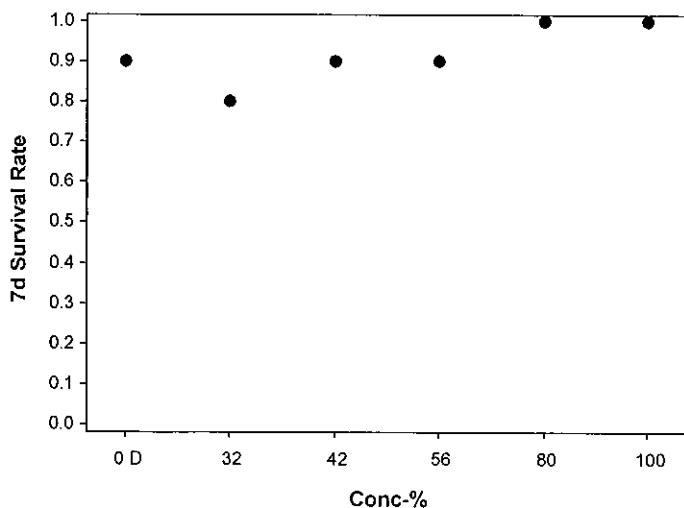
Bio-Analytical Laboratories

| | | |
|---------------------------|--------------------------------------------|-----------------------------|
| Analysis ID: 15-3845-5834 | Endpoint: 7d Survival Rate | CETIS Version: CETIS v2.1.5 |
| Analyzed: 04 Aug-23 9:08 | Analysis: STP 2xK Contingency Tables | Status Level: 1 |
| Edit Date: 04 Aug-23 8:57 | MD5 Hash: 7CAB7F2B529B5F33120A1C0A550A9723 | Editor ID: 008-522-314-5 |

7d Survival Rate Binomials

| Conc-% | Code | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 | Rep 7 | Rep 8 | Rep 9 | Rep 10 |
|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| 0 | D | 1/1 | 1/1 | 0/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 |
| 32 | | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 0/1 | 1/1 | 0/1 | 1/1 | 1/1 |
| 42 | | 1/1 | 1/1 | 1/1 | 1/1 | 0/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 |
| 56 | | 1/1 | 0/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 |
| 80 | | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 |
| 100 | | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 |

Graphics



EUB
8/4/23

CETIS Analytical Report

Report Date: 04 Aug-23 09:09 (p 1 of 2)
 Test Code/ID: 2DD461E6 / 07-6889-3414

Ceriodaphnia 7-d Survival and Reproduction Test **SURVIVING** Bio-Analytical Laboratories

Analysis ID: 01-7821-9517 Endpoint: Reproduction CETIS Version: CETIS v2.1.5
 Analyzed: 04 Aug-23 9:08 Analysis: Parametric-Multiple Comparison Status Level: 1
 Edit Date: 04 Aug-23 8:57 MD5 Hash: C394006A3BCE9BF91254A51233CE53C7 Editor ID: 008-522-314-5

Batch ID: 00-0412-1669 Test Type: Reproduction-Survival (2-8d) Analyst:
 Start Date: 23 Jul-23 10:55 Protocol: EPA/821/R-02-013 (2002) Diluent: Reconstituted Water
 Ending Date: 01 Aug-23 16:50 Species: Ceriodaphnia dubia Brine:
 Test Length: 9d 6h Taxon: Branchiopoda Source: In-House Culture Age: <24

Sample ID: 09-8528-3742 Code: X8872 Project: WET Monthly Compliance Test (JUL)
 Sample Date: 24 Jul-23 08:00 Material: POTW Effluent Source: AR0043613
 Receipt Date: 24 Jul-23 11:43 CAS (PC): Station: 001
 Sample Age: -- (8.3 °C) Client: Magnolia Wastewater System

| Data Transform | Alt Hyp | NOEL | LOEL | TOEL | Tox Units | MSDu | PMSD |
|----------------|---------|------|------|------|-----------|-------|--------|
| Untransformed | C > T | 100 | >100 | --- | 1 | 5.336 | 25.14% |

Bonferroni Adj t Test

| Control | vs | Conc-% | df | Test Stat | Critical | MSD | P-Type | P-Value | Decision(α:5%) |
|----------------|----|--------|----|-----------|----------|-------|--------|---------|------------------------|
| Dilution Water | | 32 | 15 | 0.734 | 2.405 | 5.643 | CDF | 1.0000 | Non-Significant Effect |
| | | 42 | 16 | 0.1952 | 2.405 | 5.475 | CDF | 1.0000 | Non-Significant Effect |
| | | 56 | 16 | 0.6345 | 2.405 | 5.475 | CDF | 1.0000 | Non-Significant Effect |
| | | 80 | 17 | -0.9815 | 2.405 | 5.336 | CDF | 1.0000 | Non-Significant Effect |
| | | 100 | 17 | -0.2604 | 2.405 | 5.336 | CDF | 1.0000 | Non-Significant Effect |

ANOVA Table

| Source | Sum Squares | Mean Square | DF | F Stat | P-Value | Decision(α:5%) |
|---------|-------------|-------------|----|--------|---------|------------------------|
| Between | 94.8606 | 18.9721 | 5 | 0.8136 | 0.5458 | Non-Significant Effect |
| Error | 1142.67 | 23.3197 | 49 | | | |
| Total | 1237.53 | | 54 | | | |

ANOVA Assumptions Tests

| Attribute | Test | Test Stat | Critical | P-Value | Decision(α:1%) |
|--------------|------------------------------------|-----------|----------|---------|---------------------|
| Variance | Bartlett Equality of Variance Test | 1.736 | 15.09 | 0.8843 | Equal Variances |
| Distribution | Shapiro-Wilk W Normality Test | 0.9856 | 0.9417 | 0.7491 | Normal Distribution |

Reproduction Summary

| Conc-% | Code | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|--------|------|-------|-------|---------|---------|--------|-----|-----|---------|--------|---------|
| 0 | D | 9 | 21.22 | 18.18 | 24.27 | 20 | 17 | 28 | 1.321 | 18.67% | 0.00% |
| 32 | | 8 | 19.5 | 15.71 | 23.29 | 21 | 13 | 27 | 1.604 | 23.26% | 8.12% |
| 42 | | 9 | 20.78 | 17.48 | 24.08 | 22 | 13 | 26 | 1.432 | 20.67% | 2.09% |
| 56 | | 9 | 19.78 | 16.32 | 23.23 | 20 | 12 | 25 | 1.498 | 22.72% | 6.81% |
| 80 | | 10 | 23.4 | 19.57 | 27.23 | 24.5 | 12 | 31 | 1.694 | 22.90% | -10.26% |
| 100 | | 10 | 21.8 | 17.63 | 25.97 | 22.5 | 12 | 32 | 1.843 | 26.73% | -2.72% |

Reproduction Detail

| Conc-% | Code | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 | Rep 7 | Rep 8 | Rep 9 | Rep 10 |
|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| 0 | D | 19 | 20 | 22 | 18 | 17 | 18 | 27 | 22 | 28 | |
| 32 | | 21 | 13 | 16 | 15 | 21 | 21 | 22 | 27 | | |
| 42 | | 22 | 18 | 16 | 13 | 23 | 23 | 21 | 26 | 25 | |
| 56 | | 20 | 24 | 14 | 20 | 25 | 21 | 18 | 12 | 24 | |
| 80 | | 23 | 22 | 29 | 25 | 31 | 25 | 24 | 25 | 12 | 18 |
| 100 | | 32 | 15 | 12 | 22 | 24 | 19 | 23 | 19 | 25 | 27 |

EWB
8/4/23

CETIS Analytical Report

Report Date: 04 Aug-23 09:09 (p 1 of 2)
Test Code/ID: 2DD461E6 / 07-6889-3414

Ceriodaphnia 7-d Survival and Reproduction Test

Bio-Analytical Laboratories

| | | |
|-------------------------------|-----------------------------------------------|--------------------------------------------|
| Analysis ID: 16-3618-4620 | Endpoint: Reproduction | CETIS Version: CETIS v2.1.5 |
| Analyzed: 04 Aug-23 9:09 | Analysis: Nonparametric-Control vs Treatments | Status Level: 1 |
| Edit Date: 04 Aug-23 8:57 | MD5 Hash: 304AB0541BA4EB008F87A6A1B44AB13F | Editor ID: 008-522-314-5 |
| Batch ID: 00-0412-1669 | Test Type: Reproduction-Survival (2-8d) | Analyst: |
| Start Date: 23 Jul-23 10:55 | Protocol: EPA/821/R-02-013 (2002) | Diluent: Reconstituted Water |
| Ending Date: 01 Aug-23 16:50 | Species: Ceriodaphnia dubia | Brine: |
| Test Length: 9d 6h | Taxon: Branchiopoda | Source: In-House Culture Age: <24 |
| Sample ID: 09-8528-3742 | Code: X8872 | Project: WET Monthly Compliance Test (JUL) |
| Sample Date: 24 Jul-23 08:00 | Material: POTW Effluent | Source: AR0043613 |
| Receipt Date: 24 Jul-23 11:43 | CAS (PC): | Station: 001 |
| Sample Age: -- (8.3 °C) | Client: Magnolia Wastewater System | |

| Data Transform | Alt Hyp | NOEL | LOEL | TOEL | Tox Units | MSDu | PMSD |
|----------------|---------|------|------|------|-----------|-------|--------|
| Untransformed | C > T | 100 | >100 | --- | 1 | 7.328 | 38.37% |

Steel Many-One Rank Sum Test

| Control | vs | Conc-% | df | Test Stat | Critical | Ties | P-Type | P-Value | Decision(α:5%) |
|----------------|----|--------|----|-----------|----------|------|--------|---------|------------------------|
| Dilution Water | | 32 | 18 | 93 | 75 | 3 | CDF | 0.4569 | Non-Significant Effect |
| | | 42 | 18 | 106 | 75 | 2 | CDF | 0.8549 | Non-Significant Effect |
| | | 56 | 18 | 101.5 | 75 | 3 | CDF | 0.7427 | Non-Significant Effect |
| | | 80 | 18 | 126 | 75 | 2 | CDF | 0.9980 | Non-Significant Effect |
| | | 100 | 18 | 115.5 | 75 | 3 | CDF | 0.9727 | Non-Significant Effect |

ANOVA Table

| Source | Sum Squares | Mean Square | DF | F Stat | P-Value | Decision(α:5%) |
|---------|-------------|-------------|----|--------|---------|------------------------|
| Between | 375.933 | 75.1867 | 5 | 1.467 | 0.2158 | Non-Significant Effect |
| Error | 2767 | 51.2407 | 54 | | | |
| Total | 3142.93 | | 59 | | | |

ANOVA Assumptions Tests

| Attribute | Test | Test Stat | Critical | P-Value | Decision(α:1%) |
|--------------|------------------------------------|-----------|----------|---------|-------------------------|
| Variance | Bartlett Equality of Variance Test | 2.813 | 15.09 | 0.7288 | Equal Variances |
| Distribution | Shapiro-Wilk W Normality Test | 0.9092 | 0.9459 | 0.0003 | Non-Normal Distribution |

Reproduction Summary

| Conc-% | Code | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|--------|------|-------|------|---------|---------|--------|-----|-----|---------|--------|---------|
| 0 | D | 10 | 19.1 | 13.61 | 24.59 | 19.5 | 0 | 28 | 2.429 | 40.21% | 0.00% |
| 32 | | 10 | 15.8 | 9.52 | 22.08 | 18.5 | 0 | 27 | 2.776 | 55.56% | 17.28% |
| 42 | | 10 | 18.9 | 13.76 | 24.04 | 21.5 | 2 | 26 | 2.273 | 38.03% | 1.05% |
| 56 | | 10 | 17.8 | 12.4 | 23.2 | 20 | 0 | 25 | 2.389 | 42.44% | 6.81% |
| 80 | | 10 | 23.4 | 19.57 | 27.23 | 24.5 | 12 | 31 | 1.694 | 22.90% | -22.51% |
| 100 | | 10 | 21.8 | 17.63 | 25.97 | 22.5 | 12 | 32 | 1.843 | 26.73% | -14.14% |

