# Wyckoff Groundwater Treatment Plant: First Quarter 2024 Bioassay Monitoring

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# 1. Introduction

This technical memorandum summarizes information obtained from the first quarter 2024 sampling event performed at the U.S. Environmental Protection Agency (EPA) Wyckoff/Eagle Harbor Superfund Site (the Site) groundwater treatment plant (GWTP) located at 5350 Creosote Place NE, Bainbridge Island, Washington. CH2M HILL Engineers, Inc. (CH2M)¹ conducted this sampling event to support the current biomonitoring requirements of the substantive condition as presented in the site's Record of Decision (EPA 2000), hereinafter referred to as "substantive condition".

Sampling was generally conducted in accordance with the final *Quality Assurance Project Plan, Groundwater Treatment Plant Operations and Maintenance* (QAPP; CH2M, 2022). While there were deviations from the QAPP as noted in the Laboratory Quality Data Review section, the data is deemed usable, and the sampling is considered to have met the monitoring requirements of the substantive condition.

The current substantive condition does not include effluent limits for chronic toxicity. Chronic toxicity testing was conducted on the effluent samples per the requirements outlined in the substantive condition. The current substantive condition does not include specific dilution series for chronic toxicity tests. For the mussel larvae chronic toxicity testing conducted during the first quarter 2024 sampling event, 69.7 percent effluent is the highest concentration tested due to the addition of hypersaline brine to achieve a salinity of 30 parts per trillion (ppt) per the *Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPA/600/R-95/136, 1995).

Due to the recent toxicity observed in the highest test concentrations for the mussel larvae chronic toxicity testing, concurrent tests were conducted (one test using artificial salts and the other test using HSB) during the first quarter 2024 sampling event to evaluate potential toxicity for undiluted sample (i.e. salts) while maintaining comparability of results from this quarter to previous test results (i.e. HSB). 69.7 percent effluent is the highest concentration tested using the HSB for the first quarter 2024 testing.

No statistically significant effects on the survival or development endpoints were observed for all test concentrations, indicating no evidence of the presence of chronic toxicity.

As stated above, the current substantive condition does not include effluent limit for chronic toxicity. The chronic toxicity test requirement section of the substantive condition (Section II.8) specifies the following:

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 $<sup>^{</sup>m 1}$  CH2M HILL Engineers, Inc. is now a wholly owned subsidiary of Jacobs Engineering Group Inc.

"EPA and Ecology will evaluate the results to determine whether they indicate the occurrence of chronic toxicity outside the mixing zone. If it appears that this may be occurring, a toxicity evaluation and reduction plan will be prepared within 90 days. The evaluation portion of the plan may include additional toxicity testing if needed to follow up on initial results or gather information for a possible toxicity limit in the future."

The observed results for the chronic developmental endpoint would not trigger this requirement.

# 2. Sampling and Analysis Results

Biomonitoring samples were collected per the monitoring frequency included in the substantive condition. Samples were collected from a 24-hr. autosampler collection point at the effluent tank of the treatment system. Water samples were collected on January 30, 2024. Chemical testing was conducted on a split of each sample collected for bioassay testing per the substantive condition requirement. The bioassays were performed by EcoAnalysts, Inc. (EcoAnalysts), Port Gamble, Washington, a Washington State Department of Ecology accredited lab. Table 1 lists the sample Laboratory ID and sampling analysis methods. EcoAnalysts sampling analysis report for chronic toxicity testing is provided in Attachment 1.

Table 1. Biological Testing Summary

| Laboratory  | Laboratory ID | Method                          | Test Type/Descriptor/Species                              |
|-------------|---------------|---------------------------------|---|
| EcoAnalysts | P240130.03    | EPA/600/R-95-136 Method 1005.0; | Chronic/48-hr Survival and                                |
|             |               | ASTM E724-89                    | Development/ <i>Mytilus galloprovincialis</i><br>(Mussel) |
|             |               | TOX042.12                       | (Mussel)  |

No statistically significant effects were detected in any effluent concentration tested for the survival or development endpoint of the bivalve test. This result indicates a No Observed Effect Concentration of 69.7 percent (the highest concentration tested) of the effluent concentration and a chronic toxic unit of 1.4 for both endpoints. The Effect Concentration expected to affect 50 percent of the organisms (EC50) is greater than 100 percent and 69.7 percent of the effluent concentration, respectively for the salt and HSB adjusted samples, respectively.

# 3. Laboratory Quality Data Review

A CH2M chemist validated the bioassay results Stage 2A in accordance with the QAPP. The QAPP (CH2M 2022) was cited by EcoAnalysts and the appropriate species of mussel specified in the QAPP was used for the analytical testing.

The data were 100 percent complete, and method and QAPP quality control requirements were met, with the following exceptions noted:

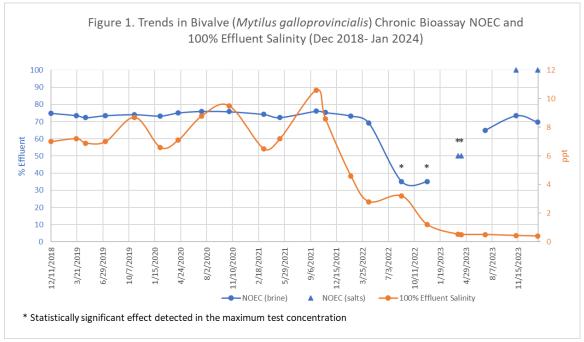
- (1) The QAPP reference toxicant copper sulfate was not used. The reference toxicant utilized was ammonia. A review of the total and unionized ammonia quality control data indicates the ammonia reference toxicant test results were within two standard deviations of the laboratory mean at the time of testing. There is no impact to the data and an addendum to the QAPP to utilize ammonia as reference toxicant was requested in May 2023 after these samples were collected and analyzed.
- (2) Replicate 3 of the 6.25% effluent concentration in the brine test was removed from statistical analysis because the vial was compromised from potential contamination. Test data is considered usable because no statistically significant biological response of the test organisms was not detected at any of the test concentrations.

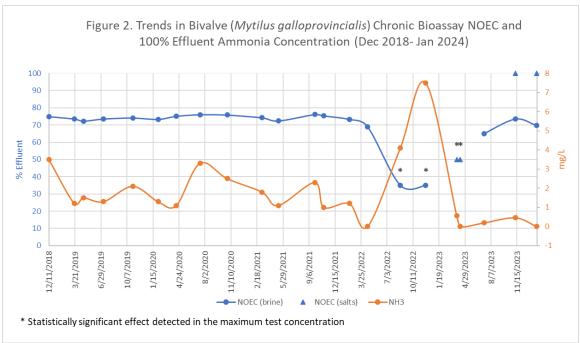
(3) No significant differences were observed between the laboratory (dilution water) control and brine control indicating that the addition of hypersaline brine did not contribute to any negative biological effects. There was a significant difference between the laboratory (dilution water) control and artificial salts control. Test data is considered usable because both the laboratory (dilution water) control and artificial salts control met EPA test acceptability criteria. In addition, there was no effect in any of the test concentrations, artificial salts did not contribute to any negative biological effects.

# 4. Trends

A review of bioassay data collected from 2007 through the first quarter of 2024 indicated there were no statistically significant effect detected for the survival endpoint for any test concentrations and species. No statistically significant effect was detected for the sublethal endpoints with the exception for the sampling events from the third quarter of 2022 through second quarter of 2023. For these four sampling events, statistically significant effects were detected in the maximum test concentrations for the developmental endpoint of the chronic bioassay test.

Figure 1 shows the bivalve chronic bioassay NOEC and salinity for the 100 percent effluent samples from December 2018 through January 2024. NOEC for bivalve chronic bioassay tests conducted prior to December 2018 were 70 percent. Hypersaline brine (HSB) with a fixed concentration was used for the salinity adjustment for chronic toxicity testing conducted prior to December 2018, therefore the maximum test concentrations remained the same for that test period. The laboratories that conducted the testing from December 2018 to November 2022 used HSB created at their laboratory (i.e. concentration varies slightly from batch to batch), therefore the resulting maximum test concentrations varies slightly for the different monitoring events. The maximum test concentration for the first and second quarter of 2023 is higher than previous monitoring events as well as third quarter of 2023 (i.e. 100 percent versus ~70 percent) due to the use of artificial sea salts as opposed to HSB. This resulted in a higher NOEC than those reported for the third and fourth quarter of 2022 despite a statistically significant effect was only observed in the maximum test concentration in the samples in all four sampling events. For the first quarter of 2024, concurrent tests were conducted (one test using artificial salts and the other test using HSB) for the split samples (see Figure 1 for NOEC for samples with salinity adjustment using brine and salts). A review of the water quality parameters measured for the bioassay samples indicated the lowest detected salinity levels were detected in the samples collected from the most recent seven sampling events (see Figure 1). While the elevated ammonia concentrations detected in the third and fourth quarter 2022 may have contributed to the observed toxicity during those sampling events, ammonia does not appear to be contributing to the toxicity observed in the monitoring events for the first and second quarter of 2023 (see Figure 2).





