March 23, 2022

Biomonitoring Testing
for
Eff

Control No. 263772-1

Prepared for:

Mr. Jimmy Smith
Searcy Water and Sewer System
P.O. Box 1319
Searcy, AR 72145

Prepared by:

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

Searcy Water and Sewer System
ATTN: Mr. Jimmy Smith
P.O. Box 1319
Searcy, AR 72145

Re: Chronic 7-Day Renewal*Pimephales promelas* (Fathead minnow) and *Ceriodaphnia dubia*
Eff
NPDES Permit No. AR0021601 AFIN# 73-00055

Dear Mr. Jimmy Smith:

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

Testing procedures and Quality Assurance were in accordance with "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" EPA-821-R-02-013, Fourth Edition, October 2002. Test results are summarized below:

Method 1000.0 Chronic *Pimephales promelas* (Fathead minnow) Survival and Growth Test: The No Observable Effects Concentration (NOEC) for survival occurred at 27 % effluent, which is above the critical dilution of 20 %. The NOEC for growth occurred at 27 % effluent, which is above the critical dilution of 20 %. **The sample, therefore, PASSED both lethal and sub-lethal effects for the Fathead minnow test.**

Method 1002.0 Chronic *Ceriodaphnia dubia* Survival and Reproduction Test: The No Observable Effects Concentration (NOEC) for survival occurred at 27 % effluent, which is above the critical dilution of 20 %. The NOEC for reproduction occurred at 27 % effluent, which is above the sub-lethal limit of 20 %. **The sample, therefore, PASSED both lethal and sub-lethal effects for the *Ceriodaphnia dubia* test.**

**AMERICAN INTERPLEX CORPORATION**

John Overbey
Chief Operating Officer

PDF cc: Searcy Water and Sewer System
ATTN: Mr. Dan Dawson
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Searcy Water and Sewer System
ATTN: Mr. Jimmy Smith
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Table of Contents

I. Control Acceptance Criteria

*Pimephales promelas* (Fathead minnow) Method 1000.0

| CRITERIA | RESULTS | PASS/FAIL |
|---|---|---|
| Control Survival > or = 80% | 97.5 | PASS |
| Control Growth > or = 0.25 mg per Surviving minnow | 0.488 | PASS |
| Control Growth CV < or = 40% | 12.9 | PASS |
| Growth Minimum Significant Difference 12 to 30% | 21.5 | PASS |
| Critical Dilution CV < or = 40% | 16.4 | PASS |

*Ceriodaphnia dubia* Method 1002.0

| CRITERIA | RESULTS | PASS/FAIL |
|---|---|---|
| Control Survival > or = 80% | 100 | PASS |
| Control Reproduction > or = 15 per Surviving Female | 28.3 | PASS |
| Control CV < or = 40% per Surviving Female | 24.8 | PASS |
| Reproduction Minimum Significant Difference 13 to 47% | 24.8 | PASS |
| Critical Dilution CV < or = 40% | 19.2 | PASS |

II. Outlined Report

A. Introduction

1. Permit Number: AR0021601 AFIN# 73-00055
2. Test Requirements: Chronic Biomonitoring, Quarterly
   Test Methods 1000.0 and 1002.0

B. Source of Effluent/Dilution Water:

1. Effluent Samples:
   a. Sampling Point: Eff
   b. Chemical Data:

| Analysis | Sample 1 | Sample 2 | Sample 3 |
|---|---|---|---|
| Dissolved oxygen (mg/l) | 6.8 | 6.8 | 6.8 |
| pH (standard units) | 6.9 | 6.8 | 7.1 |
| Alkalinity (mg/l as CaCO3) | 18 | 36 | 54 |
| Hardness (mg/l as CaCO3) | 41 | 38 | 37 |
| Conductivity (umhos/cm) | 260 | 280 | 300 |
| Residual Chlorine (mg/l) | <0.05 | <0.05 | <0.05 |
| Ammonia as N (mg/l) | <0.1 | <0.1 | 0.16 |

2. Dilution Water Samples:
   Outfall 001

| Analysis | 263935-1 |
|---|---|
| Dissolved oxygen (mg/l) | 7.1 |
| pH (standard units) | 6.7 |
| Alkalinity (mg/l as CaCO3) | NA |
| Hardness (mg/l as CaCO3) | NA |
| Conductivity (umhos/cm) | 170 |
| Residual Chlorine (mg/l) | <0.05 |

C. Test Methods
1. Test methods used:
Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013; test Methods 1000.0 and 1002.0, Fathead Minnow Survival and Growth and *Ceriodaphnia dubia* Survival and Reproduction.
2. Endpoint: No Observable Effects Concentration (NOEC)
3. Test Conditions:

*Pimephales promelas* (Fathead minnow) Survival and Growth Method 1000.0

| | |
|---|---|
| Date & Time Test Initiated: | March 15, 2022 at 0959 |
| Date & Time Test Terminated: | March 22, 2022 at 0915 |
| Type & Volume of Test Chamber: | 500 ml disposable beaker |
| Volume of Sample: | 250 ml |
| Number of Organisms per replicate: | 8 |
| Number of Replicates per dilution: | 5 |

*Ceriodaphnia dubia* Survival and Reproduction Method 1002.0

| | |
|---|---|
| Date & Time Test Initiated: | March 15, 2022 at 1040 |
| Date & Time Test Terminated: | March 21, 2022 at 1228 |
| Type & Volume of Test Chamber: | 30 ml disposable beaker |
| Volume of Sample: | 15 ml |
| Number of Organisms per replicate: | 1 |
| Number of Replicates per dilution: | 10 |

4. Source of test organisms: In-house culture
5. Test Temperature: 25 +/- 1 degree Celsius

D. Test Organisms
1. Scientific Name
a. Test 1000.0 *Pimephales promelas*
b. Test 1002.0 *Ceriodaphnia dubia*

III. Data Analysis

The data was analyzed using American Interplex Corporation's Laboratory Information Management Software based on Toxstat and following EPA method criteria.

*Pimephales promelas* (Fathead minnow) survival data was transformed using the Arc Sine transformation. Normality and homogeneity of variance were checked using Shapiro-Wilk's. The survival data was then analyzed using Steel's Many-One Rank Test to determine the No Observable Effects Concentration (NOEC).

Fathead minnow growth data was analyzed for normality and homogeneity of variance using Shapiro-Wilk's and Bartlett's test. Dunnett's Test was used to determine the No Observable Effects Concentration (NOEC) for growth.

*Ceriodaphnia dubia* survival data was analyzed with Fisher's Exact Test. Reproduction data was analyzed using Kolmogorov's Test for Normality and analyzed with Steel's Many-One Rank Test to determine the No Observable Effects Concentration (NOEC) for Reproduction. Dunnett's Test was used to calculate the PMSD.

IV. Standard Reference Toxicants

The sensitivity of the offspring is determined by performing a standard reference toxicant test monthly. Sodium chloride in synthetic moderately hard water is used as prescribed in EPA-821-R-02-013.

*Pimephales promelas* (Fathead minnow)

A chronic reference test was performed on February 01, 2022 at 1124 to February 08, 2022 at 1130
The results were as follows: (Control No. 262537-1.)

Survival LC-50: 2536 mg/l
Growth IC-25: 2028 mg/l
Growth PMSD: 15.4

*Ceriodaphnia dubia*

A chronic reference test was performed on February 01, 2022 at 1433 to February 07, 2022 at 1310
The results were as follows: (Control No. 262537-2.)