Reproduction Detail

| Conc-% | Code | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 | Rep 7 | Rep 8 | Rep 9 | Rep 10 |
|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| 0 | D | 19 | 20 | 0 | 22 | 18 | 17 | 18 | 27 | 22 | 28 |
| 32 | | 21 | 13 | 16 | 15 | 21 | 0 | 21 | 2 | 22 | 27 |
| 42 | | 22 | 18 | 16 | 13 | 2 | 23 | 23 | 21 | 26 | 25 |
| 56 | | 20 | 0 | 24 | 14 | 20 | 25 | 21 | 18 | 12 | 24 |
| 80 | | 23 | 22 | 29 | 25 | 31 | 25 | 24 | 25 | 12 | 18 |
| 100 | | 32 | 15 | 12 | 22 | 24 | 19 | 23 | 19 | 25 | 27 |

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CETIS Analytical Report

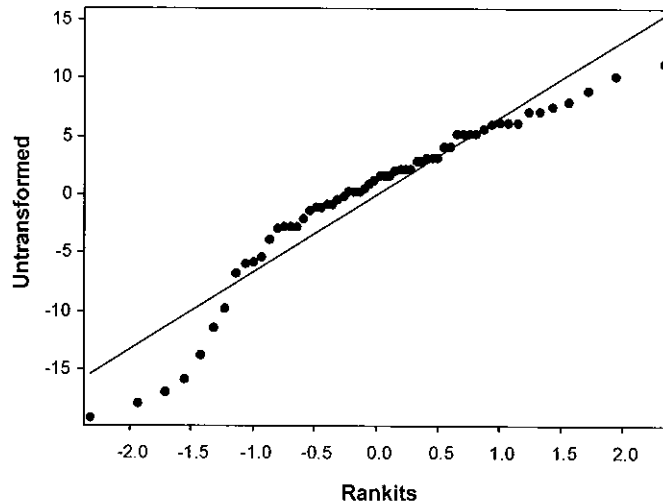
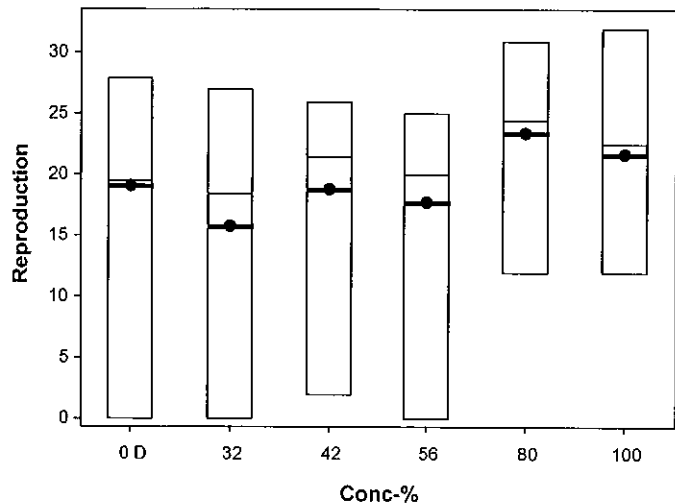
Report Date: 04 Aug-23 09:09 (p 2 of 2)
Test Code/ID: 2DD461E6 / 07-6889-3414

Ceriodaphnia 7-d Survival and Reproduction Test

Bio-Analytical Laboratories

| | | |
|---------------------------|-----------------------------------------------|-----------------------------|
| Analysis ID: 16-3618-4620 | Endpoint: Reproduction | CETIS Version: CETIS v2.1.5 |
| Analyzed: 04 Aug-23 9:09 | Analysis: Nonparametric-Control vs Treatments | Status Level: 1 |
| Edit Date: 04 Aug-23 8:57 | MD5 Hash: 304AB0541BA4EB008F87A6A1B44AB13F | Editor ID: 008-522-314-5 |

Graphics



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8/4/23

CETIS Analytical Report

Report Date: 04 Aug-23 09:09 (p 1 of 2)
 Test Code/ID: 2DD461E6 / 07-6889-3414

Ceriodaphnia 7-d Survival and Reproduction Test **Bio-Analytical Laboratories**

| | | |
|-------------------------------|--------------------------------------------|-------------------------------------------------------------------------|
| Analysis ID: 10-4598-6436 | Endpoint: Reproduction | CETIS Version: CETIS v2.1.5 |
| Analyzed: 04 Aug-23 9:09 | Analysis: Linear Interpolation (ICPIN) | Status Level: 1 |
| Edit Date: 04 Aug-23 8:57 | MD5 Hash: 304AB0541BA4EB008F87A6A1B44AB13F | Editor ID: 008-522-314-5 |
| Batch ID: 00-0412-1669 | Test Type: Reproduction-Survival (2-8d) | Analyst: |
| Start Date: 23 Jul-23 10:55 | Protocol: EPA/821/R-02-013 (2002) | Diluent: Reconstituted Water |
| Ending Date: 01 Aug-23 16:50 | Species: Ceriodaphnia dubia | Brine: |
| Test Length: 9d 6h | Taxon: Branchiopoda | Source: In-House Culture Age: <24 |
| Sample ID: 09-8528-3742 | Code: X8872 | Project: WET Monthly Compliance Test (JUL) |
| Sample Date: 24 Jul-23 08:00 | Material: POTW Effluent | Source: AR0043613 |
| Receipt Date: 24 Jul-23 11:43 | CAS (PC): | Station: 001 |
| Sample Age: --- (8.3 °C) | Client: Magnolia Wastewater System | |

Linear Interpolation Options

| X Transform | Y Transform | Seed | Resamples | Exp 95% CL | Method |
|-------------|-------------|---------|-----------|------------|-------------------------|
| Linear | Linear | 1778319 | 1000 | Yes | Two-Point Interpolation |

Point Estimates

| Level | % | 95% LCL | 95% UCL | Tox Units | 95% LCL | 95% UCL |
|-------|------|---------|---------|-----------|---------|---------|
| IC15 | >100 | --- | --- | <1 | --- | --- |
| IC20 | >100 | --- | --- | <1 | --- | --- |
| IC25 | >100 | --- | --- | <1 | --- | --- |
| IC40 | >100 | --- | --- | <1 | --- | --- |
| IC50 | >100 | --- | --- | <1 | --- | --- |

| Reproduction Summary | | | Calculated Variate | | | | | | Isotonic Variate | |
|----------------------|------|-------|--------------------|--------|-----|-----|--------|---------|------------------|---------|
| Conc-% | Code | Count | Mean | Median | Min | Max | CV% | %Effect | Mean | %Effect |
| 0 | D | 10 | 19.1 | 19.5 | 0 | 28 | 40.21% | 0.00% | 19.47 | 0.00% |
| 32 | | 10 | 15.8 | 18.5 | 0 | 27 | 55.56% | 17.28% | 19.47 | 0.00% |
| 42 | | 10 | 18.9 | 21.5 | 2 | 26 | 38.03% | 1.05% | 19.47 | 0.00% |
| 56 | | 10 | 17.8 | 20 | 0 | 25 | 42.44% | 6.81% | 19.47 | 0.00% |
| 80 | | 10 | 23.4 | 24.5 | 12 | 31 | 22.90% | -22.51% | 19.47 | 0.00% |
| 100 | | 10 | 21.8 | 22.5 | 12 | 32 | 26.73% | -14.14% | 19.47 | 0.00% |

Reproduction Detail

| Conc-% | Code | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 | Rep 7 | Rep 8 | Rep 9 | Rep 10 |
|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| 0 | D | 19 | 20 | 0 | 22 | 18 | 17 | 18 | 27 | 22 | 28 |
| 32 | | 21 | 13 | 16 | 15 | 21 | 0 | 21 | 2 | 22 | 27 |
| 42 | | 22 | 18 | 16 | 13 | 2 | 23 | 23 | 21 | 26 | 25 |
| 56 | | 20 | 0 | 24 | 14 | 20 | 25 | 21 | 18 | 12 | 24 |
| 80 | | 23 | 22 | 29 | 25 | 31 | 25 | 24 | 25 | 12 | 18 |
| 100 | | 32 | 15 | 12 | 22 | 24 | 19 | 23 | 19 | 25 | 27 |

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CETIS Analytical Report

X8872
ADEQ 880630
Page 37 of 59

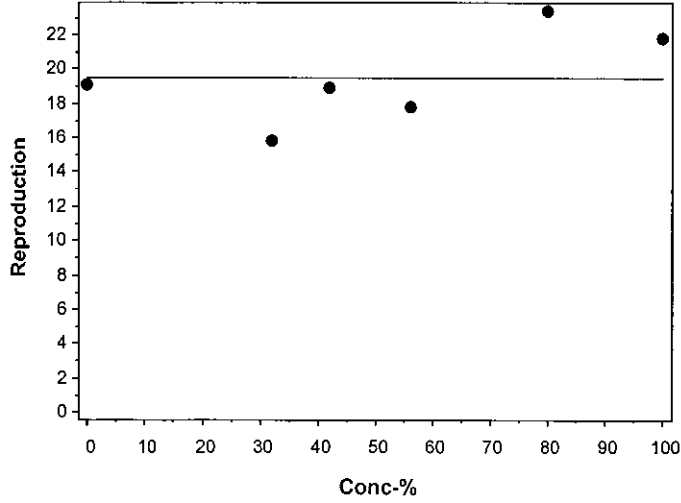
Report Date: 04 Aug-23 09:09 (p 2 of 2)
Test Code/ID: 2DD461E6 / 07-6889-3414

Ceriodaphnia 7-d Survival and Reproduction Test

Bio-Analytical Laboratories

| | | |
|---------------------------|--------------------------------------------|-----------------------------|
| Analysis ID: 10-4598-6436 | Endpoint: Reproduction | CETIS Version: CETIS v2.1.5 |
| Analyzed: 04 Aug-23 9:09 | Analysis: Linear Interpolation (ICPIN) | Status Level: 1 |
| Edit Date: 04 Aug-23 8:57 | MD5 Hash: 304AB0541BA4EB008F87A6A1B44AB13F | Editor ID: 008-522-314-5 |

Graphics



ECB
8/4/23

CETIS Analytical Report

Report Date: 04 Aug-23 09:20 (p 1 of 3)
Test Code/ID: 6188B1CF / 16-3634-8367

Fathead Minnow 7-d Larval Survival and Growth Test

Bio-Analytical Laboratories

| | | |
|-------------------------------|--------------------------------------------|--------------------------------------------|
| Analysis ID: 07-8591-0053 | Endpoint: 7d Survival Rate | CETIS Version: CETIS v2.1.5 |
| Analyzed: 04 Aug-23 9:20 | Analysis: Parametric-Control vs Treatments | Status Level: 1 |
| Edit Date: 04 Aug-23 9:12 | MD5 Hash: 81A1C250F9BFFA2E7A7212A8611D7971 | Editor ID: 008-522-314-5 |
| Batch ID: 03-0837-1396 | Test Type: Growth-Survival (7d) | Analyst: |
| Start Date: 25 Jul-23 15:21 | Protocol: EPA/821/R-02-013 (2002) | Diluent: Reconstituted Water |
| Ending Date: 01 Aug-23 14:30 | Species: Pimephales promelas | Brine: |
| Test Length: 6d 23h | Taxon: Actinopterygii | Source: Aquatic Biosystems, CO Age: <48 |
| Sample ID: 08-2085-3871 | Code: X8872 | Project: WET Monthly Compliance Test (JUL) |
| Sample Date: 24 Jul-23 08:00 | Material: POTW Effluent | Source: AR0043613 |
| Receipt Date: 24 Jul-23 11:43 | CAS (PC): | Station: 001 |
| Sample Age: 31h (8.3 °C) | Client: Magnolia Wastewater System | |

| Data Transform | Alt Hyp | NOEL | LOEL | TOEL | Tox Units | MSDu | PMSD |
|---------------------|---------|------|------|------|-----------|--------|--------|
| Angular (Corrected) | C > T | 101 | 101 | -- | 1 | 0.1351 | 13.86% |