# 5. Overall Assessment

While the current substantive condition does not include specific whole effluent toxicity (WET) limits, the Washington Administrative Code (WAC) 173-205-020 specifies the following:

"Whole effluent toxicity performance standard" means a level of effluent toxicity that is consistently so much lower than is necessary to meet state water quality standards (chapter 173-201A WAC) that no reasonable potential exists to violate the water quality standards. For acute toxicity, the performance standard is the median survival in one hundred percent effluent being equal to or greater than eighty percent and no individual test result showing less than sixty-five percent survival in one hundred percent effluent.

For chronic toxicity, the performance standard is no chronic toxicity test demonstrating a statistically significant difference in response between the control and a test concentration equal to the acute critical effluent concentration. For permittees that are ineligible for an approved mixing zone, the performance standard will equal or be close to equal (in the case of acute toxicity) the water quality-based effluent toxicity limit.

Based on sampling results, the survival and development endpoints of the chronic toxicity test met the WET performance standard because survival rates and proportion normal development were within acceptable limits. Due to the recently observed toxicity from third quarter 2022 through second quarter of 2023, CH2M recommends triggering of an accelerated testing if the next testing meets EPA test acceptability criteria and a statistically significant effect is detected when compared to the lab control. As there are no established chronic toxicity criteria included in the substantive condition, CH2M recommends an accelerated schedule of WET testing to establish whether a pattern of chronic toxicity exists. Consistent with WAC 173-205-090(1)(b), it is recommended that the accelerated testing to be conducted monthly for three months using the same toxicity test as in the routine effluent WET testing where a statistically significant effect is detected.

Due to the deviation of the QAPP quality control requirement for the artificial salts control for the mussel larvae chronic toxicity test, CH2M recommends continued concurrent mussel chronic bioassay testing using both artificial salt and brine for salinity adjustments in 2024 Q2. The following lists the recommended test dilution series:

### Brine

Maximum test concentration, 50%, 25%, 12.5%, 6.25%, and control

### **Artificial Salt**

100%, Maximum test concentration for the chronic toxicity testing using brine for salinity adjustment, 50%, 25%, 12.5%, 6.25%, and control.

### References

ASTM. 1989. Standard Guide for Conducting Static Acute Toxicity Tests Starting with Embryos of Saltwater Bivalve Molluscs, E724-89. ASTM International, West Conshohocken, PA.

CH2M HILL Engineers, Inc. (CH2M, now a wholly owned subsidiary of Jacobs Engineering Group Inc.). 2022. *Quality Assurance Project Plan, Groundwater Treatment Plant Operations and Maintenance*. Final. Prepared for Wyckoff/Eagle Harbor Superfund Site, Bainbridge Island, Washington, U.S. Environmental Protection Agency, Region 10, Seattle, Washington. January.

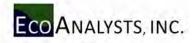
EPA. 1995. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, 1st ed. EPA/600/R-95/136. U.S. Environmental Protection Agency, National Exposure Research Laboratory, Cincinnati, OH.

EPA. 2000. Record of Decision: Wyckoff/Eagle Harbor Superfund Site Soil and Groundwater Operable Units, Bainbridge Island, Washington. EPA/ROD/R10-00/047. U.S. Environmental Protection Agency Region 10, Seattle, WA.

Washington Administrative Code (WAC) 173-205-020, "Definitions." Available at: <a href="https://app.leg.wa.gov/WAC/default.aspx?cite=17">https://app.leg.wa.gov/WAC/default.aspx?cite=17</a>3-205-020

WAC 173-205-090, "Response to noncompliance with whole effluent toxicity limits." Available at: <a href="https://app.leg.wa.gov/WAC/default.aspx?cite=173-205-090">https://app.leg.wa.gov/WAC/default.aspx?cite=173-205-090</a>

Attachment 1
EcoAnalysts Toxicity Testing Results
Wyckoff/Eagle Harbor Superfund Groundwater
Treatment Plant



# **TOXICITY TESTING RESULTS**

# WYCKOFF/EAGLE HARBOR SUPERFUND SITE GROUNDWATER TREATMENT PLANT BAINBRIDGE ISLAND, WA

NPDES TOXICITY TESTING: 1ST QUARTER 2024

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Contract: 148043868

Jacobs Project Number: 707869CH

EcoAnalysts Report ID: PG1958Q1.01

Submittal Date: February 23, 2024



All testing reported herein was performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and EcoAnalysts is not responsible for use of less than the complete report. The test results summarized in this report apply only to the sample(s) evaluated. This document is uncontrolled when printed or accessed from electronic distribution.

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# **APPENDICES**

Appendix A: Statistical Comparison and Laboratory Documents

Appendix B: Chain-of-Custody and Sample Receipt Forms

# **ACRONYMS AND ABBREVIATIONS**

EC<sub>50</sub>: Effect Concentration to 50% of test population

EPA: Environmental Protection Agency

LC<sub>50</sub>: Lethal Concentration to 50% of test population

LOEL: Lowest Observed Effect Level

NOEL: No Observed Effect Level

NPDES: National Pollutant Discharge Elimination System

PMSD: Percent Minimum Significant Difference

QAPP: Quality Assurance Project Plan

QM: Quality Manual

SOP: Standard Operating Procedures

WET: Whole Effluent Toxicity

# 1. EXECUTIVE SUMMARY

EcoAnalysts conducted Whole Effluent Toxicity (WET) testing as part of the biological compliance monitoring for Wyckoff/Eagle Harbor Superfund Site, in Bainbridge Island, Washington. The objective of this program was to assess the potential toxicity of discharge water to selected aquatic organisms following procedures defined under the facility's Quality Assurance Project Plan (QAPP) (CH2M HILL 2022). The results of the toxicity testing are contained in this report.

The bivalve development was conducted as a side-by-side test, with one aliquot of effluent sample adjusted to test salinity with hypersaline brine, and another aliquot adjusted with artificial salts.

A statistically significant biological response of the test organisms was not detected at the 69.7% (brine, highest concentration achievable) and 100% (salt) effluent sample concentrations, for the proportion survived or proportion normal endpoints (Table 1-1).

Table 1-1. Toxicity Test Results Summary.

|                 | Test  | NOEL (%) | LOEL (%) | LC50/EC50 (%) |
|-----------------|---|----------|----------|---------------|
| Changin Daine   | <i>Mytilus galloprovincialis</i><br>48-Hour Proportion Survived | 69.7     | >69.7    | >69.7         |
| Chronic - Brine | <i>Mytilus galloprovincialis</i><br>48-Hour Proportion Normal   | 69.7     | >69.7    | >69.7         |
| Chronic - Salt  | <i>Mytilus galloprovincialis</i><br>48-Hour Proportion Survived | 100      | >100     | >100          |
| Cilionic - Salt | <i>Mytilus galloprovincialis</i><br>48-Hour Proportion Normal   | 100      | >100     | >100          |

NOEL = No Observed Effect Level LOEL = Lowest Observed Effect Level

 $LC_{50}/EC_{50}$  = Lethal/Effect Concentration to 50% of test population

# 2. METHODS

The sample was analyzed for toxicity using criteria outlined in ASTM E724-89 and the Environmental Protection Agency's (EPA) most recently promulgated effluent guidance documents outlined in Section 4.

To evaluate the relative sensitivity of the organisms, reference toxicity tests were performed using standard reference toxicants (Lee 1980).

# 2.1 Sample Collection and Storage

Jacobs personnel collected two samples on January 30, 2024, which were used to conduct the Bivalve Survival and Development side-by-side test. The samples were transported by EcoAnalysts personnel and received at the laboratory on the same day as collection. The sample temperatures upon receipt were 5.6°C and was 6.2°C. Both samples were within the recommended temperature range since they were received within 4 hours of collection. Samples were composited and used for testing.

Additional sample conditions are summarized in Table 2-1. The samples were held in a walk-in cold room at  $4 \pm 2$  °C in the dark until utilized for testing.

Table 2-1. Sample Conditions upon Receipt

| Sample  | 24052146_1     |
|---|----------------|
| Laboratory ID                                     | P240130.03     |
| Date/Time sampled                                 | 01/30/24; 0935 |
| Date/Time received                                | 01/30/24; 1154 |
| Dissolved Oxygen (mg/L)<br>Recommended: >4.0 mg/L | 9.2            |
| Temperature (°C) Recommended: 0 – 6°C             | 5.6 – 6.2      |
| pH (units)<br>Recommended: 6 – 9                  | 7.5            |
| Conductivity (µS/cm)                              | 798            |
| Salinity (ppt)                                    | 0.4            |
| Total Chlorine (mg/L)                             | 0.01           |
| Total Ammonia (mg/L)                              | 0.00           |

# 2.2 Bioassay Testing

Bioassay testing for this project consisted of one chronic bioassay. The test conducted in support of this project is summarized in Table 2-2.