Survival LC-50: 1633 mg/l
Reproduction IC-25: 1093 mg/l
Reproduction PMSD: 20.4

V. Organism History

*Pimephales promelas* (Fathead minnow)

Date: March 15, 2022
Age: <24 hours
Source: In-house culture
Water: Moderately hard synthetic
Temperature: 25 deg.C

*Ceriodaphnia dubia*

Date: March 15, 2022
Age: <24 hours
Source: In-house culture
Water: Moderately hard synthetic
Temperature: 25 deg.C

VII. Results Summary *Pimephales promelas*, Fathead minnow Larval Survival and Growth Test -- Method 1000.0

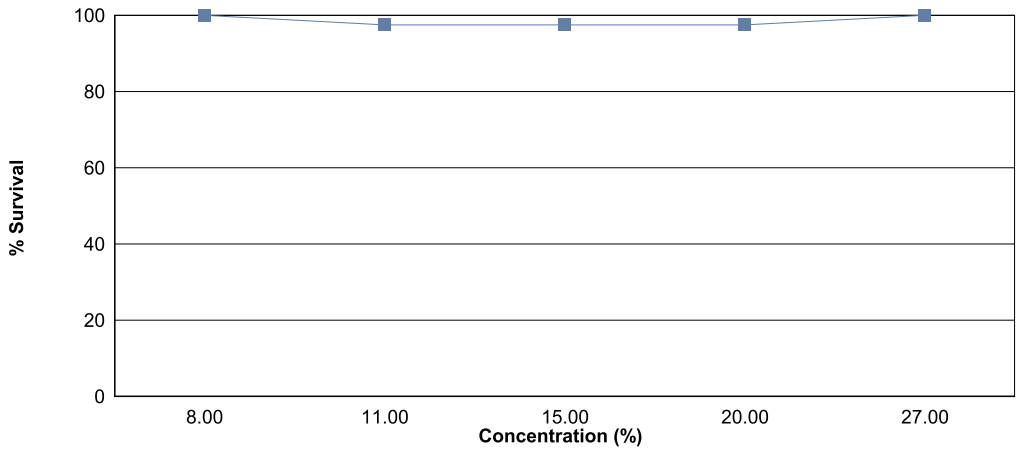
Larvae are exposed in a static renewal system for seven days to different concentrations of effluent with dilution water. Test results are based on the survival and growth (weight) of the larvae.

Effluent dilutions for this test were 8 %, 11 %, 15 %, 20 %, 27 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 20 % effluent.

The test was initiated on March 15, 2022 at 0959 and continued through March 22, 2022 at 0915. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

a.) NOEC survival = 27 % effluent
b.) NOEC growth = 27 % effluent




| Summary of the 7-day Fathead Minnow Survival and Growth | | |
|---|---|---|
| Concentration | Percent Survival | Mean Growth (mg) |
| Control | 97.5 | 0.476 |
| 8 % | 100 | 0.535 |
| 11 % | 97.5 | 0.502 |
| 15 % | 97.5 | 0.461 |
| 20 % | 97.5 | 0.500 |
| 27 % | 100 | 0.531 |

VII. Results Summary *Ceriodaphnia dubia*, Cladoceran Survival and Reproduction Test -- Method 1002.0

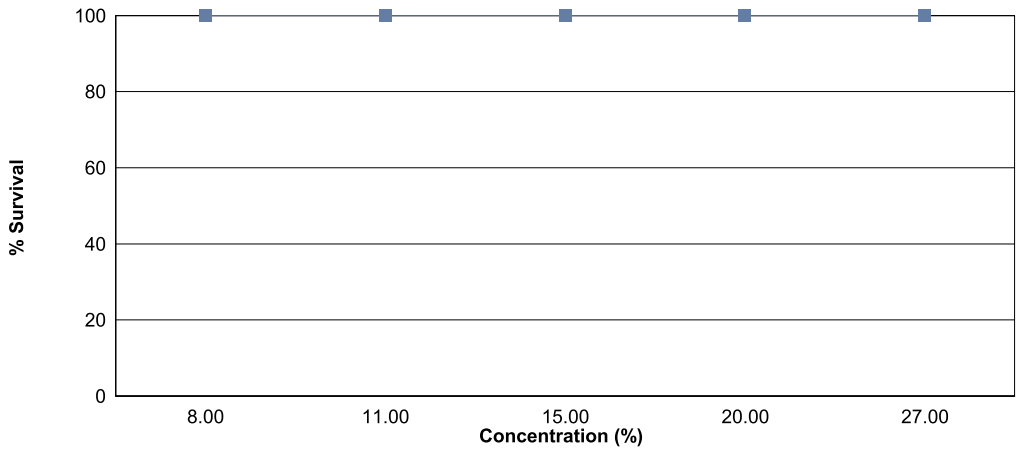
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring or a maximum of eight test days.

Effluent dilutions for this test were 8 %, 11 %, 15 %, 20 %, 27 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 20 % effluent.

The test was initiated on March 15, 2022 at 1040 and continued through March 21, 2022 at 1228. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

a.) NOEC survival = 27 % effluent
b.) NOEC reproduction = 27 % effluent




| Summary of the 6-day *Ceriodaphnia dubia* Survival and Reproduction Data | | |
|---|---|---|
| Concentration | Percent Survival | Mean Reproduction |
| Control | 100 | 28.3 |
| 8 % | 100 | 31.0 |
| 11 % | 100 | 30.2 |
| 15 % | 100 | 30.6 |
| 20 % | 100 | 32.4 |
| 27 % | 100 | 30.4 |

Appendix A1: Test 1000.0

*Pimephales promelas* (Fathead Minnow) 7-Day Survival

Date and Time Test Initiated: March 15, 2022 at 0959
Date and Time Test Terminated: March 22, 2022 at 0915

| Concentration | Replicate | Number of Survivors | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 |
| Control | A | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | B | 8 | 8 | 7 | 7 | 7 | 7 | 7 |
| | C | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | D | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | E | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 8 % | A | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | B | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | C | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | D | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | E | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 11 % | A | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | B | 8 | 8 | 8 | 8 | 8 | 7 | 7 |
| | C | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | D | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | E | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 15 % | A | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | B | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | C | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | D | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | E | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 20 % | A | 8 | 7 | 7 | 7 | 7 | 7 | 7 |
| | B | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | C | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | D | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | E | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 27 % | A | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | B | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | C | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | D | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | E | 8 | 8 | 8 | 8 | 8 | 8 | 8 |

Appendix A1: Test 1000.0

*Pimephales promelas* (Fathead Minnow) 7-Day Growth

Test Initiated: March 15, 2022 at 0959
Test Terminated: March 22, 2022 at 0915

| Concentration | Replicate | Weight of pan | Weight of pan + fish | Total weight of fish (g) | Original # of fish | Mean dry weight (mg) |
|---|---|---|---|---|---|---|
| Control | A | .76932 | .77362 | 0.00430 | 8 | 0.538 |
| | B | .77333 | .77644 | 0.00311 | 8 | 0.389 |
| | C | .77072 | .77423 | 0.00351 | 8 | 0.439 |
| | D | .76963 | .77379 | 0.00416 | 8 | 0.520 |
| | E | .77100 | .77496 | 0.00396 | 8 | 0.495 |
| 8 % | A | .77221 | .77617 | 0.00396 | 8 | 0.495 |
| | B | .76735 | .77172 | 0.00437 | 8 | 0.546 |
| | C | .76427 | .76868 | 0.00441 | 8 | 0.551 |
| | D | .76662 | .77067 | 0.00405 | 8 | 0.506 |
| | E | .76188 | .76650 | 0.00462 | 8 | 0.578 |
| 11 % | A | .76798 | .77262 | 0.00464 | 8 | 0.580 |
| | B | .77333 | .77627 | 0.00294 | 8 | 0.368 |
| | C | .76360 | .76730 | 0.00370 | 8 | 0.462 |
| | D | .77391 | .77799 | 0.00408 | 8 | 0.510 |
| | E | .76703 | .77175 | 0.00472 | 8 | 0.590 |
| 15 % | A | .77027 | .77415 | 0.00388 | 8 | 0.485 |
| | B | .76973 | .77312 | 0.00339 | 8 | 0.424 |
| | C | .76412 | .76814 | 0.00402 | 8 | 0.502 |
| | D | .77085 | .77449 | 0.00364 | 8 | 0.455 |
| | E | .76874 | .77224 | 0.00350 | 8 | 0.438 |
| 20 % | A | .76791 | .77084 | 0.00293 | 8 | 0.366 |
| | B | .77530 | .77953 | 0.00423 | 8 | 0.529 |
| | C | .77127 | .77514 | 0.00387 | 8 | 0.484 |
| | D | .77616 | .78075 | 0.00459 | 8 | 0.574 |
| | E | .76900 | .77339 | 0.00439 | 8 | 0.549 |
| 27 % | A | .76868 | .77340 | 0.00472 | 8 | 0.590 |
| | B | .77181 | .77575 | 0.00394 | 8 | 0.492 |
| | C | .77464 | .77854 | 0.00390 | 8 | 0.488 |
| | D | .77445 | .77796 | 0.00351 | 8 | 0.439 |
| | E | .76976 | .77492 | 0.00516 | 8 | 0.645 |