Dunnnett Multiple Comparison Test

| Control | vs | Conc-% | df | Test Stat | Critical | MSD | P-Type | P-Value | Decision(α:5%) |
|----------------|----|--------|----|-----------|----------|--------|--------|---------|------------------------|
| Dilution Water | | 32 | 8 | 0 | 2.407 | 0.1972 | CDF | 0.8571 | Non-Significant Effect |
| | | 42 | 8 | 0.8968 | 2.407 | 0.1972 | CDF | 0.5000 | Non-Significant Effect |
| | | 56 | 8 | 1.624 | 2.407 | 0.1972 | CDF | 0.2048 | Non-Significant Effect |
| | | 80 | 8 | 0.8968 | 2.407 | 0.1972 | CDF | 0.5000 | Non-Significant Effect |
| | | 100 | 8 | 0.8445 | 2.407 | 0.1972 | CDF | 0.5244 | Non-Significant Effect |
| | | 100 | 8 | 2.137 | 2.407 | 0.1972 | CDF | 0.0851 | Non-Significant Effect |

Test Acceptability Criteria

| Attribute | Test Stat | TAC Limits | | Overlap | Decision |
|--------------|-----------|------------|-------|---------|-----------------|
| | | Lower | Upper | | |
| Control Resp | 0.975 | 0.8 | >> | Yes | Passes Criteria |

ANOVA Table

| Source | Sum Squares | Mean Square | DF | F Stat | P-Value | Decision(α:5%) |
|---------|-------------|-------------|----|--------|---------|------------------------|
| Between | 0.12335 | 0.0205583 | 6 | 1.225 | 0.3231 | Non-Significant Effect |
| Error | 0.469716 | 0.0167756 | 28 | | | |
| Total | 0.593066 | | 34 | | | |

ANOVA Assumptions Tests

| Attribute | Test | Test Stat | Critical | P-Value | Decision(α:1%) |
|--------------|------------------------------------|-----------|----------|---------|---------------------|
| Variance | Bartlett Equality of Variance Test | 5.18 | 16.81 | 0.5210 | Equal Variances |
| Distribution | Shapiro-Wilk W Normality Test | 0.9526 | 0.9146 | 0.1360 | Normal Distribution |

7d Survival Rate Summary

| Conc-% | Code | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|--------|------|-------|--------|---------|---------|--------|--------|--------|---------|--------|---------|
| 0 | D | 5 | 0.9750 | 0.9056 | 1.0000 | 1.0000 | 0.8750 | 1.0000 | 0.0250 | 5.73% | 0.00% |
| 32 | | 5 | 0.9750 | 0.9056 | 1.0000 | 1.0000 | 0.8750 | 1.0000 | 0.0250 | 5.73% | 0.00% |
| 42 | | 5 | 0.9250 | 0.8400 | 1.0000 | 0.8750 | 0.8750 | 1.0000 | 0.0306 | 7.40% | 5.13% |
| 56 | | 5 | 0.8750 | 0.6849 | 1.0000 | 0.8750 | 0.6250 | 1.0000 | 0.0685 | 17.50% | 10.26% |
| 80 | | 5 | 0.9250 | 0.8400 | 1.0000 | 0.8750 | 0.8750 | 1.0000 | 0.0306 | 7.40% | 5.13% |
| 100 | | 5 | 0.9250 | 0.7862 | 1.0000 | 1.0000 | 0.7500 | 1.0000 | 0.0500 | 12.09% | 5.13% |
| 100 | | 5 | 0.8500 | 0.7201 | 0.9799 | 0.8750 | 0.7500 | 1.0000 | 0.0468 | 12.30% | 12.82% |

OCB
8/4/23

CETIS Analytical Report

Fathead Minnow 7-d Larval Survival and Growth Test

Bio-Analytical Laboratories

Analysis ID: 07-8591-0053 Endpoint: 7d Survival Rate CETIS Version: CETIS v2.1.5
 Analyzed: 04 Aug-23 9:20 Analysis: Parametric-Control vs Treatments Status Level: 1
 Edit Date: 04 Aug-23 9:12 MD5 Hash: 81A1C250F9BFFA2E7A7212A8611D7971 Editor ID: 008-522-314-5

Angular (Corrected) Transformed Summary

| Conc-% | Code | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|--------|------|-------|--------|---------|---------|--------|--------|--------|---------|--------|---------|
| 0 | D | 5 | 1.3560 | 1.2540 | 1.4580 | 1.3930 | 1.2090 | 1.3930 | 0.0367 | 6.06% | 0.00% |
| 32 | | 5 | 1.3560 | 1.2540 | 1.4580 | 1.3930 | 1.2090 | 1.3930 | 0.0367 | 6.06% | 0.00% |
| 42 | | 5 | 1.2830 | 1.1580 | 1.4080 | 1.2090 | 1.2090 | 1.3930 | 0.0450 | 7.84% | 5.42% |
| 56 | | 5 | 1.2230 | 0.9788 | 1.4680 | 1.2090 | 0.9117 | 1.3930 | 0.0881 | 16.10% | 9.81% |
| 80 | | 5 | 1.2830 | 1.1580 | 1.4080 | 1.2090 | 1.2090 | 1.3930 | 0.0450 | 7.84% | 5.42% |
| 100 | | 5 | 1.2870 | 1.0940 | 1.4810 | 1.3930 | 1.0470 | 1.3930 | 0.0697 | 12.12% | 5.10% |
| 101 | | 5 | 1.1810 | 1.0030 | 1.3590 | 1.2090 | 1.0470 | 1.3930 | 0.0642 | 12.15% | 12.91% |

7d Survival Rate Detail

| Conc-% | Code | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 |
|--------|------|--------|--------|--------|--------|--------|
| 0 | D | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.8750 |
| 32 | | 0.8750 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 42 | | 1.0000 | 0.8750 | 0.8750 | 1.0000 | 0.8750 |
| 56 | | 0.8750 | 1.0000 | 0.8750 | 0.6250 | 1.0000 |
| 80 | | 1.0000 | 1.0000 | 0.8750 | 0.8750 | 0.8750 |
| 100 | | 0.8750 | 1.0000 | 0.7500 | 1.0000 | 1.0000 |
| 101 | | 0.7500 | 0.7500 | 0.8750 | 1.0000 | 0.8750 |

Angular (Corrected) Transformed Detail

| Conc-% | Code | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 |
|--------|------|--------|--------|--------|--------|--------|
| 0 | D | 1.3930 | 1.3930 | 1.3930 | 1.3930 | 1.2090 |
| 32 | | 1.2090 | 1.3930 | 1.3930 | 1.3930 | 1.3930 |
| 42 | | 1.3930 | 1.2090 | 1.2090 | 1.3930 | 1.2090 |
| 56 | | 1.2090 | 1.3930 | 1.2090 | 0.9117 | 1.3930 |
| 80 | | 1.3930 | 1.3930 | 1.2090 | 1.2090 | 1.2090 |
| 100 | | 1.2090 | 1.3930 | 1.0470 | 1.3930 | 1.3930 |
| 101 | | 1.0470 | 1.0470 | 1.2090 | 1.3930 | 1.2090 |

7d Survival Rate Binomials

| Conc-% | Code | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 |
|--------|------|-------|-------|-------|-------|-------|
| 0 | D | 8/8 | 8/8 | 8/8 | 8/8 | 7/8 |
| 32 | | 7/8 | 8/8 | 8/8 | 8/8 | 8/8 |
| 42 | | 8/8 | 7/8 | 7/8 | 8/8 | 7/8 |
| 56 | | 7/8 | 8/8 | 7/8 | 5/8 | 8/8 |
| 80 | | 8/8 | 8/8 | 7/8 | 7/8 | 7/8 |
| 100 | | 7/8 | 8/8 | 6/8 | 8/8 | 8/8 |
| 101 | | 6/8 | 6/8 | 7/8 | 8/8 | 7/8 |

DEUB
8/4/23

CETIS Analytical Report

Report Date:
Test Code/ID:

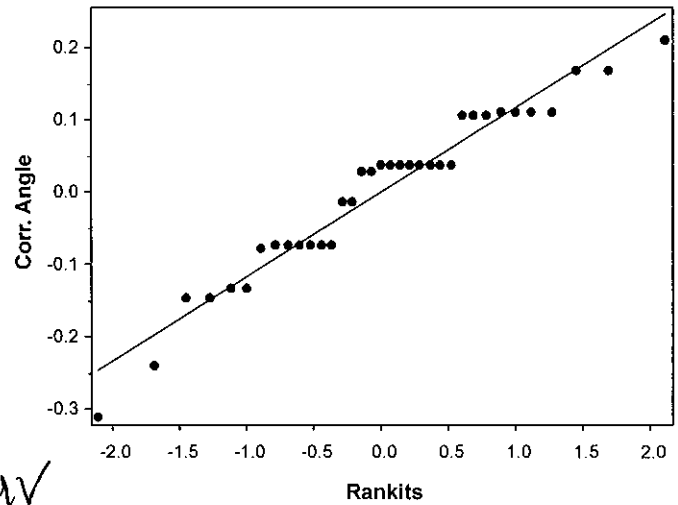
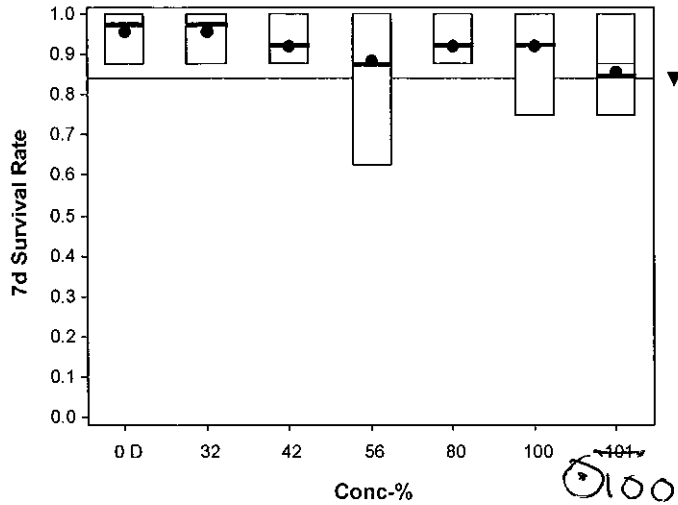
X8872
ADEQ 880630
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04 Aug-23 09:20 (p 3 of 3)
6188B1CF / 16-3634-8367

Fathead Minnow 7-d Larval Survival and Growth Test

Bio-Analytical Laboratories

| | | |
|---------------------------|--------------------------------------------|-----------------------------|
| Analysis ID: 07-8591-0053 | Endpoint: 7d Survival Rate | CETIS Version: CETIS v2.1.5 |
| Analyzed: 04 Aug-23 9:20 | Analysis: Parametric-Control vs Treatments | Status Level: 1 |
| Edit Date: 04 Aug-23 9:12 | MD5 Hash: 81A1C250F9BFFA2E7A7212A8611D7971 | Editor ID: 008-522-314-5 |