Table 2-2. Biological Testing Performed

| Test Type | Test Descriptor                     | Species                             | Method  |
|-----------|-------------------------------------|-------------------------------------|---|
| Chronic   | 48-Hour Survival and<br>Development | Mytilus galloprovincialis<br>Mussel | EPA/600/R-95-136 Method 1005.0;<br>ASTM E724-89;<br>TOX042.12 |

# 2.3 Organisms for Testing

Adult mussels ( $Mytilus\ galloprovincialis$ ) were obtained from Taylor Shellfish in Shelton, Washington on December 15, 2023. They were delivered via Taylor Shellfish personnel and maintained under ambient seawater flow-through conditions at  $12\pm3^{\circ}C$  until utilized for testing. Water quality measurements were collected from transport containers and the overall health of the organisms was visually confirmed by a laboratory technician.

# 2.4 Water for Bioassay Testing

Seawater diluent used in this study came from the northern Hood Canal at Port Gamble, Washington. This water source has been used successfully on similar bioassay testing programs. Extensive testing on a variety of test species has shown that there is no significant potential for toxicity or bioaccumulation from this water supply. Chemical analysis of each water source is conducted and reviewed on an annual basis.

# 2.5 Sample Adjustment

The effluent sample 24052146\_1 was received at a salinity of 0.4 ppt. The salinity of the effluent sample was increased by the addition of Crystal Sea® MarineMix bioassay grade artificial salt for the salt portion of the side-by-side bivalve test. A separate aliquot was adjusted to the desired test salinity using hypersaline brine for the other half of the side-by-side bivalve test. Table 2-3 summarizes the salinity adjustments performed on the project sample in relation to marine test species.

An artificial salt control sample was created to evaluate any potential negative impacts to the test organisms from the salinity adjustment alone. This sample was designated "Salt Control". A "Brine Control" was also prepared for the bivalve test that included an equal proportion of hypersaline brine added to a mixture of natural seawater (Lab Control) and deionized water. The results of this additional control are discussed in the sections below.

Table 2-3. Salinity Adjustment of Project Samples

| Sample ID         | Test                                | Sample Salinity<br>Upon Receipt | Sample Salinity Adjustment (ppt) | Salinity<br>Adjustment Media |
|-------------------|-------------------------------------|---------------------------------|----------------------------------|------------------------------|
| 24052146_1:       | Mytilus galloprovincialis           | 0.4 nnt                         | 30 ± 2                           | Hypersaline Brine            |
| Collected 1/30/24 | 48-Hour Survival and<br>Development | 0.4 ppt                         | 50 ± 2                           | Artificial Salt              |

# 2.6 Data Management and Analysis

Endpoint data was calculated for each replicate, and the mean value and standard deviation were determined for each sample concentration. All hand-entered data was reviewed for data entry errors, which were corrected prior to summary calculations. A minimum of 10% of all calculations and data sorting was reviewed for errors. Review counts were conducted on any apparent outliers.

Statistical comparisons were made according to the EPA guidance. Statistical comparisons were performed using CETIS™ software.

# 2.7 Quality Assurance/Quality Control

The quality assurance objectives for toxicity testing conducted by the testing laboratory are detailed in the method specific guidance documents and the laboratory's quality manual (QM). These objectives for accuracy and precision involve all aspects of the testing process, including the following:

- Source and Condition of Test Organisms
- Condition of Equipment

- Test Conditions
- Instrument Calibration
- Use of Reference Toxicants
- Record Keeping
- Data Evaluation

The batch of test organisms obtained was evaluated in a reference toxicant test that was run concurrently with the test period to establish the sensitivity of the test organisms. The reference toxicant  $LC_{50}$  or  $EC_{50}$  should fall within two standard deviations of the historical laboratory mean. Water quality measurements were monitored to ensure that they fell within prescribed limits.

The methods employed in every phase of the toxicity testing program are detailed in the EcoAnalysts Standard Operating Procedures (SOP). All EcoAnalysts staff members receive regular, documented training in all SOPs and test methods. Finally, all data collected and produced because of these analyses were recorded on approved data sheets. If an aspect of a test deviated from protocol, the test was evaluated to determine whether it was valid according to the regulatory agencies responsible for approval of the proposed permitting action.

# 3. RESULTS

The results of the effluent testing are presented in this section. Statistical comparisons and laboratory documents are provided in Appendix A. Chain-of-custody and sample receipt logs are provided in Appendix B.

### 3.1 Mytilus galloprovincialis Test Results

The chronic toxicity test with *M. galloprovincialis* was conducted on January 30, 2024, with sample 24052146\_1. The test was conducted as a side-by-side exposure with one aliquot of sample adjusted to test salinity with hypersaline brine and a second aliquot adjusted with artificial salts. Both tests met EPA test acceptability criteria of ≥90% proportion normal, ≥50% proportion survived, and <25% Percent Minimum Significant Difference (PMSD). The test conducted with hypersaline brine resulted in 96.7% proportion survived, 94.6% proportion normal, and 2.6% PMSD for proportion normal in the laboratory control. The test conducted with artificial salts resulted in 96.7% proportion survived, 94.4% proportion normal, and 2.5% PMSD for proportion normal in the laboratory control. Mean survival and proportion normal are summarized in Table 3-1 (brine) and Table 3-2 (salt). The test conditions are summarized in Table 3-3.

Concentrations of 6.25, 12.5, 25, 50, and 69.7% effluent were prepared utilizing laboratory water. A 100% test concentration was also included for the test with artificial salts. Sample P240130.03 (received 1/30/24) was used for test initiation. Water quality parameters were within the acceptable limits throughout the duration of the 48-hour static test. Replicate 3 of the 6.25% effluent concentration in the brine test was removed from statistical analysis because the vial was compromised.

No significant differences were observed between the laboratory (dilution water) control and brine control indicating that the addition of hypersaline brine did not contribute to any negative biological effects. There was a significant difference between the laboratory (dilution water) control and artificial salts control. However, since there wasn't an effect in any of the test concentrations, artificial salts did not contribute to any negative biological effects.

The EC $_{50}$  for the ammonia reference toxicant test was 9.2 mg/L total ammonia and was within two standard deviations of the laboratory mean (Table 3-3) at the time of testing. This indicates that the organisms are of a similar sensitivity to those previously tested at the EcoAnalysts laboratory.

Table 3-1. Results Summary for Mytilus galloprovincialis Embryo Development Test (Brine)

| Conc. (%)     | Mean Proportion Survived (%)  | Standard<br>Deviation | NOEL (%) | LOEL (%) | EC <sub>50</sub> Value (%) |
|---------------|-------------------------------|-----------------------|----------|----------|----------------------------|
| Control       | 96.7                          | 4.1                   |          |          |                            |
| Brine Control | 98.8                          | 2.5                   |          |          |                            |
| 6.25          | 100                           | 0.0                   |          |          |                            |
| 12.5          | 99.5                          | 1.0                   | 69.7     | >69.7    | >69.7                      |
| 25            | 96.9                          | 2.9                   |          |          |                            |
| 50            | 96.8                          | 6.5                   |          |          |                            |
| 69.7          | 96.6                          | 4.1                   |          |          |                            |
| Conc. (%)     | Mean Proportion<br>Normal (%) | Standard<br>Deviation | NOEL (%) | LOEL (%) | EC <sub>50</sub> Value (%) |
| Control       | 94.6                          | 1.0                   |          |          |                            |
| Brine Control | 93.6                          | 1.5                   |          |          |                            |
| 6.25          | 93.8                          | 0.5                   |          |          |                            |
| 12.5          | 93.6                          | 1.8                   | 69.7     | >69.7    | >69.7                      |
| 25            | 93.2                          | 1.3                   |          |          |                            |
| 50            | 95.1                          | 0.7                   |          |          |                            |
| 69.7          | 94.7                          | 1.9                   |          |          |                            |

NOEL = No Observed Effect Level;

LOEL = Lowest Observed Effect Level;

 $LC_{50}/EC_{50}$  = Lethal/Effect Concentration to 50% of test population;

Proportion survived = total counted / stocking density;