Appendix A1: Test 1002.0

*Ceriodaphnia dubia* Survival and Reproduction

Date and Time Test Initiated: March 15, 2022 at 1040
Date and Time Test Terminated: March 21, 2022 at 1228

| Concentration: Control | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Replicate | | | | | | | | | | No. of Young | No. of Adults | Young per Adult |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.00 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.00 |
| 3 | 5 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 27 | 10 | 2.70 |
| 4 | 0 | 0 | 0 | 3 | 3 | 0 | 3 | 4 | 0 | 0 | 13 | 10 | 1.30 |
| 5 | 11 | 12 | 11 | 12 | 9 | 9 | 10 | 10 | 11 | 11 | 106 | 10 | 10.6 |
| 6 | 21 | 16 | 17 | 14 | 0 | 16 | 12 | 13 | 16 | 12 | 137 | 10 | 13.7 |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| TOTAL | 37 | 34 | 34 | 29 | 12 | 25 | 25 | 27 | 32 | 28 | 283 | 10 | 28.3 |

| Concentration: 8 % | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Replicate | | | | | | | | | | No. of Young | No. of Adults | Young per Adult |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.00 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.00 |
| 3 | 5 | 5 | 6 | 0 | 0 | 4 | 0 | 0 | 6 | 6 | 32 | 10 | 3.20 |
| 4 | 0 | 0 | 6 | 4 | 6 | 0 | 4 | 3 | 0 | 0 | 23 | 10 | 2.30 |
| 5 | 13 | 11 | 10 | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 109 | 10 | 10.9 |
| 6 | 21 | 18 | 18 | 13 | 0 | 17 | 13 | 14 | 17 | 15 | 146 | 10 | 14.6 |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| TOTAL | 39 | 34 | 40 | 28 | 15 | 33 | 27 | 28 | 35 | 31 | 310 | 10 | 31.0 |

| Concentration: 11 % | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Replicate | | | | | | | | | | No. of Young | No. of Adults | Young per Adult |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.00 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.00 |
| 3 | 6 | 5 | 4 | 0 | 0 | 5 | 0 | 0 | 6 | 5 | 31 | 10 | 3.10 |
| 4 | 0 | 0 | 0 | 5 | 5 | 0 | 4 | 5 | 0 | 0 | 19 | 10 | 1.90 |
| 5 | 12 | 12 | 13 | 10 | 10 | 10 | 10 | 9 | 13 | 12 | 111 | 10 | 11.1 |
| 6 | 16 | 16 | 18 | 16 | 0 | 16 | 13 | 17 | 16 | 13 | 141 | 10 | 14.1 |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| TOTAL | 34 | 33 | 35 | 31 | 15 | 31 | 27 | 31 | 35 | 30 | 302 | 10 | 30.2 |

Appendix A1: Test 1002.0

*Ceriodaphnia dubia* Survival and Reproduction

Date and Time Test Initiated: March 15, 2022 at 1040
Date and Time Test Terminated: March 21, 2022 at 1228

| Concentration: 15 % | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Replicate | | | | | | | | | | No. of Young | No. of Adults | Young per Adult |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.00 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.00 |
| 3 | 7 | 6 | 5 | 0 | 0 | 1 | 0 | 0 | 5 | 5 | 29 | 10 | 2.90 |
| 4 | 0 | 0 | 0 | 5 | 5 | 0 | 3 | 4 | 0 | 0 | 17 | 10 | 1.70 |
| 5 | 13 | 11 | 13 | 10 | 10 | 11 | 12 | 11 | 12 | 12 | 115 | 10 | 11.5 |
| 6 | 19 | 20 | 15 | 13 | 0 | 14 | 17 | 15 | 14 | 18 | 145 | 10 | 14.5 |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| TOTAL | 39 | 37 | 33 | 28 | 15 | 26 | 32 | 30 | 31 | 35 | 306 | 10 | 30.6 |

| Concentration: 20 % | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Replicate | | | | | | | | | | No. of Young | No. of Adults | Young per Adult |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.00 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.00 |
| 3 | 6 | 6 | 6 | 0 | 0 | 3 | 0 | 0 | 6 | 4 | 31 | 10 | 3.10 |
| 4 | 0 | 0 | 0 | 5 | 7 | 0 | 4 | 4 | 0 | 0 | 20 | 10 | 2.00 |
| 5 | 11 | 10 | 11 | 13 | 10 | 10 | 12 | 11 | 12 | 13 | 113 | 10 | 11.3 |
| 6 | 20 | 14 | 20 | 17 | 0 | 15 | 18 | 18 | 19 | 19 | 160 | 10 | 16.0 |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| TOTAL | 37 | 30 | 37 | 35 | 17 | 28 | 34 | 33 | 37 | 36 | 324 | 10 | 32.4 |

| Concentration: 27 % | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Replicate | | | | | | | | | | No. of Young | No. of Adults | Young per Adult |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.00 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.00 |
| 3 | 6 | 5 | 4 | 0 | 0 | 4 | 0 | 0 | 6 | 3 | 28 | 10 | 2.80 |
| 4 | 0 | 0 | 0 | 4 | 5 | 0 | 5 | 4 | 0 | 0 | 18 | 10 | 1.80 |
| 5 | 13 | 10 | 11 | 13 | 12 | 10 | 13 | 14 | 12 | 11 | 119 | 10 | 11.9 |
| 6 | 21 | 18 | 18 | 15 | 0 | 18 | 0 | 11 | 21 | 17 | 139 | 10 | 13.9 |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| TOTAL | 40 | 33 | 33 | 32 | 17 | 32 | 18 | 29 | 39 | 31 | 304 | 10 | 30.4 |

Appendix A2: Statistics

*Pimephales promelas* (Fathead minnow) Survival

| | | Transformation of Data | | Transform: Arc Sin(Square Root(Y)) |
|---|---|---|---|---|
| Group | Identification | Rep | Value | Transformed |
| 1 | Control | 1 | 1.00000 | 1.39310 |
| 1 | Control | 2 | 0.87500 | 1.20940 |
| 1 | Control | 3 | 1.00000 | 1.39310 |
| 1 | Control | 4 | 1.00000 | 1.39310 |
| 1 | Control | 5 | 1.00000 | 1.39310 |
| 2 | 8 % | 1 | 1.00000 | 1.39310 |
| 2 | 8 % | 2 | 1.00000 | 1.39310 |
| 2 | 8 % | 3 | 1.00000 | 1.39310 |
| 2 | 8 % | 4 | 1.00000 | 1.39310 |
| 2 | 8 % | 5 | 1.00000 | 1.39310 |
| 3 | 11 % | 1 | 1.00000 | 1.39310 |
| 3 | 11 % | 2 | 0.87500 | 1.20940 |
| 3 | 11 % | 3 | 1.00000 | 1.39310 |
| 3 | 11 % | 4 | 1.00000 | 1.39310 |
| 3 | 11 % | 5 | 1.00000 | 1.39310 |
| 4 | 15 % | 1 | 1.00000 | 1.39310 |
| 4 | 15 % | 2 | 1.00000 | 1.39310 |
| 4 | 15 % | 3 | 1.00000 | 1.39310 |
| 4 | 15 % | 4 | 1.00000 | 1.39310 |
| 4 | 15 % | 5 | 0.87500 | 1.20940 |
| 5 | 20 % | 1 | 0.87500 | 1.20940 |
| 5 | 20 % | 2 | 1.00000 | 1.39310 |
| 5 | 20 % | 3 | 1.00000 | 1.39310 |
| 5 | 20 % | 4 | 1.00000 | 1.39310 |
| 5 | 20 % | 5 | 1.00000 | 1.39310 |
| 6 | 27 % | 1 | 1.00000 | 1.39310 |
| 6 | 27 % | 2 | 1.00000 | 1.39310 |
| 6 | 27 % | 3 | 1.00000 | 1.39310 |
| 6 | 27 % | 4 | 1.00000 | 1.39310 |
| 6 | 27 % | 5 | 1.00000 | 1.39310 |