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8/4/23

CETIS Analytical Report

| Fathead Minnow 7-d Larval Survival and Growth Test | | | Bio-Analytical Laboratories | | |
|----------------------------------------------------|--------------------------------------------|--------------------------------------------|-----------------------------|--|--|
| Analysis ID: 04-8507-2696 | Endpoint: Mean Dry Biomass-mg | CETIS Version: CETIS v2.1.5 | | | |
| Analyzed: 04 Aug-23 9:21 | Analysis: Parametric-Control vs Treatments | Status Level: 1 | | | |
| Edit Date: 04 Aug-23 9:12 | MD5 Hash: 4FA241FCD25E0E609915FB451BCE671D | Editor ID: 008-522-314-5 | | | |
| Batch ID: 03-0837-1396 | Test Type: Growth-Survival (7d) | Analyst: | | | |
| Start Date: 25 Jul-23 15:21 | Protocol: EPA/821/R-02-013 (2002) | Diluent: Reconstituted Water | | | |
| Ending Date: 01 Aug-23 14:30 | Species: Pimephales promelas | Brine: | | | |
| Test Length: 6d 23h | Taxon: Actinopterygii | Source: Aquatic Biosystems, CO Age: <48 | | | |
| Sample ID: 08-2085-3871 | Code: X8872 | Project: WET Monthly Compliance Test (JUL) | | | |
| Sample Date: 24 Jul-23 08:00 | Material: POTW Effluent | Source: AR0043613 | | | |
| Receipt Date: 24 Jul-23 11:43 | CAS (PC): | Station: 001 | | | |
| Sample Age: 31h (8.3 °C) | Client: Magnolia Wastewater System | | | | |

| Data Transform | Alt Hyp | NOEL | LOEL | TOEL | Tox Units | MSDu | PMSD |
|----------------|---------|------|------|------|-----------|--------|--------|
| Untransformed | C > T | 101 | >101 | --- | 1 | 0.2072 | 32.12% |

Dunnett Multiple Comparison Test

| Control | vs | Conc-% | df | Test Stat | Critical | MSD | P-Type | P-Value | Decision(α:5%) |
|----------------|----|--------|----|-----------|----------|--------|--------|---------|------------------------|
| Dilution Water | | 32 | 8 | -1.424 | 2.407 | 0.2072 | CDF | 0.9968 | Non-Significant Effect |
| | | 42 | 8 | -0.5811 | 2.407 | 0.2072 | CDF | 0.9608 | Non-Significant Effect |
| | | 56 | 8 | -0.4357 | 2.407 | 0.2072 | CDF | 0.9439 | Non-Significant Effect |
| | | 80 | 8 | -0.7844 | 2.407 | 0.2072 | CDF | 0.9772 | Non-Significant Effect |
| | | 100 | 8 | -0.581 | 2.407 | 0.2072 | CDF | 0.9608 | Non-Significant Effect |
| | | 101 | 8 | -0.4358 | 2.407 | 0.2072 | CDF | 0.9439 | Non-Significant Effect |

Test Acceptability Criteria

| Attribute | Test Stat | TAC Limits | | Overlap | Decision |
|--------------|-----------|------------|-------|---------|-----------------|
| | | Lower | Upper | | |
| Control Resp | 0.645 | 0.25 | >> | Yes | Passes Criteria |
| PMSD | 0.3212 | 0.12 | 0.3 | Yes | Above Criteria |

ANOVA Table

| Source | Sum Squares | Mean Square | DF | F Stat | P-Value | Decision(α:5%) |
|---------|-------------|-------------|----|--------|---------|------------------------|
| Between | 0.0417124 | 0.0069521 | 6 | 0.3755 | 0.8883 | Non-Significant Effect |
| Error | 0.518332 | 0.0185118 | 28 | | | |
| Total | 0.560044 | | 34 | | | |

ANOVA Assumptions Tests

| Attribute | Test | Test Stat | Critical | P-Value | Decision(α:1%) |
|--------------|------------------------------------|-----------|----------|---------|---------------------|
| Variance | Bartlett Equality of Variance Test | 10.47 | 16.81 | 0.1063 | Equal Variances |
| Distribution | Shapiro-Wilk W Normality Test | 0.9578 | 0.9146 | 0.1957 | Normal Distribution |

Mean Dry Biomass-mg Summary

| Conc-% | Code | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|--------|------|-------|--------|---------|---------|--------|--------|--------|---------|--------|---------|
| 0 | D | 5 | 0.645 | 0.5255 | 0.7645 | 0.6625 | 0.4875 | 0.75 | 0.04305 | 14.92% | 0.00% |
| 32 | | 5 | 0.7675 | 0.6526 | 0.8824 | 0.7875 | 0.6125 | 0.8625 | 0.04139 | 12.06% | -18.99% |
| 42 | | 5 | 0.695 | 0.4646 | 0.9254 | 0.7375 | 0.375 | 0.85 | 0.08297 | 26.70% | -7.75% |
| 56 | | 5 | 0.6825 | 0.4653 | 0.8997 | 0.65 | 0.425 | 0.875 | 0.07822 | 25.63% | -5.81% |
| 80 | | 5 | 0.7125 | 0.5365 | 0.8884 | 0.7625 | 0.5375 | 0.8875 | 0.06337 | 19.89% | -10.46% |
| 100 | | 5 | 0.695 | 0.656 | 0.734 | 0.6875 | 0.65 | 0.725 | 0.01403 | 4.51% | -7.75% |
| 101 | | 5 | 0.6825 | 0.4836 | 0.8814 | 0.6625 | 0.4875 | 0.9125 | 0.07165 | 23.48% | -5.81% |

EWB
8/4/23

100W

EWB
8/4/23

CETIS Analytical Report

Bio-Analytical Laboratories

Fathead Minnow 7-d Larval Survival and Growth Test

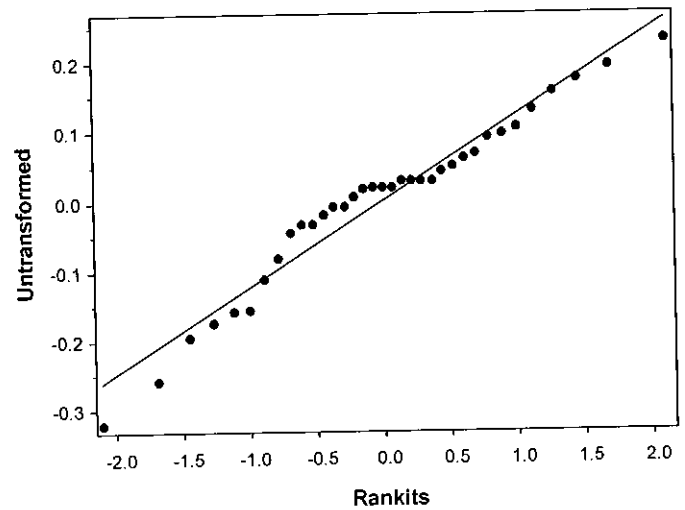
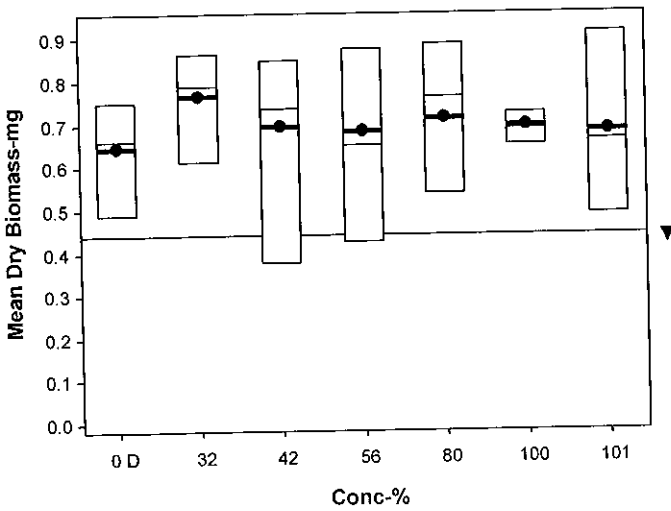
| | | |
|---------------------------|--------------------------------------------|-----------------------------|
| Analysis ID: 04-8507-2696 | Endpoint: Mean Dry Biomass-mg | CETIS Version: CETIS v2.1.5 |
| Analyzed: 04 Aug-23 9:21 | Analysis: Parametric-Control vs Treatments | Status Level: 1 |
| Edit Date: 04 Aug-23 9:12 | MD5 Hash: 4FA241FCD25E0E609915FB451BCE671D | Editor ID: 008-522-314-5 |

Mean Dry Biomass-mg Detail

| Conc-% | Code | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 |
|--------|------|--------|--------|--------|--------|--------|
| 0 | D | 0.675 | 0.75 | 0.6625 | 0.65 | 0.4875 |
| 32 | | 0.6125 | 0.7875 | 0.8625 | 0.7875 | 0.7875 |
| 42 | | 0.85 | 0.7875 | 0.375 | 0.7375 | 0.725 |
| 56 | | 0.65 | 0.875 | 0.65 | 0.425 | 0.8125 |
| 80 | | 0.775 | 0.8875 | 0.7625 | 0.5375 | 0.6 |
| 100 | | 0.725 | 0.725 | 0.6875 | 0.6875 | 0.65 |
| 101 | | 0.6 | 0.4875 | 0.6625 | 0.9125 | 0.75 |

100 UV

Graphics



0803
 8/4/23

CETIS Analytical Report

Report Date: 04 Aug-23 09:21 (p 1 of 2)
Test Code/ID: 6188B1CF / 16-3634-8367

Fathead Minnow 7-d Larval Survival and Growth Test

Bio-Analytical Laboratories

| | | |
|-------------------------------|--------------------------------------------|--------------------------------------------|
| Analysis ID: 19-1000-3797 | Endpoint: Mean Dry Biomass-mg | CETIS Version: CETIS v2.1.5 |
| Analyzed: 04 Aug-23 9:21 | Analysis: Parametric-Control vs Treatments | Status Level: 1 |
| Edit Date: 04 Aug-23 9:12 | MD5 Hash: 7DEFDC612E8C5CD52608715877D762F5 | Editor ID: 008-522-314-5 |
| Batch ID: 03-0837-1396 | Test Type: Growth-Survival (7d) | Analyst: |
| Start Date: 25 Jul-23 15:21 | Protocol: EPA/821/R-02-013 (2002) | Diluent: Reconstituted Water |
| Ending Date: 01 Aug-23 14:30 | Species: Pimephales promelas | Brine: |
| Test Length: 6d 23h | Taxon: Actinopterygii | Source: Aquatic Biosystems, CO Age: <48 |
| Sample ID: 08-2085-3871 | Code: X8872 | Project: WET Monthly Compliance Test (JUL) |
| Sample Date: 24 Jul-23 08:00 | Material: POTW Effluent | Source: AR0043613 |
| Receipt Date: 24 Jul-23 11:43 | CAS (PC): | Station: 001 |
| Sample Age: 31h (8.3 °C) | Client: Magnolia Wastewater System | |

| Data Transform | Alt Hyp | NOEL | LOEL | TOEL | Tox Units | MSDu | PMSD |
|----------------|---------|------|------|------|-----------|--------|--------|
| Untransformed | C > T | 100 | >100 | --- | 1 | 0.1966 | 30.48% |