Proportion normal = number normal/total counted

Table 3-2. Results Summary for Mytilus galloprovincialis Embryo Development Test (Salt)

| Conc. (%)    | Mean Proportion Survived (%)  | Standard<br>Deviation | NOEL (%) | LOEL (%) | EC <sub>50</sub> Value (%) |  |  |  |
|--------------|-------------------------------|-----------------------|----------|----------|----------------------------|--|--|--|
| Control      | 96.7                          | 3.6                   |          |          |                            |  |  |  |
| Salt Control | 100                           | 0.0                   |          |          |                            |  |  |  |
| 6.25         | 96.6                          | 1.1                   |          |          |                            |  |  |  |
| 12.5         | 98.0                          | 2.6                   | 100      | . 100    | > 100                      |  |  |  |
| 25           | 98.0                          | 2.3                   | 100      | >100     | >100                       |  |  |  |
| 50           | 97.5                          | 2.9                   |          |          |                            |  |  |  |
| 69.7         | 96.4                          | 4.2                   |          |          |                            |  |  |  |
| 100          | 97.0                          | 2.9                   |          |          |                            |  |  |  |
| Conc. (%)    | Mean Proportion<br>Normal (%) | Standard<br>Deviation | NOEL (%) | LOEL (%) | EC <sub>50</sub> Value (%) |  |  |  |
| Control      | 94.4                          | 1.1                   |          |          |                            |  |  |  |
| Salt Control | 92.1                          | 1.9                   |          |          |                            |  |  |  |
| 6.25         | 93.9                          | 0.7                   |          |          |                            |  |  |  |
| 12.5         | 92.5                          | 2.2                   | 100      | . 100    | . 100                      |  |  |  |
| 25           | 04.7                          | 0.7                   | 100      | >100     | >100                       |  |  |  |
|              | 94.7                          | 0.7                   |          |          |                            |  |  |  |
| 50           | 93.8                          | 1.2                   |          |          |                            |  |  |  |
|              |                               |                       |          |          |                            |  |  |  |

NOEL = No Observed Effect Level;

LOEL = Lowest Observed Effect Level;

 $LC_{50}/EC_{50}$  = Lethal/Effect Concentration to 50% of test population;

Proportion survived = total counted / stocking density;

Proportion normal = number normal/total counted

Table 3-3. Test Condition Summary for Mytilus galloprovincialis Embryo Development Test.

| Test Duration / Type   | 48-Hour; Static  |   |  |  |  |
|--|--|---|--|--|--|
| Species  | Mytilu   | s galloprovincialis   |  |  |  |
| Supplier   | Та   | ylor Shellfish  |  |  |  |
| Date acquired  |  | 12/15/23  |  |  |  |
| Test Dates   | 1/3  | 0/24 – 2/1/24   |  |  |  |
| Age at test initiation Recommended: <4-hour embryos                        |  | <4 hours  |  |  |  |
| Sample(s) used:  | 240521   | 46_1; P240130.03  |  |  |  |
| Holding Time at Initiation:<br>Recommended: < 36 hours                     |  | 7 hours   |  |  |  |
| Test Procedures  | EPA/600/R-95-136, N  | Nethod 1005.0; SOP: TOX042.12   |  |  |  |
| Test location  | EcoAnalys  | sts, Port Gamble, WA  |  |  |  |
| Control water / Diluent  | 0.45 μm-filtered, North Hood Canal seawater                    |   |  |  |  |
| Test Lighting  | 16 hour light / 8 hour dark                                    |   |  |  |  |
| Test Chamber   | 30   | -mL Chamber   |  |  |  |
| Exposure volume  |  | 10 mL   |  |  |  |
| Organisms/replicate  | Recommended: 150 –300  | Actual: 262   |  |  |  |
| Replicates/treatment   |  | 4   |  |  |  |
| Concentration/treatment  |  | 5, 50, and 69.7% (brine)<br>. 50, 69.7 and 100% (salt)  |  |  |  |
| Feeding  |  | None  |  |  |  |
| Test solution renewal  |  | None  |  |  |  |
| Test Water Quality   |  |   |  |  |  |
| Test Dissolved Oxygen  | Recommended: > 4.0 mg/L  | Actual: 7.7 – 8.7 mg/L (brine),<br>7.8 – 8.1 mg/L (salt)  |  |  |  |
| Test Temperature   | Recommended: 16 ± 1°C  | Actual: 15.3 – 17.3 °C (brine),<br>15.5 – 17.4 °C (salt)  |  |  |  |
| Test pH  | Recommended: 7 – 9   | Actual: 7.6 – 8.2 (brine),<br>7.6 – 8.3 (salt)  |  |  |  |
| Test Salinity  | Recommended: $30 \pm 2$ ppt                                    | Actual: 28 – 29 ppt (brine),<br>28 – 30 ppt (salt)  |  |  |  |
| Control performance standard (Survival,<br>Normal shell development, PMSD) | Recommended: ≥50% survival, ≥90% normal development, <25% PMSD | Actual: Brine: 96.7% survival, 94.6% normal development, 2.6% PMSD; Salt: 96.7% survival, 94.4% normal development, 2.5% PMSD |  |  |  |
| Reference Toxicant Date  |  | 1/30/24   |  |  |  |
| Reference Toxicant EC <sub>50</sub>  | 9.2 mg   | :/L total ammonia   |  |  |  |
| Laboratory Mean EC <sub>50</sub>   | 7.1 mg   | :/L total ammonia   |  |  |  |
| Acceptable Range EC <sub>50</sub> (± 2 SD)                                 | 3.9 – 12.9 mg/L to   | otal ammonia (within range)   |  |  |  |
| Deviations from Test Protocol  | Brine 6.25% Replic   | cate 3 removed from analysis  |  |  |  |

# 4. REFERENCES

- ASTM. 1989. Standard Guide for Conducting Static Acute Toxicity Tests Starting with Embryos of Saltwater Bivalve Molluscs, E724-89. ASTM International, West Conshohocken, PA.
- CETIS. 2022. CETIS™ Comprehensive Environmental Toxicity Information System User's Guide. Tidepool Scientific Software. McKinleyville, CA.
- CH2M HILL. 2022. Quality Assurance Project Plan, Groundwater Treatment Plant Operations and Maintenance, Final. Wyckoff/Eagle Harbor Superfund Site. Bainbridge Island, Washington.
- USEPA. 1995. Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine Organisms and Estuarine Organisms, First Edition. EPA-600-R-95-136.

Toxicity Testing Results Wyckoff/Eagle Harbor Superfund Site Groundwater Treatment Plant

# **APPENDIX A**

STATISTICAL COMPARISONS AND LABORATORY DOCUMENTS

Report ID PG1958Q1.01 EcoAnalysts, Inc.

Toxicity Testing Results Wyckoff/Eagle Harbor Superfund Site Groundwater Treatment Plant

# **APPENDIX A.1**

MYTILUS GALLOPROVINCIALIS 48-HOUR SURVIVAL AND DEVELOPMENT TEST

STATISTICAL COMPARISON AND LABORATORY DATA SHEETS

Report ID PG1958Q1.01 EcoAnalysts, Inc.

Report Date: Test Code/ID: 22 Feb-24 12:07 (p 1 of 2) P240130.03BC / 19-6883-4716