Appendix A2: Statistics

*Pimephales promelas* (Fathead minnow) Survival

| Shapiro - Wilk's Test for Normality | Transform: Arc Sin(Square Root(Y)) |
|---|---|
| D = 0.108 | |
| W = 0.5958 | |
| Critical W = 0.9 | (alpha = 0.01, N = 30) |
| Critical W = 0.927 | (alpha = 0.05, N = 30) |
| Data FAIL normality test (alpha = 0.01). | |

| Steel's Many-One Rank Test | | | | | Transform: Arc Sin(Square Root(Y)) |
|---|---|---|---|---|---|
| Ho:Control<Treatment | | | | | |
| Group | Identification | Rank Sum | Critical Value | DF | Sig 0.05 |
| 1 | Control | | | | |
| 2 | 8 % | 30.00 | 16.00 | 5.00 | |
| 3 | 11 % | 27.50 | 16.00 | 5.00 | |
| 4 | 15 % | 27.50 | 16.00 | 5.00 | |
| 5 | 20 % | 27.50 | 16.00 | 5.00 | |
| 6 | 27 % | 30.00 | 16.00 | 5.00 | |
| Critical values are 1 tailed (k=5) | | | | | |

Appendix A2: Statistics

*Pimephales promelas* (Fathead minnow) Growth

| Shapiro - Wilk's Test for Normality | | No Transformation |
|---|---|---|
| D = 0.1126 | | |
| W = 0.965 | | |
| Critical W = 0.9 | (alpha = 0.01, N = 30) | |
| Critical W = 0.927 | (alpha = 0.05, N = 30) | |
| Data PASS normality test (alpha = 0.01). | | |

| Bartlett's Test for Homogeneity of Variance | | No Transformation |
|---|---|---|
| Calculated B1 statistic = 6.419 | | |
| Critical B = 15.086 | (alpha = 0.01, df = 5) | |
| Data PASS B1 homogeneity test at 0.01 level. | | |

Appendix A2: Statistics

*Pimephales promelas* (Fathead minnow) Growth

| ANOVA Table | | | | No Transformation |
|---|---|---|---|---|
| SOURCE | DF | SS | MS | F |
| Between | 5 | 0.02145 | 0.00429 | 0.9143 |
| Within (Error) | 24 | 0.1126 | 0.004692 | |
| Total | 29 | 0.1341 | | |

Critical F = 3.9 (alpha = 0.01, df = 5,24)
2.62 (alpha = 0.05, df = 5,24)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

| Dunnett's Test - Table 1 of 2 | | | | | No Transformation |
|---|---|---|---|---|---|
| Ho:Control<Treatment | | | | | |
| Group | Identification | Transformed Mean | Mean In Original Units | T Stat | Sig 0.05 |
| 1 | Control | 0.4762 | 0.4762 | | |
| 2 | 8 % | 0.5352 | 0.5352 | -1.362 | |
| 3 | 11 % | 0.502 | 0.502 | -0.5955 | |
| 4 | 15 % | 0.4608 | 0.4608 | 0.3555 | |
| 5 | 20 % | 0.5004 | 0.5004 | -0.5586 | |
| 6 | 27 % | 0.5308 | 0.5308 | -1.26 | |

Dunnett's critical value = 2.36 (1 Tailed, alpha = 0.05, df = 5,24)

| Dunnett's Test - Table 2 of 2 | | | | | No Transformation |
|---|---|---|---|---|---|
| Ho:Control<Treatment | | | | | |
| Group | Identification | Num of Reps | Min Sig Diff (In Orig. Units) | % of Control | Difference From Control |
| 1 | Control | 5 | | | |
| 2 | 8 % | 5 | 0.1022 | 21.5 | -0.059 |
| 3 | 11 % | 5 | 0.1022 | 21.5 | -0.0258 |
| 4 | 15 % | 5 | 0.1022 | 21.5 | 0.0154 |
| 5 | 20 % | 5 | 0.1022 | 21.5 | -0.0242 |
| 6 | 27 % | 5 | 0.1022 | 21.5 | -0.0546 |

Appendix A2: Statistics

*Ceriodaphnia dubia* Survival

Fisher's Exact Test

| Identification | Alive | Dead | Total Animals |
|---|---|---|---|
| Control | 10 | 0 | 10 |
| 8 % | 10 | 0 | 10 |
| Total | 20 | 0 | 20 |

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test

| Identification | Alive | Dead | Total Animals |
|---|---|---|---|
| Control | 10 | 0 | 10 |
| 11 % | 10 | 0 | 10 |
| Total | 20 | 0 | 20 |

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test

| Identification | Alive | Dead | Total Animals |
|---|---|---|---|
| Control | 10 | 0 | 10 |
| 15 % | 10 | 0 | 10 |
| Total | 20 | 0 | 20 |

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test

| Identification | Alive | Dead | Total Animals |
|---|---|---|---|
| Control | 10 | 0 | 10 |
| 20 % | 10 | 0 | 10 |
| Total | 20 | 0 | 20 |

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Appendix A2: Statistics

*Ceriodaphnia dubia* Survival

| Fisher's Exact Test | | | |
|---|---|---|---|
| Identification | Alive | Dead | Total Animals |
| Control | 10 | 0 | 10 |
| 27 % | 10 | 0 | 10 |
| Total | 20 | 0 | 20 |

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

| Summary of Fisher's Exact Test | | | | |
|---|---|---|---|---|
| Group | Identification | Exposed | Dead | Sig 0.05 |
| 0 | Control | 10 | 0 | |
| 1 | 8 % | 10 | 0 | |
| 2 | 11 % | 10 | 0 | |
| 3 | 15 % | 10 | 0 | |
| 4 | 20 % | 10 | 0 | |
| 5 | 27 % | 10 | 0 | |

Appendix A2: Statistics

*Ceriodaphnia dubia* Reproduction

| Kolmogorov Test for Normality | | No Transformation |
|---|---|---|
| D = 0.1474 | | |
| D* = 1.156 | | |
| Critical D* = 1.035 | (alpha = 0.01, N = 60) | |
| Data FAIL normality test (alpha = 0.01). | | |

| Steel's Many-One Rank Test | | | | | No Transformation |
|---|---|---|---|---|---|
| Ho:Control<Treatment | | | | | |
| Group | Identification | Rank Sum | Critical Value | DF | Sig 0.05 |
| 1 | Control | | | | |
| 2 | 8 % | 118.50 | 75.00 | 10.00 | |
| 3 | 11 % | 116.50 | 75.00 | 10.00 | |
| 4 | 15 % | 117.50 | 75.00 | 10.00 | |
| 5 | 20 % | 128.00 | 75.00 | 10.00 | |
| 6 | 27 % | 115.50 | 75.00 | 10.00 | |
| Critical values are 1 tailed (k=5) | | | | | |

Appendix A2: Statistics

*Ceriodaphnia dubia* Reproduction

Dunnett's Test for PMSD Calculation

ANOVA Table — No Transformation

| SOURCE | DF | SS | MS | F |
|---|---|---|---|---|
| Between | 5 | 88.08 | 17.62 | 0.3807 |
| Within (Error) | 54 | 2499 | 46.28 | |
| Total | 59 | 2587 | | |

Critical F = 3.38 (alpha = 0.01, df = 5,54)
2.38 (alpha = 0.05, df = 5,54)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