Dunnett Multiple Comparison Test

| Control | vs | Conc-% | df | Test Stat | Critical | MSD | P-Type | P-Value | Decision(α:5%) |
|----------------|----|--------|----|-----------|----------|--------|--------|---------|------------------------|
| Dilution Water | | 32 | 8 | -1.472 | 2.362 | 0.1966 | CDF | 0.9959 | Non-Significant Effect |
| | | 42 | 8 | -0.6007 | 2.362 | 0.1966 | CDF | 0.9528 | Non-Significant Effect |
| | | 56 | 8 | -0.4505 | 2.362 | 0.1966 | CDF | 0.9329 | Non-Significant Effect |
| | | 80 | 8 | -0.8109 | 2.362 | 0.1966 | CDF | 0.9722 | Non-Significant Effect |
| | | 100 | 8 | -0.6007 | 2.362 | 0.1966 | CDF | 0.9528 | Non-Significant Effect |

Test Acceptability Criteria

| Attribute | Test Stat | TAC Limits | | Overlap | Decision |
|--------------|-----------|------------|-------|---------|-----------------|
| | | Lower | Upper | | |
| Control Resp | 0.645 | 0.25 | >> | Yes | Passes Criteria |
| PMSD | 0.3048 | 0.12 | 0.3 | Yes | Above Criteria |

ANOVA Table

| Source | Sum Squares | Mean Square | DF | F Stat | P-Value | Decision(α:5%) |
|---------|-------------|-------------|----|--------|---------|------------------------|
| Between | 0.0404625 | 0.0080925 | 5 | 0.4673 | 0.7967 | Non-Significant Effect |
| Error | 0.415644 | 0.0173185 | 24 | | | |
| Total | 0.456106 | | 29 | | | |

ANOVA Assumptions Tests

| Attribute | Test | Test Stat | Critical | P-Value | Decision(α:1%) |
|--------------|------------------------------------|-----------|----------|---------|---------------------|
| Variance | Bartlett Equality of Variance Test | 10.18 | 15.09 | 0.0702 | Equal Variances |
| Distribution | Shapiro-Wilk W Normality Test | 0.9263 | 0.9031 | 0.0393 | Normal Distribution |

Mean Dry Biomass-mg Summary

| Conc-% | Code | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|--------|------|-------|--------|---------|---------|--------|--------|--------|---------|--------|---------|
| 0 | D | 5 | 0.645 | 0.5255 | 0.7645 | 0.6625 | 0.4875 | 0.75 | 0.04305 | 14.92% | 0.00% |
| 32 | | 5 | 0.7675 | 0.6526 | 0.8824 | 0.7875 | 0.6125 | 0.8625 | 0.04139 | 12.06% | -18.99% |
| 42 | | 5 | 0.695 | 0.4646 | 0.9254 | 0.7375 | 0.375 | 0.85 | 0.08297 | 26.70% | -7.75% |
| 56 | | 5 | 0.6825 | 0.4653 | 0.8997 | 0.65 | 0.425 | 0.875 | 0.07822 | 25.63% | -5.81% |
| 80 | | 5 | 0.7125 | 0.5365 | 0.8884 | 0.7625 | 0.5375 | 0.8875 | 0.06337 | 19.89% | -10.46% |
| 100 | | 5 | 0.695 | 0.656 | 0.734 | 0.6875 | 0.65 | 0.725 | 0.01403 | 4.51% | -7.75% |

Mean Dry Biomass-mg Detail

| Conc-% | Code | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 |
|--------|------|--------|--------|--------|--------|--------|
| 0 | D | 0.675 | 0.75 | 0.6625 | 0.65 | 0.4875 |
| 32 | | 0.6125 | 0.7875 | 0.8625 | 0.7875 | 0.7875 |
| 42 | | 0.85 | 0.7875 | 0.375 | 0.7375 | 0.725 |
| 56 | | 0.65 | 0.875 | 0.65 | 0.425 | 0.8125 |
| 80 | | 0.775 | 0.8875 | 0.7625 | 0.5375 | 0.6 |
| 100 | | 0.725 | 0.725 | 0.6875 | 0.6875 | 0.65 |

EUB
8/4/23

CETIS Analytical Report

Report Date:

04 Aug-23 09:21 (p 1 of 2)

Test Code/ID:

6188B1CF / 16-3634-8367

Fathead Minnow 7-d Larval Survival and Growth Test

Bio-Analytical Laboratories

| | | |
|-------------------------------|--------------------------------------------|--------------------------------------------|
| Analysis ID: 04-7011-4512 | Endpoint: Mean Dry Biomass-mg | CETIS Version: CETIS v2.1.5 |
| Analyzed: 04 Aug-23 9:21 | Analysis: Linear Interpolation (ICPIN) | Status Level: 1 |
| Edit Date: 04 Aug-23 9:12 | MD5 Hash: 7DEFDC612E8C5CD52608715877D762F5 | Editor ID: 008-522-314-5 |
| Batch ID: 03-0837-1396 | Test Type: Growth-Survival (7d) | Analyst: |
| Start Date: 25 Jul-23 15:21 | Protocol: EPA/821/R-02-013 (2002) | Diluent: Reconstituted Water |
| Ending Date: 01 Aug-23 14:30 | Species: Pimephales promelas | Brine: |
| Test Length: 6d 23h | Taxon: Actinopterygii | Source: Aquatic Biosystems, CO Age: <48 |
| Sample ID: 08-2085-3871 | Code: X8872 | Project: WET Monthly Compliance Test (JUL) |
| Sample Date: 24 Jul-23 08:00 | Material: POTW Effluent | Source: AR0043613 |
| Receipt Date: 24 Jul-23 11:43 | CAS (PC): | Station: 001 |
| Sample Age: 31h (8.3 °C) | Client: Magnolia Wastewater System | |

Linear Interpolation Options

| X Transform | Y Transform | Seed | Resamples | Exp 95% CL | Method |
|-------------|-------------|---------|-----------|------------|-------------------------|
| Linear | Linear | 1872759 | 1000 | Yes | Two-Point Interpolation |

Test Acceptability Criteria

| Attribute | Test Stat | TAC Limits | | Overlap | Decision |
|--------------|-----------|------------|-------|---------|-----------------|
| | | Lower | Upper | | |
| Control Resp | 0.645 | 0.25 | >> | Yes | Passes Criteria |

Point Estimates

| Level | % | 95% LCL | 95% UCL | Tox Units | 95% LCL | 95% UCL |
|-------|------|---------|---------|-----------|---------|---------|
| IC15 | >100 | --- | --- | <1 | --- | --- |
| IC20 | >100 | --- | --- | <1 | --- | --- |
| IC25 | >100 | --- | --- | <1 | --- | --- |
| IC40 | >100 | --- | --- | <1 | --- | --- |
| IC50 | >100 | --- | --- | <1 | --- | --- |

Mean Dry Biomass-mg Summary

| Conc-% | Code | Count | Calculated Variate | | | | | | Isotonic Variate | |
|--------|------|-------|--------------------|--------|--------|--------|--------|---------|------------------|---------|
| | | | Mean | Median | Min | Max | CV% | %Effect | Mean | %Effect |
| 0 | D | 5 | 0.645 | 0.6625 | 0.4875 | 0.75 | 14.92% | 0.00% | 0.7062 | 0.00% |
| 32 | | 5 | 0.7675 | 0.7875 | 0.6125 | 0.8625 | 12.06% | -18.99% | 0.7062 | 0.00% |
| 42 | | 5 | 0.695 | 0.7375 | 0.375 | 0.85 | 26.70% | -7.75% | 0.6967 | 1.36% |
| 56 | | 5 | 0.6825 | 0.65 | 0.425 | 0.875 | 25.63% | -5.81% | 0.6967 | 1.36% |
| 80 | | 5 | 0.7125 | 0.7625 | 0.5375 | 0.8875 | 19.89% | -10.46% | 0.6967 | 1.36% |
| 100 | | 5 | 0.695 | 0.6875 | 0.65 | 0.725 | 4.51% | -7.75% | 0.695 | 1.59% |

Mean Dry Biomass-mg Detail

| Conc-% | Code | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 |
|--------|------|--------|--------|--------|--------|--------|
| 0 | D | 0.675 | 0.75 | 0.6625 | 0.65 | 0.4875 |
| 32 | | 0.6125 | 0.7875 | 0.8625 | 0.7875 | 0.7875 |
| 42 | | 0.85 | 0.7875 | 0.375 | 0.7375 | 0.725 |
| 56 | | 0.65 | 0.875 | 0.65 | 0.425 | 0.8125 |
| 80 | | 0.775 | 0.8875 | 0.7625 | 0.5375 | 0.6 |
| 100 | | 0.725 | 0.725 | 0.6875 | 0.6875 | 0.65 |

ELB
8/4/23

CETIS Analytical Report

Report Date:

04 Aug-23 09:21 (p 2 of 2)

Test Code/ID:

6188B1CF / 16-3634-8367

Fathead Minnow 7-d Larval Survival and Growth Test

Bio-Analytical Laboratories

Analysis ID: 04-7011-4512

Endpoint: Mean Dry Biomass-mg

CETIS Version: CETIS v2.1.5

Analyzed: 04 Aug-23 9:21

Analysis: Linear Interpolation (ICPIN)