| WARD WES A          |                           |         |  |                          |            |              | Tes           | t Code  | /ID:                | P24013               | 30.03BC / 19      | -6883-4 | 71   |
|---------------------|---------------------------|---------|--|--------------------------|------------|--------------|---------------|---------|---------------------|----------------------|-------------------|---------|------|
| Bivalve Larva       | l Survival and            | Develop | ment Test                                  |                          |            |              |               |         |                     |                      | Ec                | oAnaly  | sts  |
| Batch ID:           | 13-6318-1280              | r = +3  | Test Type:                                 | Development-S            | Survival   |              | 1.0           | Analyst | : Da                | Danielle Mulligan    |                   |         |      |
| Start Date:         | 30 Jan-24 16:             | 10      | Protocol: EPA/600/R-95/136 (1995) Diluent: |                          | : La       | boratory Sea | water         |         |                     |                      |                   |         |      |
| <b>Ending Date:</b> | 01 Feb-24 15:             | 21      | Species:                                   | Mytilus gallopri         | ovincialis |              | H             | Brine:  | Evaporated Seawater |                      |                   |         |      |
| Test Length:        | 47h                       | - 10    | Taxon:                                     | Bivalvia                 |            |              |               | Source  |                     |                      |                   | Age: <  | <4r  |
| Sample ID:          | 18-6559-3037              |         | Code:                                      | P240130.03BC             |            |              | 13            | roject  | · W                 | yckoff Eagle         | Harbor GWI        | P 2024  | W    |
|                     | 30 Jan-24 09:             | green a | Material:                                  | Treated Groun            | dwater     |              |               | Source  | : Ja                | cobs Wyckof          | f                 |         |      |
|                     | 30 Jan-24 11;             | 54 (    | CAS (PC):                                  |                          |            |              |               | Station | : 24                | 052146_1             |                   |         |      |
| Sample Age:         |                           |         | Client:                                    | Jacobs Wycko             | ff         |              |               |         |                     |                      |                   |         |      |
|                     | arison Summa              | iry     |  |                          |            |              |               |         |                     |                      |                   |         |      |
| Analysis ID         | Endpoint                  |         |  | parison Method           |            |              | P-Val         |         |                     | ison Result          |                   |         |      |
|                     | Proportion No             |         |  | Variance t Two           |            |              | 0.163         |         |                     | ntrol passed         | The second second |         |      |
| STATE OF            | Proportion Su             | 12:4    | Equa                                       | Variance t Two           | -Sample Te | st           | 0.770         | 8 B     | Brine Co            | ntrol passed         | proportion s      | urvived |      |
|                     | parison Sumn              | nary    | 725  |                          |            |              |               |         |                     |                      |                   |         |      |
| Analysis ID         | Endpoint<br>Drangdian No. | en di   |  | parison Method           |            |              | √ NOEL        | _       | OEL                 | TOEL                 | PMSD              | TU      | . 14 |
| 16-1866-4626        |                           |         |  | rroni Adj t Test         |            |              | 69.7          |         | 69.7                |                      | 2.58%             | 1.4     |      |
| 16-5011-6400        |                           | rvived  | Bonfe                                      | erroni Adj t Test        |            |              | 69.7          | >       | 69.7                |                      | 9.25%             | 1.4     |      |
| Point Estimat       |                           |         |  |                          |            |              |               |         |                     |                      |                   |         |      |
| Analysis ID         | Endpoint                  | and t   |  | Estimate Meth            | TYPE -     |              | ✓ Level       |         |                     | 95% LCL              | 95% UCL           | _       |      |
| 20-2099-4460        | Proportion No             | rmal    | Linea                                      | r Interpolation (I       | CPIN)      |              | ✓ EC25        |         | 69.7                |                      |                   | <1.4    |      |
| 11-1031-6784        | Proportion Sur            | ningd   | 1) terms                                   | e liste en el estir e di | COLLIN     |              | ✓ EC50        |         | 69.7                | ***                  | (Appel            | <1.4    | _    |
| 11-1031-0704        | Fiopolition Sui           | iviveu  | Linea                                      | r Interpolation (I       | CPIN)      |              | √ EC25 √ EC50 |         | 69.7<br>69.7        |                      | -                 | <1.4    |      |
| Test Acceptat       | oility                    |         |  |                          |            | 1.00         |               |         |                     |                      |                   | 2301    | -    |
| Analysis ID         | Endpoint                  |         | Attrib                                     | iute                     | Test Stat  | 67.43        | Limits        |         | ), ionion           | Desistan             |                   |         |      |
| 08-5822-2281        |                           | rmal    | 0,000,000                                  | ol Resp                  | 0.9461     | 0.9          | Uppe<br><<    |         | verlap              |                      |                   |         | _    |
| 00-0022-2201        | Proportion No             |         |  | ol Resp                  | 0.9364     | 0.9          | <<            |         | es                  | Passes C<br>Passes C |                   |         |      |
| 16-1866-4626        |                           |         |  | ol Resp                  | 0.9461     | 0.9          | <<            |         | es                  | Passes C             |                   |         |      |
| 20-2099-4460        |                           |         |  | ol Resp                  | 0.9461     | 0.9          | <<            |         | es                  | Passes C             |                   |         |      |
| 11-1031-6784        |                           |         |  | ol Resp                  | 0.9666     | 0.5          | <<            |         | es                  | Passes C             |                   |         |      |
| 13-9281-0414        | Proportion Sur            | rvived  |  | ol Resp                  | 0.9666     | 0.5          | <<            |         | es                  | Passes C             |                   |         |      |
|                     | Proportion Sur            | rvived  |  | ol Resp                  | 0.9876     | 0.5          | <<            |         | es                  | Passes C             |                   |         |      |
| 16-5011-6400        | Proportion Sur            | rvived  | Contro                                     | ol Resp                  | 0.9666     | 0.5          | <<            | Y       | es                  | Passes C             | riteria           |         |      |
| Proportion No       | ormal Summar              | у       |  |                          |            |              |               |         |                     |                      |                   |         | Ī    |
| Conc-%              | Code                      | Count   | Mean                                       | 95% LCL                  | 95% UCL    | Min          | Max           | S       | td Err              | Std Dev              | CV%               | %Effe   | ct   |
| 0                   | D                         | 4       | 0.946                                      |                          | 0.9612     | 0.9341       | 0.956         |         | .0048               | 0.0095               | 1.00%             | 0.00%   | ,    |
| 0                   | BC                        | 4       | 0.936                                      |                          | 0.9602     | 0.9233       | 0.951         | 7 0     | .0075               | 0.0150               | 1.60%             | 1.02%   | ,    |
| 6.25                |                           | 3       | 0.937                                      |                          | 0.9496     | 0.9326       | 0.941         | 4 0     | .0027               | 0.0047               | 0.50%             | 0.86%   |      |
| 12.5                |                           | 4       | 0.935                                      |                          | 0.9637     | 0.9097       | 0.950         | 4 0     | .0089               | 0.0177               | 1.90%             | 1.12%   | 9    |
| 25                  |                           | 4       | 0.932                                      |                          | 0.9538     | 0.9139       | 0.945         |         | .0067               | 0.0134               | 1.44%             | 1.44%   | ,    |
| 50                  |                           | 4       | 0.951                                      |                          | 0.9616     | 0.9418       | 0.956         |         | .0032               | 0.0065               | 0.68%             | -0.569  | 6    |
| 69.7                |                           | 4       | 0.947                                      | 2 0.9165                 | 0.9779     | 0.9190       | 0.962         | 7 0     | .0096               | 0.0193               | 2,04%             | -0.139  | 6    |
| Proportion Su       |                           |         | 43.0                                       | 4 2 k 8 2 m              | June 1995  |              |               |         |                     |                      |                   |         |      |
| Conc-%              | Code                      | Count   |  |                          |            |              | Max           | _       | td Err              | Std Dev              | CV%               | %Effe   | _    |
| 0                   | D                         | 4       | 0.966                                      |                          | 1.0320     | 0.9160       | 1.000         |         | .0205               | 0.0410               | 4.25%             | 0.00%   |      |
| 0                   | BC                        | 4       | 0.987                                      |                          | 1.0270     | 0.9504       | 1.000         |         | .0124               | 0.0248               | 2.51%             | -2.179  |      |
| 6.25                |                           | 3       | 1.000                                      |                          | 1.0000     | 1.0000       | 1.000         |         | .0000               | 0.0000               | 0.00%             | -3.469  |      |
| 12.5                |                           | 4       | 0.995                                      |                          | 1.0100     | 0.9809       | 1.000         |         | .0048               | 0.0095               | 0.96%             | -2.969  |      |
| 25                  |                           | 4       | 0.968                                      |                          | 1.0150     | 0.9313       | 1.000         |         | .0147               | 0.0293               | 3.02%             | -0.209  |      |
| 50                  |                           | 4       | 0.967                                      |                          | 1.0710     | 0.8702       | 1.000         |         | .0324               | 0.0649               | 6.71%             | -0.109  |      |
| 69.7                |                           | 4       | 0.965                                      | 6 0.9008                 | 1.0300     | 0.9198       | 1.000         | 0       | .0204               | 0.0408               | 4.22%             | 0.10%   | )    |
|                     |                           |         |  |                          |            |              |               |         |                     |                      |                   |         |      |