Dunnett's Test - Table 1 of 2 — No Transformation

Ho:Control<Treatment

| Group | Identification | Transformed Mean | Mean In Original Units | T Stat | Sig 0.05 |
|---|---|---|---|---|---|
| 1 | Control | 28.3 | 28.3 | | |
| 2 | 8 % | 31 | 31 | -0.8875 | |
| 3 | 11 % | 30.2 | 30.2 | -0.6245 | |
| 4 | 15 % | 30.6 | 30.6 | -0.756 | |
| 5 | 20 % | 32.4 | 32.4 | -1.348 | |
| 6 | 27 % | 30.4 | 30.4 | -0.6903 | |

Dunnett's critical value = 2.31 (1 Tailed, alpha = 0.05, df [used] = 5,40) (Actual df = 5,54)

Dunnett's Test - Table 2 of 2 — No Transformation

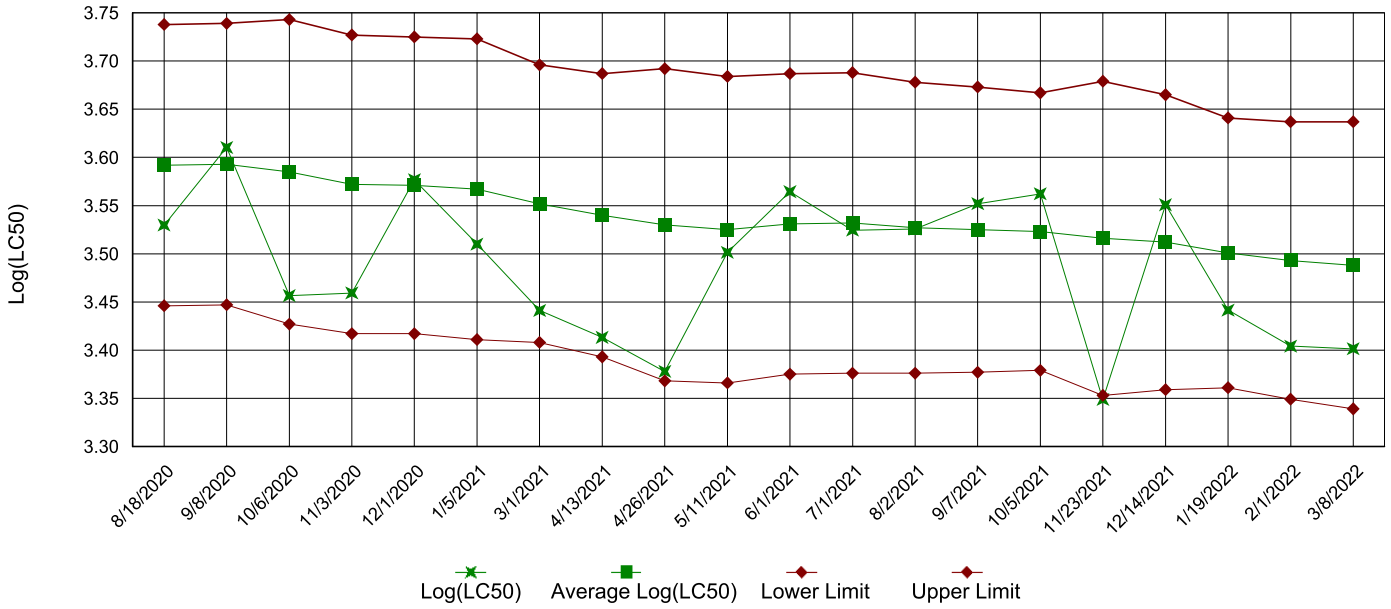
Ho:Control<Treatment

| Group | Identification | Num of Reps | Min Sig Diff (In Orig. Units) | % of Control | Difference From Control |
|---|---|---|---|---|---|
| 1 | Control | 10 | | | |
| 2 | 8 % | 10 | 7.028 | 24.8 | -2.7 |
| 3 | 11 % | 10 | 7.028 | 24.8 | -1.9 |
| 4 | 15 % | 10 | 7.028 | 24.8 | -2.3 |
| 5 | 20 % | 10 | 7.028 | 24.8 | -4.1 |
| 6 | 27 % | 10 | 7.028 | 24.8 | -2.1 |