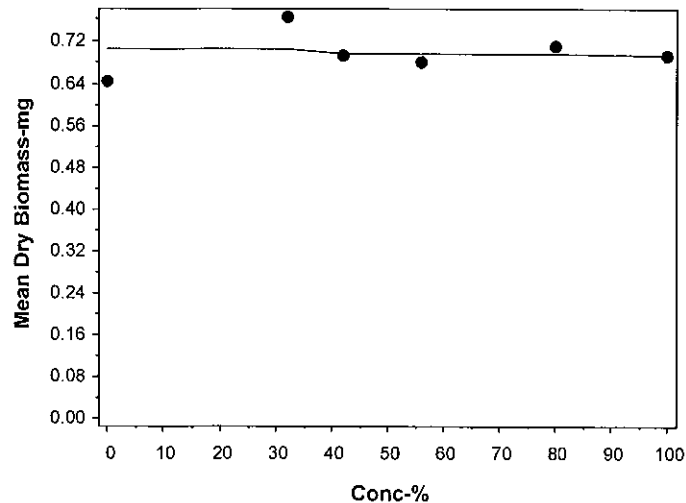
Status Level: 1

Edit Date: 04 Aug-23 9:12

MD5 Hash: 7DEFDC612E8C5CD52608715877D762F5

Editor ID: 008-522-314-5

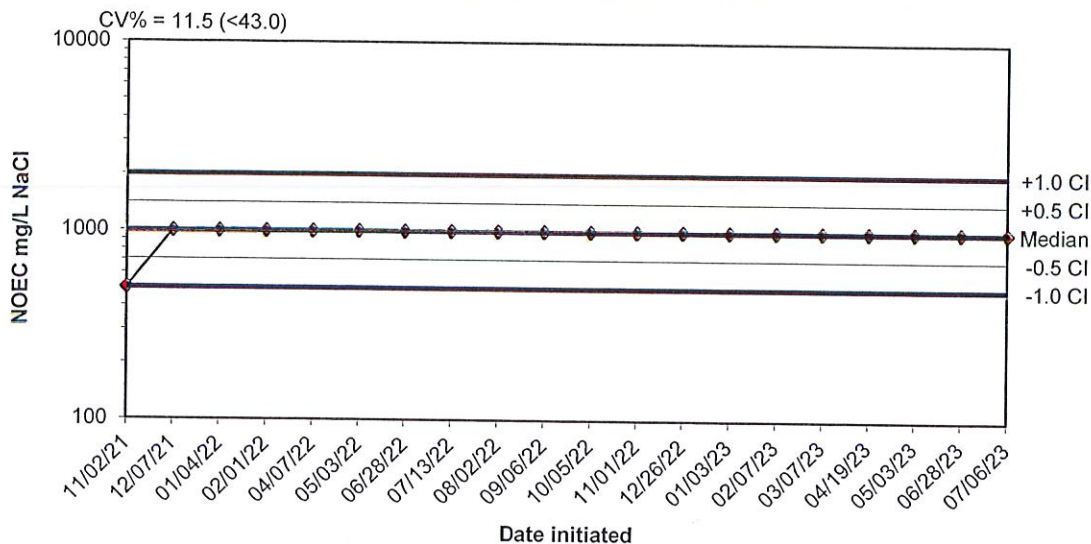
Graphics



EWB
8/4/23

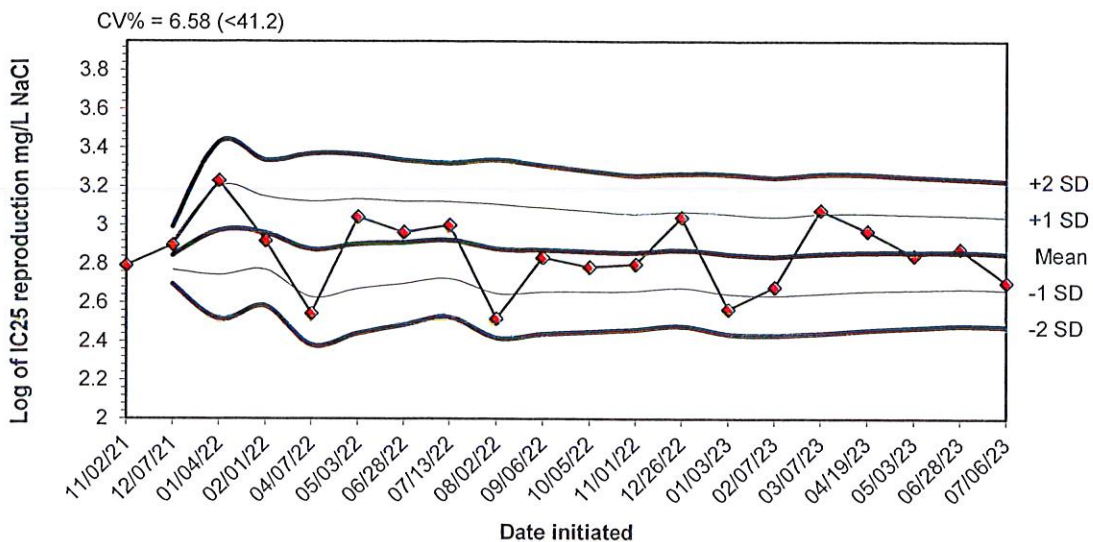
APPENDIX D
QUALITY ASSURANCE CHARTS

**CHRONIC REFERENCE TOXICANT TEST RESULTS FOR
 CERIODAPHNIA DUBIA IN SOFT WATER**



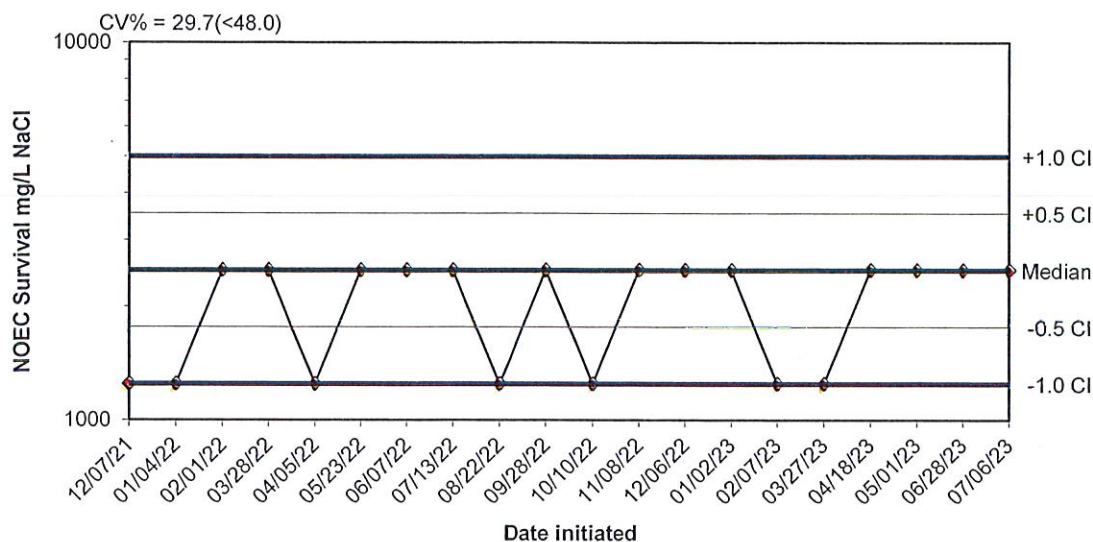
| Dates | Values | Median | -0.5 CI | -1.0 CI | +0.5 CI | +1.0 CI |
|----------|-----------|-----------|----------|----------|-----------|-----------|
| 11/02/21 | 500.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 12/07/21 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 01/04/22 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 02/01/22 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 04/07/22 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 05/03/22 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 06/28/22 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 07/13/22 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 08/02/22 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 09/06/22 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 10/05/22 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 11/01/22 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 12/26/22 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 01/03/23 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 02/07/23 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 03/07/23 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 04/19/23 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 05/03/23 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 06/28/23 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |
| 07/06/23 | 1000.0000 | 1000.0000 | 707.1068 | 500.0000 | 1414.2136 | 2000.0000 |

**CHRONIC REFERENCE TOXICANT TEST RESULTS FOR
 CERIODAPHНИЯ DUBIA IN SOFT WATER**



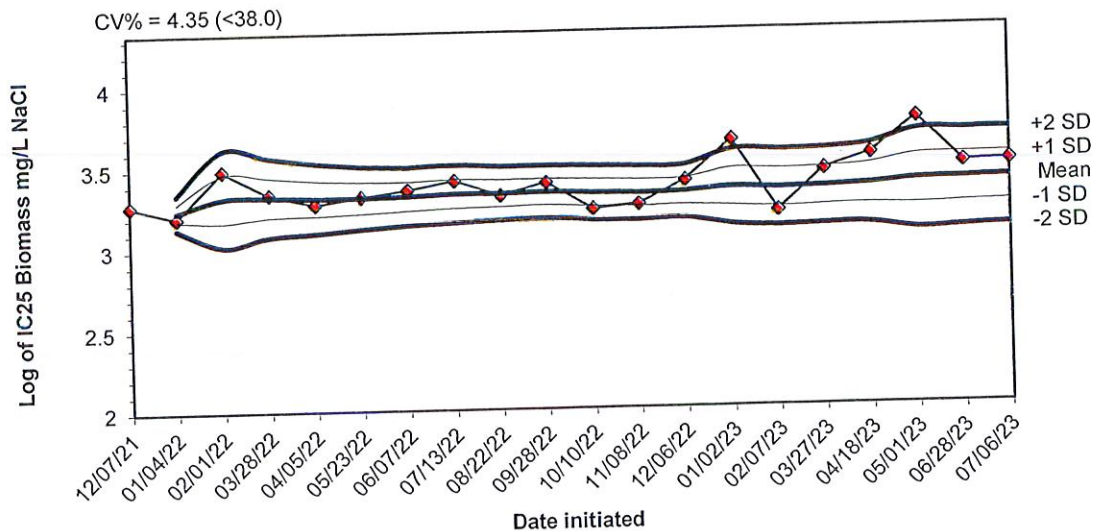
| Dates | Values | Mean | -1 SD | -2 SD | +1 SD | +2 SD |
|----------|--------|--------|--------|--------|--------|--------|
| 11/02/21 | 2.7924 | | | | | |
| 12/07/21 | 2.8976 | 2.8450 | 2.7706 | 2.6962 | 2.9194 | 2.9938 |
| 01/04/22 | 3.2304 | 2.9735 | 2.7448 | 2.5161 | 3.2022 | 3.4308 |
| 02/01/22 | 2.9191 | 2.9599 | 2.7712 | 2.5825 | 3.1486 | 3.3372 |
| 04/07/22 | 2.5441 | 2.8767 | 2.6292 | 2.3816 | 3.1243 | 3.3718 |
| 05/03/22 | 3.0414 | 2.9042 | 2.6728 | 2.4414 | 3.1356 | 3.3670 |
| 06/28/22 | 2.9638 | 2.9127 | 2.7003 | 2.4878 | 3.1251 | 3.3376 |
| 07/13/22 | 3.0000 | 2.9236 | 2.7245 | 2.5254 | 3.1227 | 3.3218 |
| 08/02/22 | 2.5185 | 2.8786 | 2.6486 | 2.4185 | 3.1086 | 3.3386 |
| 09/06/22 | 2.8325 | 2.8740 | 2.6566 | 2.4393 | 3.0913 | 3.3087 |
| 10/05/22 | 2.7853 | 2.8659 | 2.6580 | 2.4501 | 3.0739 | 3.2818 |
| 11/01/22 | 2.7993 | 2.8604 | 2.6612 | 2.4620 | 3.0596 | 3.2587 |
| 12/26/22 | 3.0414 | 2.8743 | 2.6771 | 2.4799 | 3.0715 | 3.2687 |
| 01/03/23 | 2.5682 | 2.8524 | 2.6461 | 2.4397 | 3.0588 | 3.2652 |
| 02/07/23 | 2.6812 | 2.8410 | 2.6373 | 2.4336 | 3.0447 | 3.2485 |
| 03/07/23 | 3.0792 | 2.8559 | 2.6503 | 2.4447 | 3.0615 | 3.2671 |
| 04/19/23 | 2.9703 | 2.8626 | 2.6616 | 2.4606 | 3.0636 | 3.2647 |
| 05/03/23 | 2.8441 | 2.8616 | 2.6665 | 2.4715 | 3.0567 | 3.2517 |
| 06/28/23 | 2.8774 | 2.8624 | 2.6728 | 2.4832 | 3.0520 | 3.2416 |
| 07/06/23 | 2.7054 | 2.8546 | 2.6667 | 2.4789 | 3.0424 | 3.2303 |

**CHRONIC REFERENCE TOXICANT TEST RESULTS FOR PIMEPHALES
 PROMELAS IN MODERATELY HARD WATER**



| Dates | Values | Median | -0.5 CI | -1.0 CI | +0.5 CI | +1.0 CI |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 12/07/21 | 1250.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 01/04/22 | 1250.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 02/01/22 | 2500.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 03/28/22 | 2500.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 04/05/22 | 1250.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 05/23/22 | 2500.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 06/07/22 | 2500.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 07/13/22 | 2500.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 08/22/22 | 1250.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 09/28/22 | 2500.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 10/10/22 | 1250.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 11/08/22 | 2500.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 12/06/22 | 2500.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 01/02/23 | 2500.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 02/07/23 | 1250.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 03/27/23 | 1250.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 04/18/23 | 2500.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 05/01/23 | 2500.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 06/28/23 | 2500.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |
| 07/06/23 | 2500.0000 | 2500.0000 | 1767.7670 | 1250.0000 | 3535.5339 | 5000.0000 |