Report Date: Test Code/ID: 22 Feb-24 12:07 (p 2 of 2) P240130.03BC / 19-6883-4716

|                |               |            |         |         |         | Test Code/ID: | P240130.03BC / 19-6883-4716   |
|----------------|---------------|------------|---------|---------|---------|---------------|-------------------------------|
| Bivalve Larval | Survival and  | Developmen | nt Test |         |         |               | EcoAnalysts                   |
| Proportion No  | rmal Detail   |            |         |         |         | MD5: F940     | D12F01CA89A5B3FA16B01601E5ECE |
| Conc-%         | Code          | Rep 1      | Rep 2   | Rep 3   | Rep 4   |               |                               |
| 0              | D             | 0.9438     | 0.9341  | 0.9564  | 0.9500  |               |                               |
| 0              | BC            | 0.9237     | 0.9233  | 0.9517  | 0.9468  |               |                               |
| 6.25           |               | 0.9398     | 0.9414  | 0.9326  |         |               |                               |
| 12.5           |               | 0.9097     | 0.9416  | 0.9401  | 0.9504  |               |                               |
| 25             |               | 0.9139     | 0.9377  | 0.9455  | 0.9325  |               |                               |
| 50             |               | 0.9418     | 0.9530  | 0.9544  | 0.9561  |               |                               |
| 69.7           |               | 0.9190     | 0.9544  | 0.9627  | 0.9529  |               |                               |
| Proportion Sur | rvived Detail |            |         |         |         | MD5: 36D6     | 6E136B1BB4042928204B65A5D1F23 |
| Conc-%         | Code          | Rep 1      | Rep 2   | Rep 3   | Rep 4   |               |                               |
| 0              | D             | 0.9504     | 1.0000  | 1.0000  | 0.9160  |               |                               |
| 0              | BC            | 0.9504     | 1.0000  | 1.0000  | 1.0000  |               |                               |
| 6.25           |               | 1.0000     | 1.0000  | 1.0000  |         |               |                               |
| 12.5           |               | 1.0000     | 0.9809  | 1.0000  | 1.0000  |               |                               |
| 25             |               | 0.9313     | 0.9809  | 1.0000  | 0.9618  |               |                               |
| 50             |               | 1.0000     | 1.0000  | 1.0000  | 0.8702  |               |                               |
| 69.7           |               | 0.9427     | 1.0000  | 0.9198  | 1.0000  |               |                               |
| Proportion No  | rmal Binomia  | ıls        |         |         |         |               |                               |
| Conc-%         | Code          | Rep 1      | Rep 2   | Rep 3   | Rep 4   |               |                               |
| 0              | D             | 235/249    | 255/273 | 263/275 | 228/240 |               |                               |
| 0              | BC            | 230/249    | 265/287 | 256/269 | 267/282 |               |                               |
| 6.25           |               | 250/266    | 257/273 | 249/267 |         |               |                               |
| 12.5           |               | 252/277    | 242/257 | 267/284 | 268/282 |               |                               |
| 25             |               | 223/244    | 241/257 | 260/275 | 235/252 |               |                               |
| 50             |               | 259/275    | 284/298 | 251/263 | 218/228 |               |                               |
| 69.7           |               | 227/247    | 251/263 | 232/241 | 263/276 |               |                               |
| Proportion Sur | rvived Binom  | ials       |         |         |         |               |                               |
| Conc-%         | Code          | Rep 1      | Rep 2   | Rep 3   | Rep 4   |               |                               |
| 0              | D             | 249/262    | 262/262 | 262/262 | 240/262 |               |                               |
| 0              | BC            | 249/262    | 262/262 | 262/262 | 262/262 |               |                               |
| 6.25           |               | 262/262    | 262/262 | 262/262 |         |               |                               |
| 12.5           |               | 262/262    | 257/262 | 262/262 | 262/262 |               |                               |
| 25             |               | 244/262    | 257/262 | 262/262 | 252/262 |               |                               |
| 50             |               | 262/262    | 262/262 | 262/262 | 228/262 |               |                               |
| 69.7           |               | 247/262    | 262/262 | 241/262 | 262/262 |               |                               |