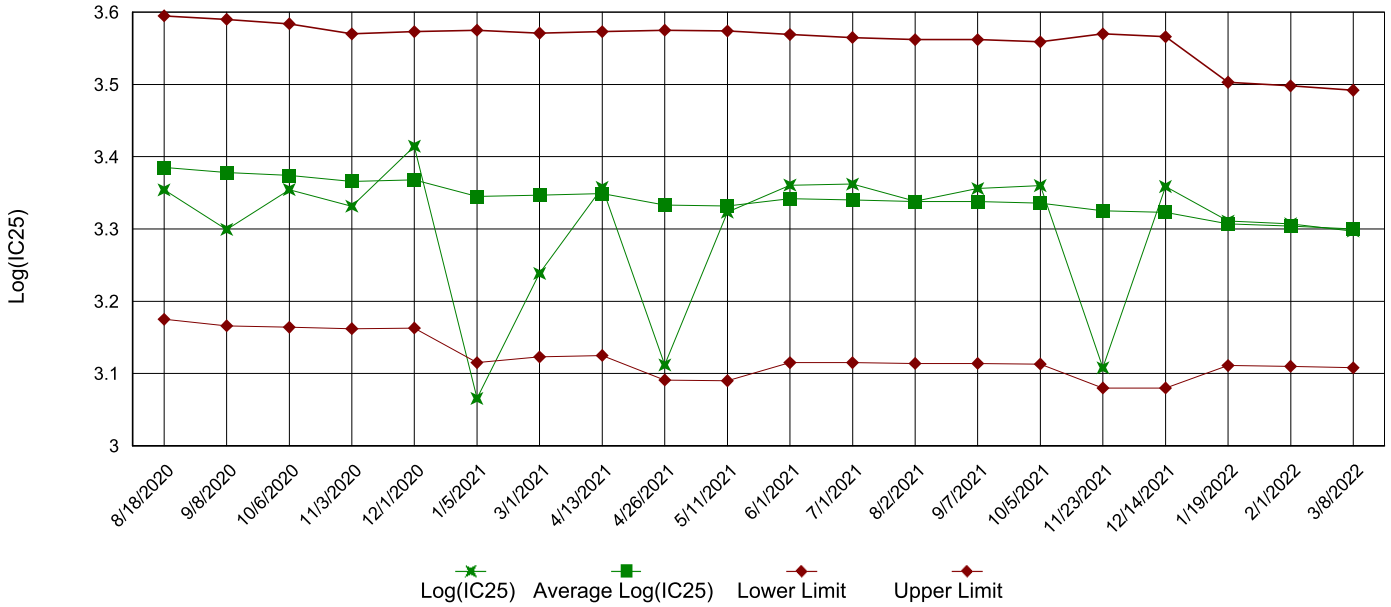
Appendix A3: Test 1000.0

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

LC50 Survival Data



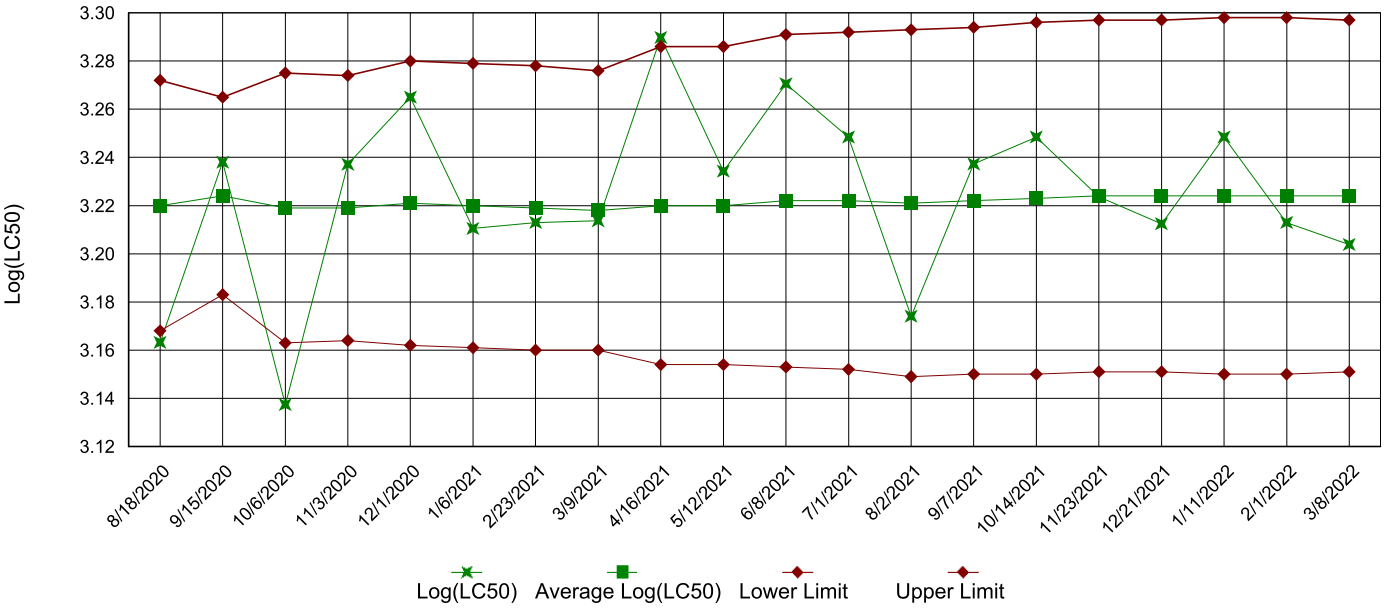

IC25 Growth Data



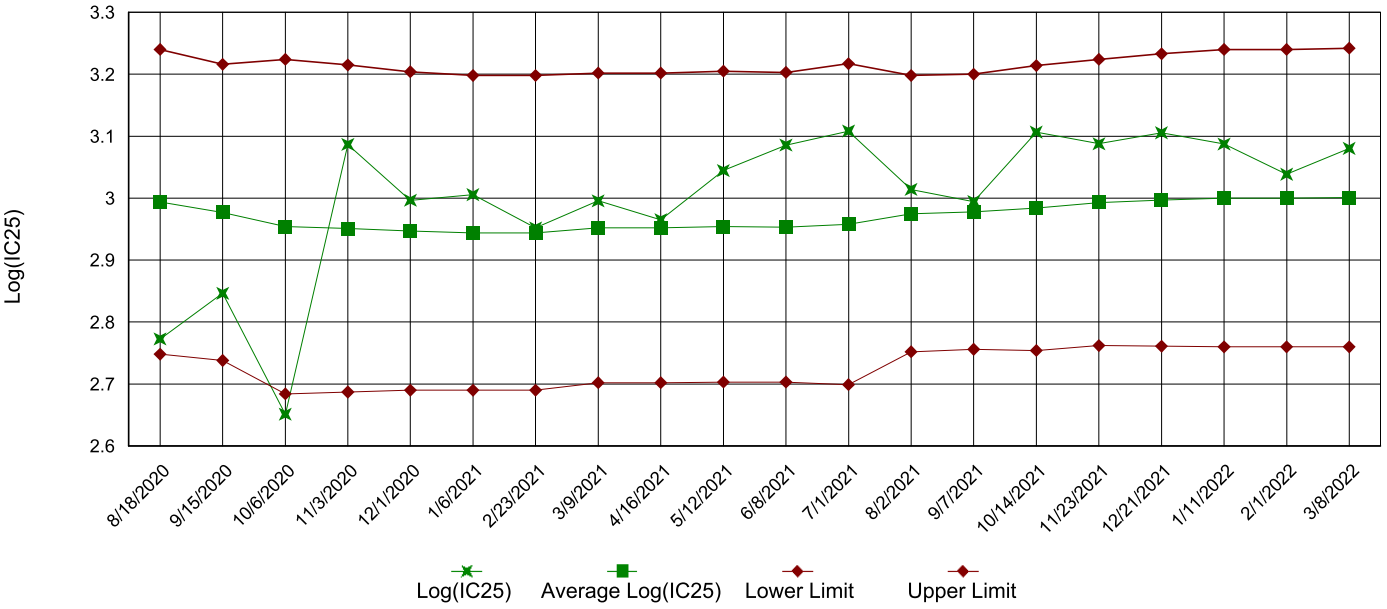
Appendix A3: Test 1002.0

Chronic Reference Toxicant, *Ceriodaphnia dubia*

LC50 Survival Data




IC25 Reproduction Data



Appendix B: Test 1000.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
*Pimephales promelas* (Fathead Minnow)
SURVIVAL AND GROWTH

Permittee: Searcy Water and Sewer System

NPDES No.: AR0021601 AFIN# 73-00055

Date and Time Test Initiated: March 15, 2022 at 0959
Date and Time Test Terminated: March 22, 2022 at 0915
Dilution water used: Outfall 001

DATA TABLE FOR SURVIVAL

| Effluent Conc. % | Percent Survival in replicate chambers A | B | C | D | E | Mean percent survival 24 hr | 48 hr | 7 days | CV% |
|---|---|---|---|---|---|---|---|---|---|
| Control | 100 | 87.5 | 100 | 100 | 100 | 100 | 100 | 97.5 | 5.73 |
| 8 % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0.00 |
| 11 % | 100 | 87.5 | 100 | 100 | 100 | 100 | 100 | 97.5 | 5.73 |
| 15 % | 100 | 100 | 100 | 100 | 87.5 | 97.5 | 97.5 | 97.5 | 5.73 |
| 20 % | 87.5 | 100 | 100 | 100 | 100 | 100 | 97.5 | 97.5 | 5.73 |
| 27 % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0.00 |

DATA TABLE FOR GROWTH

| Effluent Conc. % | Average dry weight, mg replicate chambers A | B | C | D | E | Mean dry weight, mg | CV% |
|---|---|---|---|---|---|---|---|
| Control | 0.538 | 0.389 | 0.439 | 0.520 | 0.495 | 0.476 | 12.9 |
| 8 % | 0.495 | 0.546 | 0.551 | 0.506 | 0.578 | 0.535 | 6.38 |
| 11 % | 0.580 | 0.368 | 0.462 | 0.510 | 0.590 | 0.502 | 18.2 |
| 15 % | 0.485 | 0.424 | 0.502 | 0.455 | 0.438 | 0.461 | 7.02 |
| 20 % | 0.366 | 0.529 | 0.484 | 0.574 | 0.549 | 0.500 | 16.4 |
| 27 % | 0.590 | 0.492 | 0.488 | 0.439 | 0.645 | 0.531 | 15.8 |

CV = Coefficient of variation = standard deviation * 100 / mean

Appendix B: Test 1000.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
*Pimephales promelas* (Fathead Minnow)
SURVIVAL AND GROWTH

1. Steel's Many-One Rank Test:

   Is the mean survival significantly different (p=0.05) than the control survival for the % effluent corresponding to (lethality):

   a.) LOW FLOW OR CRITICAL DILUTION _____YES __X__ NO
   b.) 1/2 LOW FLOW DILUTION _____YES _____ NO

2. Dunnett's Test:

   Is the mean dry weight (growth) significantly different (p=0.05) than the control's dry weight (growth) for the % effluent corresponding to (significant non-lethal effects):

   a.) LOW FLOW OR CRITICAL DILUTION _____YES __X__ NO
   b.) 1/2 LOW FLOW DILUTION _____YES _____ NO

3. If you answered NO to 1.a) enter [0] otherwise enter [1]: 0 (TLP6C)

4. If you answered NO to 2.a) enter [0] otherwise enter [1]: 0 (TGP6C)

5. NOEC Pimephales Lethality: 27 % (TOP6C)

6. LOEC Pimephales Lethality: 27 % (TXP6C)

7. NOEC Pimephales Sublethality: 27 % (TPP6C)

8. LOEC Pimephales Sublethality: 27 % (TYP6C)

9. Coefficient of variation for Pimephales growth: 16.4 (TQP6C)

10. Sublethality for this test: 27 % (51714 or 51714S)

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Appendix B: Test 1000.0

CHRONIC TOXICITY SUMMARY FORM
*Pimephales promelas* (Fathead minnow)
CHEMICAL PARAMETERS CHART