CHRONIC REFERENCE TOXICANT TEST RESULTS FOR PIMEPHALES PROMELAS IN MODERATELY HARD WATER



| Dates | Values | Mean | -1 SD | -2 SD | +1 SD | +2 SD |
|----------|--------|--------|--------|--------|--------|--------|
| 12/07/21 | 3.2788 | | | | | |
| 01/04/22 | 3.2041 | 3.2414 | 3.1887 | 3.1359 | 3.2942 | 3.3470 |
| 02/01/22 | 3.4914 | 3.3247 | 3.1757 | 3.0267 | 3.4738 | 3.6228 |
| 03/28/22 | 3.3424 | 3.3292 | 3.2072 | 3.0851 | 3.4512 | 3.5732 |
| 04/05/22 | 3.2788 | 3.3191 | 3.2110 | 3.1030 | 3.4271 | 3.5352 |
| 05/23/22 | 3.3222 | 3.3196 | 3.2230 | 3.1263 | 3.4163 | 3.5129 |
| 06/07/22 | 3.3617 | 3.3256 | 3.2360 | 3.1463 | 3.4153 | 3.5049 |
| 07/13/22 | 3.4150 | 3.3368 | 3.2480 | 3.1592 | 3.4256 | 3.5144 |
| 08/22/22 | 3.3222 | 3.3352 | 3.2520 | 3.1687 | 3.4184 | 3.5016 |
| 09/28/22 | 3.3979 | 3.3414 | 3.2605 | 3.1796 | 3.4224 | 3.5033 |
| 10/10/22 | 3.2304 | 3.3314 | 3.2476 | 3.1639 | 3.4151 | 3.4989 |
| 11/08/22 | 3.2553 | 3.3250 | 3.2422 | 3.1594 | 3.4078 | 3.4907 |
| 12/06/22 | 3.3979 | 3.3306 | 3.2488 | 3.1670 | 3.4125 | 3.4943 |
| 01/02/23 | 3.6435 | 3.3530 | 3.2382 | 3.1234 | 3.4677 | 3.5825 |
| 02/07/23 | 3.2041 | 3.3430 | 3.2260 | 3.1089 | 3.4601 | 3.5772 |
| 03/27/23 | 3.4550 | 3.3500 | 3.2335 | 3.1170 | 3.4666 | 3.5831 |
| 04/18/23 | 3.5469 | 3.3616 | 3.2391 | 3.1166 | 3.4841 | 3.6066 |
| 05/01/23 | 3.7654 | 3.3841 | 3.2318 | 3.0795 | 3.5363 | 3.6886 |
| 06/28/23 | 3.4878 | 3.3895 | 3.2396 | 3.0898 | 3.5394 | 3.6893 |
| 07/06/23 | 3.4949 | 3.3948 | 3.2470 | 3.0993 | 3.5425 | 3.6903 |

APPENDIX E
AGENCY FORMS

**SUMMARY REPORTING FORMS
 CHRONIC BIOMONITORING
Ceriodaphnia dubia Survival and Reproduction**

Permittee: Magnolia Wastewater System

NPDES No.: AR0043613

AFIN: 14-00059

| | | | | | |
|-----------------------------|-------------|-------------|-----------|-----------------|-------------|
| | Time | Date | To | Time | Date |
| Composite 1 Collected From: | 0800 | 07/23/23 | To | 0800 | 07/24/23 |
| Composite 2 Collected From: | 0800 | 07/25/23 | To | 0800 | 07/26/23 |
| Composite 3 Collected From: | 0800 | 07/27/23 | To | 0800 | 07/28/23 |
| Test initiated: | 1055 am/pm | | | 07/25/23 | Date |
| Test terminated: | 1650 am/pm | | | 08/01/23 | Date |
| Dilution water used: | Receiving | | | X Reconstituted | |

PERCENT SURVIVAL

| Time of Reading | Percent Effluent | | | | | |
|-----------------|------------------|-------|-------|-------|-------|-------|
| | 0 | 32.0 | 42.0 | 56.0 | 80.0 | 100.0 |
| 24h | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 48h | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| End of test | 90.0 | 80.0 | 90.0 | 90.0 | 100.0 | 100.0 |

NUMBER OF YOUNG PRODUCED PER FEMALE @ END OF TEST

| Rep | 0 | 32.0 | 42.0 | 56.0 | 80.0 | 100.0 |
|------------|-------|-------|-------|-------|-------|-------|
| 1 | 19 | 21 | 22 | 20 | 23 | 32 |
| 2 | 20 | 13 | 18 | D | 22 | 15 |
| 3 | D | 16 | 16 | 24 | 29 | 12 |
| 4 | 22 | 15 | 13 | 14 | 25 | 22 |
| 5 | 18 | 21 | D2 | 20 | 31 | 24 |
| 6 | 17 | D | 23 | 25 | 25 | 19 |
| 7 | 18 | 21 | 23 | 21 | 24 | 23 |
| 8 | 27 | D2 | 21 | 18 | 25 | 19 |
| 9 | 22 | 22 | 26 | 12 | 12 | 25 |
| 10 | 28 | 27 | 25 | 24 | 18 | 27 |
| Surv. Mean | 21.2 | 19.5 | 20.8 | 19.8 | 23.4 | 21.8 |
| Total Mean | 19.1 | 15.8 | 18.9 | 17.8 | 23.4 | 21.8 |
| CV%* | 18.67 | 23.26 | 20.67 | 22.72 | 22.90 | 26.73 |

*coefficient of variation = standard deviation x 100/mean. D=dead adult

PMSD = 38.37

Ceriodaphnia dubia
Survival and Reproduction (continued)

1. Fisher's Exact Test:

Is the mean survival at the end of the test significantly different ($p=.05$) than the control survival for the % effluent corresponding to (lethality):

| | | | |
|------------------------------------------|-----|---|----|
| a) LOW FLOW OR CRITICAL DILUTION (100%): | YES | X | NO |
| b) ½ LOW FLOW DILUTION (NA%): | YES | | NO |

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

Is the mean number of young produced per female significantly different ($p=.05$) than the control's number of young per female for the % effluent corresponding to (significant non-lethal effects):

| | | | |
|------------------------------------------|-----|---|----|
| a) LOW FLOW OR CRITICAL DILUTION (100%): | YES | X | NO |
| b) ½ LOW FLOW DILUTION (NA%): | YES | | NO |

3. If you answered NO to 1. a) and 2. a) enter (0) otherwise enter (1): 0
4. If you answered NO to 1. b) and 2. b) enter (0) otherwise enter (1):
5. Enter response to item 3 on DMR Form, parameter #TEP3B.
6. Enter response to item 4 on DMR Form, parameter #TFP3B.
7. Enter percent effluent corresponding to each NOEC below and circle lowest number:
 - a) NOEC survival: 100.0 % effluent
 - b) NOEC reproduction: 100.0 % effluent

Biomonitoring Form
Chronic Toxicity Summary Form for *Ceriodaphnia dubia*
Chemical Parameters Chart

Permittee: Magnolia Wastewater System
NPDES#: AR0043613/AFIN 14-00059
Contact: Russell Thomas
Analysts: Ware, Mitchell, Miller, Morado

Sample #1 Collected: **Date:** 7/24/2023 **Time:** 800
Sample #2 Collected: **Date:** 7/26/2023 **Time:** 800
Sample #3 Collected: **Date:** 7/28/2023 **Time:** 800
Test Begin: **Date:** 7/25/2023 **Time:** 1055
Test End: **Date:** 8/1/2023 **Time:** 1650

| | | | | | | | | | | | | | | | | | | | | |
|--------------|--------|-------|-------|-------|-------|-------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Dilution: | 0% | | | | | | | | | | | | | | | | | | | |
| Day: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | | | | | | | | |
| T (°C) | 24.2 | 24.4 | 24.3 | 24.4 | 24.5 | 25.1 | 24.9 | | | | | | | | | | | | | |
| DO Initial | 7.3 | 8.5 | 7.7 | 8.9 | 8.7 | 7.4 | 8.0 | | | | | | | | | | | | | |
| DO Final | 6.1 | 7.3 | 7.3 | 8.1 | 8.0 | 7.4 | 7.6 | | | | | | | | | | | | | |
| pH Initial | 7.7 | 7.1 | 7.4 | 6.7 | 6.6 | 7.0 | 7.6 | | | | | | | | | | | | | |
| pH Final | 6.7 | 7.0 | 7.0 | 7.8 | 7.3 | 7.0 | 7.4 | | | | | | | | | | | | | |
| Conductivity | 245.0 | 280.0 | 265.0 | 165.0 | 205.0 | 230.0 | | | | | | | | | | | | | | |
| Alkalinity | 76.0 | | | | 28 | | | | | | | | | | | | | | | |
| Hardness | 32.0 | | | | 40 | | | | | | | | | | | | | | | |
| Chlorine | <0.5 | | | | <0.5 | | | | | | | | | | | | | | | |
| Dilution: | 32.0% | | | | | | | | | | | | | | | | | | | |
| Day: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | | | | | | | | |
| T (°C) | 24.2 | 24.4 | 24.3 | 24.4 | 24.5 | 25.1 | 24.9 | | | | | | | | | | | | | |
| DO Initial | 7.4 | 8.1 | 7.3 | 9.0 | 8.9 | 7.6 | 7.6 | | | | | | | | | | | | | |
| DO Final | 7.0 | 7.6 | 7.5 | 8.2 | 8.1 | 7.4 | 7.4 | | | | | | | | | | | | | |
| pH Initial | 7.9 | 7.6 | 7.5 | 7.7 | 7.6 | 7.4 | 7.4 | | | | | | | | | | | | | |
| pH Final | 7.0 | 7.1 | 7.0 | 7.5 | 7.3 | 7.2 | 7.4 | | | | | | | | | | | | | |
| Conductivity | 285.0 | 300.0 | 310.0 | 300.0 | 305.0 | 300.0 | | | | | | | | | | | | | | |
| Alkalinity | | | | | | | | | | | | | | | | | | | | |
| Hardness | | | | | | | | | | | | | | | | | | | | |
| Chlorine | | | | | | | | | | | | | | | | | | | | |
| Dilution: | 42.0% | | | | | | | | | | | | | | | | | | | |
| Day: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | | | | | | | | |
| T (°C) | 24.2 | 24.4 | 24.3 | 24.4 | 24.5 | 25.1 | 24.9 | | | | | | | | | | | | | |
| DO Initial | 7.4 | 8.6 | 7.4 | 8.9 | 9.0 | 8.2 | 7.6 | | | | | | | | | | | | | |
| DO Final | 6.6 | 7.1 | 7.5 | 7.9 | 8.0 | 7.3 | 7.4 | | | | | | | | | | | | | |
| pH Initial | 7.9 | 7.7 | 7.6 | 7.8 | 7.7 | 7.3 | 7.4 | | | | | | | | | | | | | |
| pH Final | 7.0 | 7.0 | 7.0 | 7.3 | 7.3 | 6.7 | | | | | | | | | | | | | | |
| Alkalinity | | | | | | | | | | | | | | | | | | | | |
| Hardness | | | | | | | | | | | | | | | | | | | | |
| Conductivity | 290.0 | 305.0 | 315.0 | 310.0 | 320.0 | 399.0 | | | | | | | | | | | | | | |
| Chlorine | | | | | | | | | | | | | | | | | | | | |
| Dilution: | 100.0% | | | | | | | | | | | | | | | | | | | |
| Day: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | | | | | | | | |
| T (°C) | 24.2 | 24.4 | 24.3 | 24.4 | 24.5 | 25.1 | 24.9 | | | | | | | | | | | | | |
| DO Initial | 7.5 | 8.4 | 7.3 | 9.0 | 9.2 | 8.4 | 7.9 | | | | | | | | | | | | | |
| DO Final | 7.4 | 8.3 | 7.6 | 8.5 | 8.3 | 8.3 | | | | | | | | | | | | | | |
| pH Initial | 7.9 | 7.6 | 7.4 | 7.6 | 7.7 | 7.3 | 7.4 | | | | | | | | | | | | | |
| pH Final | 6.6 | 6.8 | 6.9 | 7.1 | 7.0 | 7.1 | | | | | | | | | | | | | | |
| Alkalinity | 52.0 | 44.0 | | 60.0 | | | | | | | | | | | | | | | | |
| Hardness | 28.0 | 32.0 | | 16.0 | | | | | | | | | | | | | | | | |
| Conductivity | 305.0 | 350.0 | 365.0 | 375.0 | 370.0 | 385.0 | | | | | | | | | | | | | | |
| Chlorine | <0.5 | <0.5 | | <0.5 | | | | | | | | | | | | | | | | |