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| Rivalve I arval                              |  |  |   |  |   |  |   | est C                                  | ode/ID:   | 1 24013   | 0.03BC / I                     | 9-6883-471              |
|--|--|--|---|--|---|--|---|--|---|---|--------------------------------|-------------------------|
| Divalve Laivai                               | Survival and [   | Developme  | nt Test   |  |   |  |   |  |   |   | E                              | coAnalysts              |
| Analysis ID:                                 | 16-1866-4626   | En   | dpoint:   | Proportion N   | ormal   |  |   | CET                                    | S Versio  | n: CETISv2  | .1.4                           |                         |
|  | 22 Feb-24 12:0   | 3 Ana  | alysis:   | Parametric-N   | fultiple Compa  | arison   |   | State                                  | ıs Level:   | 1   |                                |                         |
|  | 22 Feb-24 12:0   |  |   |  | 8E20B839E1  |  | 385   | Edit                                   | or ID:  | 003-841-  | 189-5                          |                         |
| Batch ID:                                    | 13-6318-1280   | Tes  | t Type:   | Development  | t-Survival  |  |   | Anal                                   | vst: D  | anielle Mulliga   | in                             |                         |
| Start Date:                                  | 30 Jan-24 16:10  |  | tocol:  | The state of the state of the                          | 5/136 (1995)  |  |   | Dilu                                   | 0   | aboratory Sea   |                                |                         |
| Ending Date:                                 | 01 Feb-24 15:2   |  | ecies:  | Mytilus gallor   | The state of the state of   |  |   | Brin                                   |   | vaporated Sea   |                                |                         |
| Test Length:                                 |  |  | on:   | Bivalvia   | St. W. Science  |  |   | Sou                                    |   | aylor Shellfish   |                                | Age: <4                 |
| Sample ID:                                   | 18-6559-3037   | Co   | de:   | P240130.03E  | BC .  |  |   | Proj                                   | ect: W  | Vyckoff Eagle I   | Harbor GW                      | TP 2024/M               |
| Sample Date:                                 | 30 Jan-24 09:3   |  | terial:   | Treated Grou   |   |  |   | Soul                                   |   | acobs Wyckof  |                                | 6.45.20.11              |
| Receipt Date:                                |  |  | S (PC):   | Treated City   | , 15710101  |  |   | Stati                                  |   | 4052146_1   |                                |                         |
| Sample Age:                                  |  |  | ent:  | Jacobs Wyck  | off   |  |   | Stati                                  | OII. Z  | 4032140_1   |                                |                         |
| Data Transform                               |  |  | 200-1   |  | ****  | NOEL   | 10  | ci .                                   | TOEL  | Toy Units   | Men                            | PMSD                    |
| Angular (Correc                              |  | Alt Hyp<br>C > T   |   |  | -   | 69.7   | >69   |  | TOEL  | Tox Units   | 0.02439                        | 2.58%                   |
| Bonferroni Ad                                |  |  |   |  |   | 20.7   |   |  |   |   | 0.02.100                       | 2.0070                  |
|  | vs Conc-%  | d  | f Test S  | Stat Critical  | MSD   | P-Type   | P-V   | alue                                   | Decisio   | on(α:5%)  |                                |                         |
| Dilution Water                               | 6.25   | 5  | 0.851   |  | 0.05392   | CDF  | _   | 000                                    |   | gnificant Effect  |                                |                         |
| Dilution water                               | 12.5   | 6  | 1.105   |  | 0.03392   | CDF  |   | 112                                    |   | gnificant Effect  |                                |                         |
|  | 25   | 6  | 1.457   | (3),747  | 0.04992   | CDF  |   | 082                                    |   | gnificant Effect  |                                |                         |
|  | 50   | 6  | -0.600  |  | 0.04992   | CDF  |   | 000                                    |   | gnificant Effect  |                                |                         |
|  | 69.7   | 6  | -0.23   |  | 0.04992   | CDF  |   | 000                                    |   | gnificant Effect  |                                |                         |
| Test Acceptab                                | ility Criteria   | TAC  | Limits  |  |   |  |   |  |   |   |                                |                         |
| Attribute                                    | Test Stat  |  | Uppe  | r Overlag  | Decision  |  |   |  |   |   |                                |                         |
| Control Resp                                 | 0.9461   | 0.9  | <<  | Yes  | Passes C  | riteria  |   |  |   |   |                                |                         |
| ANOVA Table                                  |  |  |   |  |   |  |   |  |   |   |                                |                         |
| Source                                       | Sum Squ  | ares   | Mean  | Square   | DF  | F Stat   | P-V   | /alue                                  | Decisio   | on(α:5%)  |                                |                         |
| Between                                      | 0.005104   | 6  | 0.001   |  | 5   | 1.35   | 0.2   | 914                                    |   | gnificant Effec   |                                |                         |
| Error  | 0.012858   |  | 0.000   |  | 17  | .,,  | -   | 2.0                                    | .05.7.559   |   |                                |                         |
| Total  | 0.017962   | 6  |   | 200  | 22  | -  |   |  |   |   |                                |                         |
| ANOVA Assum                                  | nptions Tests  |  |   |  |   |  |   |  |   |   |                                |                         |
| Attribute                                    | Test   |  |   |  | Test Stat   | Critical   | P-V   | /alue                                  | Decisio   | on(α:1%)  |                                |                         |
| Variance                                     | Bartlett E   | quality of Va  | ariance T   | Test   | 5.335   | 15.09  | 0.3   | 764                                    | Equal \   | /ariances   |                                |                         |
|  |  | quality of V   |   |  | 1.132   | 4.336  |   | 812                                    |   | /ariances   |                                |                         |
|  |  | ne Equality  |   |  | 0.3019  | 4.437  |   | 046                                    |   | /ariances   |                                |                         |
| Distribution                                 |  | -Darling A2  |   | 00.10.00   | 1.077   | 3.878  |   | 081                                    |   | ormal Distribut   | ion                            |                         |
|  |  |  |   |  | 0.9658  | 2.576  | 0.3   |  |   | Distribution  | 871                            |                         |
| Distribution                                 | D'Agostin  | o Kurtosis   |   |  |   |  | 0.0   |  |   | Distribution  |                                |                         |
| Distribution                                 |  | o Kurtosis   |   |  | 2.107   | 2.576  |   | JJ 1                                   |   |   |                                |                         |
| Distribution                                 | D'Agostin  | o Skewnes  | s Test  | bus Test   | 2.107<br>5.372  | 2.576<br>9.21  |   |  |   |   |                                |                         |
| Distribution                                 | D'Agostin<br>D'Agostin   | o Skewnes<br>o-Pearson   | s Test<br>K2 Omni   | ibus Test  | 5.372   | 9.21   | 0.0   | 681                                    | Normal  | Distribution  | ion                            |                         |
| Distribution                                 | D'Agostin<br>D'Agostin<br>Kolmogor                                       | o Skewnes  | s Test<br>K2 Omni<br>D Test                                       |  |   |  | 0.0   |  | Normal<br>Non-No  |   | ion                            |                         |
|  | D'Agostin<br>D'Agostin<br>Kolmogoi<br>Shapiro-V                          | o Skewnes<br>o-Pearson<br>ov-Smirnov<br>Vilk W Norn                          | s Test<br>K2 Omni<br>D Test                                       |  | 5.372<br>0.2114   | 9.21<br>0.2097   | 0.0   | 681<br>090                             | Normal<br>Non-No  | Distribution<br>ormal Distribut   | ion                            |                         |
| Proportion No                                | D'Agostin<br>D'Agostin<br>Kolmogoi<br>Shapiro-V                          | o Skewnes<br>o-Pearson<br>ov-Smirnov<br>Vilk W Norn                          | s Test<br>K2 Omni<br>D Test                                       | st   | 5.372<br>0.2114<br>0.9021   | 9.21<br>0.2097<br>0.88   | 0.0   | 681<br>090<br>280                      | Normal<br>Non-No  | Distribution<br>ormal Distribut   | cv%                            | %Effect                 |
| Proportion No<br>Conc-%                      | D'Agostin<br>D'Agostin<br>Kolmogoi<br>Shapiro-V                          | o Skewnes<br>o-Pearson<br>rov-Smirnov<br>Vilk W Norr                         | s Test<br>K2 Omni<br>D Test<br>nality Te                          | st<br>95% LC   | 5.372<br>0.2114<br>0.9021   | 9.21<br>0.2097<br>0.88   | 0.0<br>0.0<br>0.0                             | 681<br>090<br>280                      | Normal<br>Non-No<br>Normal                                      | Distribution<br>ormal Distribution<br>Distribution<br>Std Err                     |                                | %Effect<br>0.00%        |
| Proportion No<br>Conc-%<br>0                 | D'Agostin<br>D'Agostin<br>Kolmogor<br>Shapiro-V<br>ormal Summary<br>Code | o Skewnes<br>o-Pearson<br>rov-Smirnov<br>Vilk W Norn                         | s Test<br>K2 Omni<br>D Test<br>nality Te                          | 95% LC<br>1 0.9309                                     | 5.372<br>0.2114<br>0.9021<br>SL 95% UCL                               | 9.21<br>0.2097<br>0.88<br>Median                               | 0.0<br>0.0<br>0.0<br>Mir<br>0.9               | 681<br>090<br>280                      | Normal<br>Non-No<br>Normal                                      | Distribution  prmal Distributi  Distribution  Std Err  0.0048                     | CV%                            |                         |
| Proportion No<br>Conc-%<br>0<br>6.25         | D'Agostin<br>D'Agostin<br>Kolmogor<br>Shapiro-V<br>ormal Summary<br>Code | o Skewnes<br>o-Pearson<br>rov-Smirnov<br>Vilk W Norr<br>Count                | K2 Omni<br>D Test<br>nality Te<br>Mean                            | 95% LC<br>1 0.9309<br>9 0.9263                         | 5.372<br>0.2114<br>0.9021<br>SL 95% UCL<br>0.9612                     | 9.21<br>0.2097<br>0.88<br>Median<br>0.9469                     | 0.0<br>0.0<br>0.0<br>Mir<br>0.9               | 681<br>090<br>280<br>1<br>341          | Normal<br>Non-Normal<br>Normal<br>Max<br>0.9564                 | Distribution<br>ormal Distribution<br>Distribution<br>Std Err<br>0.0048<br>0.0027 | CV%                            | 0.00%<br>0.86%          |
| Proportion No<br>Conc-%<br>0<br>6.25<br>12.5 | D'Agostin<br>D'Agostin<br>Kolmogor<br>Shapiro-V<br>ormal Summary<br>Code | o Skewnes<br>o-Pearson<br>rov-Smirnov<br>Vilk W Norr<br>Count<br>4<br>3      | K2 Omni<br>D Test<br>nality Te<br>Mean<br>0.946<br>0.937<br>0.935 | 95% LC<br>1 0.9309<br>9 0.9263<br>5 0.9073             | 5.372<br>0.2114<br>0.9021<br>SL 95% UCL<br>0.9612<br>0.9496<br>0.9637 | 9.21<br>0.2097<br>0.88<br>Median<br>0.9469<br>0.9398<br>0.9409 | 0.0<br>0.0<br>0.0<br>Mir<br>0.9<br>0.9        | 681<br>090<br>280<br>341<br>326<br>097 | Normal<br>Non-No<br>Normal<br>Max<br>0.9564<br>0.9414<br>0.9504 | Std Err 0.0048 0.0027 0.0089  | CV%<br>1.00%<br>0.50%<br>1.90% | 0.00%<br>0.86%<br>1.12% |
| Proportion No                                | D'Agostin<br>D'Agostin<br>Kolmogor<br>Shapiro-V<br>ormal Summary<br>Code | o Skewnes<br>o-Pearson<br>rov-Smirnov<br>Vilk W Norr<br>Count<br>4<br>3<br>4 | K2 Omni<br>D Test<br>nality Te<br>Mean<br>0.946<br>0.937          | 95% LC<br>1 0.9309<br>9 0.9263<br>5 0.9073<br>4 0.9111 | 5.372<br>0.2114<br>0.9021<br>SL 95% UCL<br>0.9612<br>0.9496           | 9.21<br>0.2097<br>0.88<br>Median<br>0.9469<br>0.9398           | 0.0<br>0.0<br>0.0<br>Mir<br>0.9<br>0.9<br>0.9 | 681<br>090<br>280<br>1<br>341<br>326   | Max<br>0.9564<br>0.9414   | Std Err 0.0048 0.0027 0.0089 0.0067   | CV%<br>1.00%<br>0.50%          | 0.00%<br>0.86%          |

Report Date: Test Code/ID:

22 Feb-24 12:07 (p 2 of 7) P240130.03BC / 19-6883-4716

### **Bivalve Larval Survival and Development Test**

**EcoAnalysts** 

Analysis ID: 16-1866-4626 Endpoint: Proportion Normal

**CETIS Version:** 

CETISv2.1.4

Analyzed: Edit Date:

22 Feb-24 12:03 22 Feb-24 12:02 Analysis: Parametric-Multiple Comparison MD5 Hash: A74253BF098E20B839E1A95914D9D385 Status Level: Editor ID:

003-841-189-5

| Angular | (Corrected) | Transformed | Summary |
|---------|-------------|-------------|---------|
|---------|-------------|-------------|---------|

| Conc-% | Code | Count | Mean   | 95% LCL | 95% UCL | Median | Min    | Max    | Std Err | CV%   | %Effect |
|--------|------|-------|--------|---------|---------|--------|--------|--------|---------|-------|---------|
| 0      | D    | 4     | 1.3370 | 1.3040  | 1.3700  | 1.3380 | 1.3110 | 1.3600 | 0.0105  | 1.57% | 0.00%   |
| 6.25   |      | 3     | 1.3190 | 1.2950  | 1.3430  | 1.3230 | 1.3080 | 1.3260 | 0.0056  | 0.73% | 1.34%   |
| 12.5   |      | 4     | 1.3160 | 1.2600  | 1.3710  | 1.3250 | 1.2660 | 1.3460 | 0.0174  | 2.64% | 1.61%   |
| 25     |      | 4     | 1.3090 | 1.2670  | 1.3500  | 1.3130 | 1.2730 | 1.3350 | 0.0131  | 2.00% | 2.12%   |
| 50     |      | 4     | 1.3490 | 1.3250  | 1.3720  | 1.3540 | 1.3270 | 1.3600 | 0.0073  | 1.09% | -0.87%  |
| 69.7   |      | 4     | 1.3420 | 1.2760  | 1.4070  | 1.3540 | 1.2820 | 1.3760 | 0.0205  | 3.05% | -0.34%  |