PERMITTEE: Searcy Water and Sewer System
NPDES NO.: AR0021601 AFIN# 73-00055
CONTACT: Mr. Jimmy Smith
ANALYST: 280, 343, 357, 358

Test Initiated: DATE: March 15, 2022 TIME: 0959
Test Terminated: DATE: March 22, 2022 TIME: 0915

| DILUTION Control | DAY 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| D.O. Initial | 7.1 | 7.5 | 7.1 | 6.3 | 6.8 | 6.5 | 7.8 |
| Final | 6.3 | 6.0 | 6.5 | 5.2 | 5.1 | 6.0 | 4.7 |
| pH Initial | 6.7 | 6.9 | 7.1 | 6.9 | 6.9 | 7.4 | 6.9 |
| Final | 7.3 | 6.7 | 7.3 | 6.9 | 6.8 | 6.8 | 6.2 |

| DILUTION 8 % | DAY 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| D.O. Initial | 6.9 | 7.4 | 7.3 | 6.2 | 6.8 | 6.5 | 7.4 |
| Final | 6.3 | 6.0 | 6.4 | 5.9 | 5.2 | 6.1 | 5.6 |
| pH Initial | 6.6 | 6.7 | 7.0 | 7.0 | 6.8 | 7.3 | 6.8 |
| Final | 7.2 | 6.9 | 7.3 | 7.1 | 7.0 | 6.9 | 6.4 |

| DILUTION 11 % | DAY 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| D.O. Initial | 7.1 | 7.4 | 7.2 | 6.2 | 6.9 | 6.7 | 7.5 |
| Final | 6.1 | 6.0 | 6.4 | 5.8 | 5.7 | 6.2 | 5.2 |
| pH Initial | 6.7 | 6.6 | 6.8 | 6.8 | 6.8 | 7.3 | 6.8 |
| Final | 7.2 | 7.0 | 7.3 | 7.0 | 7.0 | 7.1 | 6.3 |

| DILUTION 15 % | DAY 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| D.O. Initial | 7.1 | 7.3 | 7.0 | 6.0 | 6.8 | 6.6 | 7.5 |
| Final | 6.0 | 6.0 | 6.6 | 5.6 | 5.2 | 6.2 | 5.1 |
| pH Initial | 6.8 | 6.6 | 6.7 | 6.8 | 6.8 | 7.3 | 6.8 |
| Final | 7.2 | 7.0 | 7.3 | 7.1 | 7.0 | 7.0 | 6.3 |

| DILUTION 20 % | DAY 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| D.O. Initial | 7.0 | 7.2 | 7.0 | 6.1 | 6.9 | 6.6 | 7.7 |
| Final | 6.1 | 6.0 | 6.5 | 5.4 | 5.1 | 6.2 | 5.7 |
| pH Initial | 6.8 | 6.6 | 6.7 | 6.8 | 6.8 | 7.3 | 6.9 |
| Final | 7.2 | 7.0 | 7.2 | 7.0 | 7.0 | 7.1 | 6.4 |

| DILUTION 27 % | DAY 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| D.O. Initial | 7.1 | 7.2 | 7.1 | 5.9 | 7.2 | 6.5 | 7.7 |
| Final | 6.1 | 5.8 | 6.3 | 5.6 | 5.3 | 6.2 | 5.6 |
| pH Initial | 7.3 | 6.6 | 6.7 | 6.8 | 6.9 | 7.3 | 7.1 |
| Final | 7.2 | 7.0 | 7.3 | 7.1 | 7.0 | 7.2 | 6.5 |

| Alkalinity | Hardness | Conductivity | Chlorine | Sample ID |
|---|---|---|---|---|
| 18 | 41 | 260 | <0.05 | Eff 14-MAR-22 |
| 36 | 38 | 280 | <0.05 | Eff 16-MAR-22 |
| 54 | 37 | 300 | <0.05 | Eff 18-MAR-22 |

| Alkalinity | Hardness | Conductivity | Chlorine | Sample ID |
|---|---|---|---|---|
| NA | NA | 170 | <0.05 | 263935-1 |

Appendix B: Test 1002.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
*Ceriodaphnia dubia*
SURVIVAL AND REPRODUCTION

Permittee: Searcy Water and Sewer System

NPDES No.: AR0021601 AFIN# 73-00055

Date and Time Test Initiated: March 15, 2022 at 1040
Date and Time Test Terminated: March 21, 2022 at 1228
Dilution water used: Outfall 001

PERCENT SURVIVAL

| | | Percent Effluent | | | | |
|---|---|---|---|---|---|---|
| Time of Reading | Control | 8 % | 11 % | 15 % | 20 % | 27 % |
| 24 hour | 100 | 100 | 100 | 100 | 100 | 100 |
| 48 hour | 100 | 100 | 100 | 100 | 100 | 100 |
| 6 day | 100 | 100 | 100 | 100 | 100 | 100 |

NUMBER OF YOUNG PRODUCED PER FEMALE @ 6 DAYS

| | | Percent Effluent | | | | |
|---|---|---|---|---|---|---|
| Replicates | Control | 8 % | 11 % | 15 % | 20 % | 27 % |
| A | 37 | 39 | 34 | 39 | 37 | 40 |
| B | 34 | 34 | 33 | 37 | 30 | 33 |
| C | 34 | 40 | 35 | 33 | 37 | 33 |
| D | 29 | 28 | 31 | 28 | 35 | 32 |
| E | 12 | 15 | 15 | 15 | 17 | 17 |
| F | 25 | 33 | 31 | 26 | 28 | 32 |
| G | 25 | 27 | 27 | 32 | 34 | 18 |
| H | 27 | 28 | 31 | 30 | 33 | 29 |
| I | 32 | 35 | 35 | 31 | 37 | 39 |
| J | 28 | 31 | 30 | 35 | 36 | 31 |
| Mean per Adult | 28.3 | 31.0 | 30.2 | 30.6 | 32.4 | 30.4 |
| Mean per Surviving Adult | 28.3 | 31.0 | 30.2 | 30.6 | 32.4 | 30.4 |
| CV % | 24.8 | 23.2 | 19.5 | 22.1 | 19.2 | 25.0 |

CV = Coefficient of variation = standard deviation * 100 / mean
(calculated based on young produced by surviving females)

Appendix B: Test 1002.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
*Ceriodaphnia dubia*
SURVIVAL AND REPRODUCTION

1. Fisher's Exact Test:

   Is the mean survival significantly different (p=0.05) than the control survival for the % effluent corresponding to (lethality):

   a.) LOW FLOW OR CRITICAL DILUTION _____YES __X__ NO
   b.) 1/2 LOW FLOW DILUTION _____YES _____ NO

2. Steel's Many-One Rank Test:

   Is the mean number of young produced per female significantly different (p=0.05) than the control's number of young per female for the % effluent corresponding to (significant non-lethal effects):

   a.) LOW FLOW OR CRITICAL DILUTION _____YES __X__ NO
   b.) 1/2 LOW FLOW DILUTION _____YES _____ NO

3. If you answered NO to 1.a) enter [0] otherwise enter [1]: 0 (TLP3B)

4. If you answered NO to 2.a) enter [0] otherwise enter [1]: 0 (TGP3B)

5. NOEC Ceriodaphnia Lethality: 27 % (TOP3B)

6. LOEC Ceriodaphnia Lethality: 27 % (TXP3B)

7. NOEC Ceriodaphnia Sublethality: 27 % (TPP3B)

8. LOEC Ceriodaphnia Sublethality: 27 % (TYP3B)

9. Coefficient of variation for Ceriodaphnia Reproduction: 24.8 (TQP3B)

10. Lethality for this test: 27 % (51710 or 51710P)

11. Sublethality for this test: 27 % (51710 or 51710Q)

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Appendix B: Test 1002.0

CHRONIC TOXICITY SUMMARY FORM
*Ceriodaphnia dubia*
CHEMICAL PARAMETERS CHART

PERMITTEE: Searcy Water and Sewer System
NPDES NO.: AR0021601 AFIN# 73-00055
CONTACT: Mr. Jimmy Smith
ANALYST: 280, 343, 357, 358