Comments:

**SUMMARY REPORTING FORMS CHRONIC BIOMONITORING
 FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL
 (*Pimephales promelas*)**

Permittee: Magnolia Wastewater System

NPDES No.: AR0043613
 AFIN: 14-00059

| | | | | | |
|-----------------------------|-------------|-------------|----|-------------|-------------|
| | Time | Date | | Time | Date |
| Composite 1 Collected from: | 0800 | 07/23/23 | To | 0800 | 07/24/23 |
| Composite 2 Collected from: | 0800 | 07/25/23 | To | 0800 | 07/26/23 |
| Composite 3 Collected from: | 0800 | 07/27/23 | To | 0800 | 07/28/23 |

| | | | | | |
|----------------------|------|-----------|---|---------------|------|
| Test initiated: | 1521 | am/pm | | 07/25/23 | Date |
| Test terminated: | 1430 | am/pm | | 08/01/23 | Date |
| Dilution water used: | | Receiving | X | Reconstituted | |

DATA TABLE FOR SURVIVAL

| Effluent Conc. % | Percent Survival in Replicate Chambers | | | | | Mean Percent Survival | | | CV%* |
|------------------|----------------------------------------|-------|-------|-------|-------|-----------------------|-------|--------|-------|
| | A | B | C | D | E | 24h | 48h | 7 days | |
| 0 | 100.0 | 100.0 | 100.0 | 100.0 | 87.5 | 100.0 | 87.5 | 97.5 | 6.06 |
| 32.0 | 87.5 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 97.5 | 6.06 |
| 42.0 | 100.0 | 87.5 | 87.5 | 100.0 | 87.5 | 100.0 | 100.0 | 92.5 | 7.84 |
| 56.0 | 87.5 | 100.0 | 87.5 | 62.5 | 100.0 | 100.0 | 100.0 | 87.5 | 16.10 |
| 80.0 | 100.0 | 100.0 | 87.5 | 87.5 | 87.5 | 100.0 | 100.0 | 92.5 | 7.84 |
| 100.0 | 87.5 | 100.0 | 75.0 | 100.0 | 100.0 | 100.0 | 100.0 | 92.5 | 12.12 |

DATA TABLE FOR GROWTH

| Effluent Conc. % | Average Dry Weight in milligrams in replicate chambers | | | | | Mean Dry Weight mg | CV* |
|------------------|--------------------------------------------------------|-------|-------|-------|-------|--------------------|-------|
| | A | B | C | D | E | | |
| 0 | 0.675 | 0.750 | 0.663 | 0.650 | 0.488 | 0.645 | 14.92 |
| 32.0 | 0.613 | 0.788 | 0.863 | 0.788 | 0.788 | 0.768 | 12.06 |
| 42.0 | 0.850 | 0.788 | 0.375 | 0.738 | 0.725 | 0.695 | 26.70 |
| 56.0 | 0.650 | 0.875 | 0.650 | 0.425 | 0.813 | 0.683 | 25.63 |
| 80.0 | 0.775 | 0.888 | 0.763 | 0.538 | 0.600 | 0.713 | 19.89 |
| 100.0 | 0.725 | 0.725 | 0.688 | 0.688 | 0.650 | 0.695 | 4.51 |

*coefficient of variation = standard deviation x 100/mean.

PMSD = 30.4%

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL (cont)
(Pimephales promelas)

1. Dunnett's Procedure or Steels Many-One Rank Test as appropriate:

Is the mean survival at 7 days significantly different ($p=.05$) than the control survival for the % effluent corresponding to:

- | | | | |
|-------------------------------------------|-----|---|----|
| a) LOW FLOW OR CRITICAL DILUTION (100.0%) | YES | X | NO |
| b) ½ LOW FLOW DILUTION (NA%) | YES | | NO |

2. Dunnett's Procedure (or appropriate test):

Is the mean dry weight (growth) at 7 days significantly different ($p=.05$) than the control's dry weight for the % effluent corresponding to (significant non-lethal effects):

- | | | | |
|-------------------------------------------|-----|---|----|
| a) LOW FLOW OR CRITICAL DILUTION (100.0%) | YES | X | NO |
| b) ½ LOW FLOW DILUTION (NA%) | YES | | NO |

3. If you answered NO to 1. a) and 2. a) enter (0) otherwise enter (1): 0
4. If you answered NO to 1. b) and 2. b) enter (0) otherwise enter (1):
5. Enter response to item 3 on DMR Form, parameter #TEP6C.
6. Enter response to item 4 on DMR Form, parameter #TFP6C.
7. Enter percent effluent corresponding to each NOEC below and circle lowest number:

- | | |
|-------------------|-----------------|
| a.) NOEC survival | 100.0% effluent |
| b.) NOEC growth | 100.0% effluent |

Biomonitoring Form
Chronic Toxicity Summary Form for Pimephales promelas
Chemical Parameters Chart

Permittee: Magnolia Wastewater System
NPDES#: AR0043613/AFIN 14-00059
Contact: Tracie Love
Analysts: Ware, Mitchell, Miller, Valle, Morado

Sample #1 Collected: 7/24/2023 Time: 800
Sample #2 Collected: 7/26/2023 Time: 800
Sample #3 Collected: 7/28/2023 Time: 800
Test Begin: 7/25/2023 Time: 1521
Test End: 8/1/2023 Time: 1430

| | | | | | | | | | | | | | | | |
|--------------|-------|-------|-------|-------|-------|-------|------|--------------|--------|-------|-------|-------|-------|-------|------|
| Dilution: | 0% | | | | | | | Dilution: | 56.0% | | | | | | |
| Day: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Day: | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| T (°C) | 25.7 | 25.6 | 25.6 | 25.6 | 25.3 | 24.5 | 27.3 | T (°C) | 25.7 | 25.6 | 25.6 | 25.6 | 25.6 | 25.3 | 27.3 |
| DO Initial | 4.5 | 5.4 | 4.7 | 8.0 | 8.1 | 7.6 | 5.1 | DO Initial | 4.4 | 5.1 | 4.4 | 5.9 | 8.0 | 7.9 | 5.1 |
| DO Final | 6.2 | 6.5 | 7.0 | 7.5 | 7.7 | 7.8 | | DO Final | 6.8 | 7.4 | 6.6 | 6.8 | 7.3 | 7.5 | |
| pH Initial | 6.9 | 7.0 | 6.7 | 7.0 | 7.1 | 7.4 | 6.1 | pH Initial | 6.5 | 6.5 | 6.8 | 6.7 | 6.9 | 7.2 | 6.4 |
| pH Final | 7.3 | 7.1 | 7.7 | 7.1 | 7.3 | 7.5 | | pH Final | 6.8 | 7.0 | 7.0 | 7.0 | 7.1 | 7.3 | |
| Conductivity | 285.0 | 315.0 | 290.0 | 190.0 | 200.0 | 205.0 | | Conductivity | 295.0 | 335.0 | 325.0 | 340.0 | 345.0 | 310.0 | |
| Alkalinity | 24.0 | | | 68.0 | | | | Alkalinity | | | | | | | |
| Hardness | 48.0 | | | 48.0 | | | | Hardness | | | | | | | |
| Chlorine | <0.5 | | | <0.5 | | | | Chlorine | | | | | | | |
| Dilution: | 32.0% | | | | | | | Dilution: | 80.0% | | | | | | |
| Day: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Day: | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| T (°C) | 25.7 | 25.6 | 25.6 | 25.6 | 25.3 | 24.5 | 27.3 | T (°C) | 25.7 | 25.6 | 25.6 | 25.6 | 25.6 | 25.3 | 27.3 |
| DO Initial | 4.5 | 5.1 | 4.7 | 6.6 | 8.1 | 7.9 | 5.1 | DO Initial | 4.2 | 5.0 | 4.7 | 5.8 | 7.8 | 7.6 | 5.0 |
| DO Final | 6.5 | 7.0 | 6.8 | 7.3 | 7.6 | 7.0 | | DO Final | 7.2 | 7.1 | 6.7 | 6.7 | 7.3 | 7.9 | |
| pH Initial | 6.7 | 6.7 | 6.7 | 6.7 | 7.1 | 7.2 | 6.5 | pH Initial | 6.4 | 6.5 | 6.7 | 6.7 | 6.8 | 7.3 | 6.5 |
| pH Final | 7.1 | 7.1 | 7.4 | 7.2 | 7.3 | 7.7 | | pH Final | 6.7 | 7.0 | 6.9 | 6.8 | 7.0 | 7.3 | |
| Conductivity | 290.0 | 325.0 | 310.0 | 315.0 | 305.0 | 275.0 | | Conductivity | 300.0 | 345.0 | 345.0 | 350.0 | 365.0 | 345.0 | |
| Alkalinity | | | | | | | | Alkalinity | | | | | | | |
| Hardness | | | | | | | | Hardness | | | | | | | |
| Chlorine | | | | | | | | Chlorine | | | | | | | |
| Dilution: | 42.0% | | | | | | | Dilution: | 100.0% | | | | | | |
| Day: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Day: | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| T (°C) | 25.7 | 25.6 | 25.6 | 25.6 | 25.3 | 24.5 | 27.3 | T (°C) | 25.7 | 25.6 | 25.6 | 25.6 | 25.6 | 25.3 | 27.3 |
| DO Initial | 4.6 | 5.1 | 4.7 | 5.8 | 8.2 | 7.0 | 4.9 | DO Initial | 4.8 | 5.2 | 4.7 | 5.6 | 7.6 | 7.3 | 5.2 |
| DO Final | 6.7 | 7.2 | 6.5 | 7.0 | 7.5 | 7.5 | | DO Final | 7.5 | 8.4 | 6.8 | 6.6 | 7.4 | 7.6 | |
| pH Initial | 6.6 | 6.5 | 6.7 | 6.7 | 7.1 | 7.2 | 6.5 | pH Initial | 6.4 | 6.4 | 6.7 | 6.7 | 6.8 | 7.2 | 6.5 |
| pH Final | 7.0 | 7.1 | 7.2 | 7.2 | 7.3 | 7.4 | | pH Final | 6.5 | 6.9 | 6.6 | 6.8 | 7.0 | 7.2 | |
| Conductivity | 290.0 | 330.0 | 315.0 | 330.0 | 335.0 | 290.0 | | Conductivity | 305.0 | 350.0 | 355.0 | 350.0 | 380.0 | 380 | |
| Alkalinity | | | | | | | | Alkalinity | 44.0 | 44.0 | | 60.0 | | | |
| Hardness | | | | | | | | Hardness | 32.0 | 32.0 | | 16.0 | | | |
| Chlorine | | | | | | | | Chlorine | <0.5 | <0.5 | | <0.5 | | | |

Comments:

APPENDIX F
REPORT QUALITY ASSURANCE FORM



Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

(318) 745-2772
1-800-259-1246
Fax: (318) 745-2773

REPORT QUALITY ASSURANCE FORM

Client: City of Magnolia

Project#: X8872

Chain of Custody Documents Checked by: Emily More 8/4/23
Technician/Date

Raw Data Documents Checked by: Emily More 8/4/23
Technician/Date

Statistical Analysis Package Checked by: EGB 8/4/23
Quality Manager/Date

Quality Control Data Checked by: EGB 8/10/23
Quality Manager/Date

Report Checked by: EGB 8/10/23
Quality Manager/Date

I certify that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information contained in this document, to the best of my knowledge, is true, accurate and complete.

Cynthia Brugg, BS
Quality Manager

8/10/2023
Date

No part of this work may be altered in any form or by any means without written permission from Bio-Analytical Laboratories.