Test Initiated: DATE: March 15, 2022 TIME: 1040
Test Terminated: DATE: March 21, 2022 TIME: 1228

| DILUTION Control | DAY 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| D.O. Initial | 7.1 | 7.5 | 7.1 | 6.3 | 6.8 | 6.5 | 7.8 |
| Final | 7.2 | 7.2 | 7.1 | 7.0 | 6.2 | 6.6 | -- |
| pH Initial | 6.7 | 6.9 | 7.1 | 6.9 | 6.9 | 7.4 | 6.9 |
| Final | 7.8 | 7.9 | 7.9 | 7.6 | 7.6 | 7.6 | -- |

| DILUTION 8 % | DAY 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| D.O. Initial | 6.9 | 7.4 | 7.3 | 6.2 | 6.8 | 6.5 | 7.4 |
| Final | 7.1 | 7.3 | 7.1 | 7.1 | 6.5 | 6.8 | -- |
| pH Initial | 6.6 | 6.7 | 7.0 | 7.0 | 6.8 | 7.3 | 6.8 |
| Final | 8.0 | 8.0 | 7.8 | 7.7 | 7.7 | 7.7 | -- |

| DILUTION 11 % | DAY 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| D.O. Initial | 7.1 | 7.4 | 7.2 | 6.2 | 6.9 | 6.7 | 7.5 |
| Final | 6.8 | 7.4 | 7.3 | 7.5 | 6.7 | 7.0 | -- |
| pH Initial | 6.7 | 6.6 | 6.8 | 6.8 | 6.8 | 7.3 | 6.8 |
| Final | 8.0 | 8.1 | 7.8 | 7.7 | 7.6 | 7.7 | -- |

| DILUTION 15 % | DAY 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| D.O. Initial | 7.1 | 7.3 | 7.0 | 6.0 | 6.8 | 6.6 | 7.5 |
| Final | 6.9 | 6.9 | 7.2 | 7.1 | 6.3 | 6.8 | -- |
| pH Initial | 6.8 | 6.6 | 6.7 | 6.8 | 6.8 | 7.3 | 6.8 |
| Final | 7.9 | 7.8 | 7.9 | 7.8 | 7.7 | 7.8 | -- |

| DILUTION 20 % | DAY 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| D.O. Initial | 7.0 | 7.2 | 7.0 | 6.1 | 6.9 | 6.6 | 7.7 |
| Final | 6.9 | 6.9 | 7.3 | 6.9 | 6.6 | 6.9 | -- |
| pH Initial | 6.8 | 6.6 | 6.7 | 6.8 | 6.8 | 7.3 | 6.9 |
| Final | 7.9 | 7.9 | 7.9 | 7.8 | 7.7 | 7.8 | -- |

| DILUTION 27 % | DAY 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| D.O. Initial | 7.1 | 7.2 | 7.1 | 5.9 | 7.2 | 6.5 | 7.7 |
| Final | 6.9 | 7.1 | 7.1 | 7.0 | 6.6 | 6.9 | -- |
| pH Initial | 7.3 | 6.6 | 6.7 | 6.8 | 6.9 | 7.3 | 7.1 |
| Final | 7.9 | 8.0 | 7.9 | 8.0 | 7.9 | 7.8 | -- |

| Alkalinity | Hardness | Conductivity | Chlorine | Sample ID |
|---|---|---|---|---|
| 18 | 41 | 260 | <0.05 | Eff 14-MAR-22 |
| 36 | 38 | 280 | <0.05 | Eff 16-MAR-22 |
| 54 | 37 | 300 | <0.05 | Eff 18-MAR-22 |

| Alkalinity | Hardness | Conductivity | Chlorine | Sample ID |
|---|---|---|---|---|
| NA | NA | 170 | <0.05 | 263935-1 |

AMERICAN INTERPLEX CORPORATION
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# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM



Client: Searcy Water Utilities
Project Reference: Bio-Monitoring
Project Manager: Jimmy Smith
Sampled By: Brady Anderson

PO No.

MATRIX: W A T E R | S O I L

NO OF BOTTLES

ANALYSES REQUESTED: Bio-Monitor

AIC CONTROL NO: 263772
AIC PROPOSAL NO:
Carrier:
Received on ice? Yes No Temp. 1.0 °C

| AIC No. | Sample Identification | Date/Time Collected | GRAB | COMP | WATER | SOIL | | NO OF BOTTLES | Bio-Monitor | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | EFF | 3-14-22 | | / | / | | | 1 | 1 | |
| | | | | | | | | | | |
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| | | | | | | | | | | |
| | | Container Type | | | | | | ? | | Field pH calibration |
| | | Preservative | | | | | | No | | on _____ @ _____ Buffer: |

G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate
NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate A=$(NH_4)_2SO_4$, $NH_4OH$

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions: _____
Contact Phone: _____
Report Attention to: _____
_____
_____
Email Address:

| Relinquished By: | Date/Time | Received By: | Date/Time |
|---|---|---|---|
| | | | |
| Relinquished By: Anderson | Date/Time 3-14-22 9:30 | Received in Lab By: | Date/Time 3-14-22 0930 |

Comments:

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM



Client: Searcy Water Utilities
Project Reference: Bio-Monitor
Project Manager: Jimmy Smith
Sampled By: Jeremy Cheely

PO No.

AIC CONTROL NO: 263772
AIC PROPOSAL NO:
Carrier:
Received on ice? (Yes) No Temp. 1.2 °C

| AIC No. | Sample Identification | Date/Time Collected | GRAB | COMP | MATRIX: WATER | MATRIX: SOIL | MATRIX: | NO OF BOTTLES | ANALYSES REQUESTED: Bio-Monitor | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | EFF | 3-16-22 8am | | / | / | | | | 1 | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | Container Type | | | | | | | P | Field pH calibration |
| | | Preservative | | | | | | | NO | on _____ @ _____ |
| | | | | | | | | | | Buffer: |

G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate
NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate A=$(NH_4)_2SO_4$, $NH_4OH$

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions: _____
Contact Phone: _____
Report Attention to: _____
_____
_____
Email Address:

| Relinquished By: | Date/Time | Received By: | Date/Time |
|---|---|---|---|
| | | | |
| Relinquished By: [signature] | Date/Time 3-16-22 9:57am | Received in Lab By: Danny Brown | Date/Time 3-16-22 0957 |

Comments:

FORM 0060

AMERICAN INTERPLEX CORPORATION LABORATORIES

# CHAIN OF CUSTODY / ANALYSIS REQUEST FORM



Client: Seacoy Water Utilities
Project Reference: Bio-Monitoring
Project Manager: Jimmy Smith
Sampled By: Brady Anderson

PO No.

MATRIX

| AIC No. | Sample Identification | Date/Time Collected | GRAB | COMP | WATER | SOIL | NO OF BOTTLES | Bamonitor | N. Pond | S. Pond |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 | EFF | 3-18-22 8am | | / | / | | | 1 | | |
| | N. Pond | 3-18-22 2:45pm | / | | | | | | 1 | |
| | S. Pond | 3-18-22 2:30pm | / | | | | | | | 1 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | Container Type | | | | | | P | G | G |
| | | Preservative | | | | | | NO | NO | NO |

G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate
NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate A=$(NH_4)_2SO_4$, $NH_4OH$

AIC CONTROL NO: Z63772
AIC PROPOSAL NO:
Carrier:
Received on ice? (Yes) No Temp. 3.8 °C
Remarks
AIC Z63880
" "
Field pH calibration
on _____ @ _____
Buffer:

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions: _____
Contact Phone: _____
Report Attention to: _____
_____
_____
Email Address:

| Relinquished By: | Date/Time | Received By: | Date/Time |
|---|---|---|---|
| Relinquished By: Banderson | Date/Time 3-18-22 10am | Received in Lab By: | Date/Time 3-18-22 1000 |

Comments:

FORM 0060