# **Proportion Normal Detail**

| Conc-% | Code | Rep 1  | Rep 2  | Rep 3  | Rep 4  |
|--------|------|--------|--------|--------|--------|
| 0      | D    | 0.9438 | 0.9341 | 0.9564 | 0.9500 |
| 6.25   |      | 0.9398 | 0.9414 | 0,9326 |        |
| 12.5   |      | 0.9097 | 0.9416 | 0.9401 | 0.9504 |
| 25     |      | 0.9139 | 0.9377 | 0.9455 | 0.9325 |
| 50     |      | 0.9418 | 0.9530 | 0.9544 | 0.9561 |
| 69.7   |      | 0.9190 | 0.9544 | 0.9627 | 0.9529 |

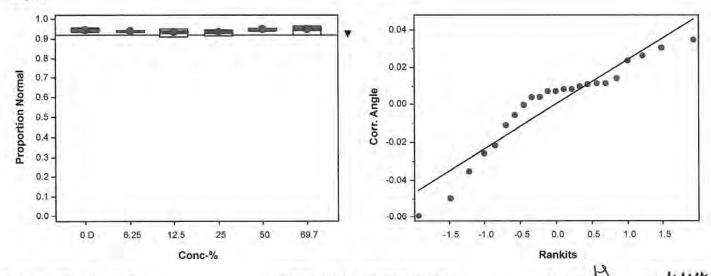
# Angular (Corrected) Transformed Detail

| Code | Rep 1  | Rep 2  | Rep 3   | Rep 4  |  |
|------|--------|--|---|--|--|
| D    | 1.3310 | 1.3110   | 1.3600  | 1.3450   |  |
|      | 1.3230 | 1.3260   | 1.3080  |  |  |
|      | 1.2660 | 1.3270   | 1.3240  | 1.3460   |  |
|      | 1.2730 | 1.3190   | 1.3350  | 1.3080   |  |
|      | 1.3270 | 1.3520   | 1.3560  | 1.3600   |  |
|      | 1.2820 | 1.3560   | 1.3760  | 1.3520   |  |
|      |        | D 1.3310<br>1.3230<br>1.2660<br>1.2730<br>1.3270 | D 1.3310 1.3110<br>1.3230 1.3260<br>1.2660 1.3270<br>1.2730 1.3190<br>1.3270 1.3520 | D 1.3310 1.3110 1.3600<br>1.3230 1.3260 1.3080<br>1.2660 1.3270 1.3240<br>1.2730 1.3190 1.3350<br>1.3270 1.3520 1.3560 | D 1.3310 1.3110 1.3600 1.3450<br>1.3230 1.3260 1.3080<br>1.2660 1.3270 1.3240 1.3460<br>1.2730 1.3190 1.3350 1.3080<br>1.3270 1.3520 1.3560 1.3600 |

# **Proportion Normal Binomials**

| Conc-% | Code | Rep 1   | Rep 2   | Rep 3   | Rep 4   |  |
|--------|------|---------|---------|---------|---------|--|
| 0      | D    | 235/249 | 255/273 | 263/275 | 228/240 |  |
| 6.25   |      | 250/266 | 257/273 | 249/267 |         |  |
| 12.5   |      | 252/277 | 242/257 | 267/284 | 268/282 |  |
| 25     |      | 223/244 | 241/257 | 260/275 | 235/252 |  |
| 50     |      | 259/275 | 284/298 | 251/263 | 218/228 |  |
| 69.7   |      | 227/247 | 251/263 | 232/241 | 263/276 |  |

# Graphics



Report Date: Test Code/ID: 22 Feb-24 12:07 (p 3 of 7) P240130.03BC / 19-6883-4716

|                |        |               |           |       |             |      |               |  |                  | 1631   | ooderib.         | 1 2701           | 0.0000         | 13-0000-471    |
|----------------|--------|---------------|-----------|-------|-------------|------|---------------|--|------------------|--|------------------|------------------|----------------|----------------|
| Bivalve Larva  | l Sur  | vival and D   | evelop    | men   | t Test      |      |               |  |                  |  |                  |                  | 4              | EcoAnalysts    |
| Analysis ID:   | 08-5   | 822-2281      |           | End   | ooint:      | Pro  | portion Norr  | mal                                    |                  | CE   | TIS Version      | CETISV           | 2.1.4          |                |
| Analyzed:      | 22 F   | eb-24 12:05   | 5         |       | ysis:       |      | ametric-Two   | the state of the state of the state of |                  | and the same of th | atus Level:      | 1                |                |                |
| Edit Date:     | 22 F   | eb-24 12:02   | 2         | MD5   | Hash:       | BE   | 7D7424747     | 734BD8D489                             | 921A36256        | 946 Ed   | itor ID:         | 003-841          | -189-5         |                |
| Batch ID:      | 13-6   | 318-1280      |           | Test  | Type:       | Dev  | elopment-S    | urvival                                |                  | An   | alyst: Da        | nielle Mulliga   | an             |                |
| Start Date:    | 30 J   | an-24 16:10   |           |       | ocol:       |      | V600/R-95/    |  |                  |  |                  | oratory Sea      |                |                |
| Ending Date:   |        |               |           | Spe   | 0000        |      | ilus gallopro |  |                  |  |                  | aporated Se      |                |                |
| Test Length:   |        | CD 24 10.21   |           | Taxo  |             |      | alvia         | VIIICIAIIS                             |                  |  |                  | lor Shellfish    |                | Age: <4        |
|                | 4/11   | 21.501115     |           | laxu  | 711.        | 6.0  | 2000          |  |                  | 30   | urce. Ta         | /ioi oneillisi   |                | Age. \4        |
| Sample ID:     |        | 559-3037      |           | Cod   |             |      | 0130.03BC     |  |                  |  | 2 (1 10) 11 2 2  | ckoff Eagle      |                | WTP 2024/V     |
| Sample Date:   |        |               |           |       | rial:       | Tre  | ated Ground   | dwater                                 |                  |  |                  | cobs Wyckot      | Ħ              |                |
| Receipt Date:  |        |               |           | CAS   | (PC):       |      |               |  |                  | Sta  | ation: 240       | 052146_1         |                |                |
| Sample Age:    | 7h (5  | 5.6 °C)       |           | Clie  | nt:         | Jac  | obs Wyckof    | f                                      |                  |  |                  |                  |                |                |
| Data Transfor  | rm     |               | Alt F     | lyp   |             |      |               |  | Comparis         | son Resu   | t                |                  |                | PMSD           |
| Angular (Corre | ected) |               | C > T     |       |             |      |               |  | Brine Cor        | ntrol passe  | d proportion     | normal endp      | oint           | 1.82%          |
| Equal Variand  | ce t T | wo-Sample     | Test      |       |             |      |               |  |                  |  |                  |                  |                |                |
| Control I      | vs     | Control II    |           | df    | Test :      | Stat | Critical      | MSD                                    | P-Type           | P-Value  | Decision         | ı(α:5%)          |                |                |
| Dilution Water | 5      | Brine Con     | trol      | 6     | 1.067       |      | 1.943         | 0.0363                                 | CDF              | 0.1635   | Non-Sign         | ificant Effec    | t              |                |
| Test Acceptal  | bility | Criteria      | т         | AC L  | mite        |      |               |  |                  |  |                  |                  |                |                |
| Attribute      |        | Test Stat     |           |       | Uppe        | r    | Overlap       | Decision                               |                  |  |                  |                  |                |                |
| Control Resp   |        | 0.9461        | 0.9       |       | <<          |      | Yes           | Passes C                               | riteria          |  |                  |                  |                |                |
| Control Resp   |        | 0.9364        | 0.9       |       | <<          |      | Yes           | Passes C                               |                  |  |                  |                  |                |                |
| ANOVA Table    |        | 1.42          | -         |       |             | -    |               | of Children Care                       |                  |  |                  |                  |                |                |
| Source         |        | Sum Squ       | ares      |       | Mean        | Sai  | are           | DF                                     | F Stat           | P-Value  | Decision         | (a:5%)           |                |                |
| Between        | -      | 0.0007948     |           |       | 0.000       |      |               | 1                                      | 1.139            | 0.3270   |                  | ificant Effec    | t              |                |
| Error          |        | 0.0041879     |           |       | 0.000       |      |               | 6                                      |                  | (4,44,7  |                  |                  |                |                |
| Total          |        | 0.0049827     |           |       |             |      |               | 7                                      | -                |  |                  |                  |                |                |
| ANOVA Assu     | mptic  | ns Tests      |           |       |             |      |               |  |                  |  |                  |                  |                |                |
| Attribute      |        | Test          |           |       |             |      |               | Test Stat                              | Critical         | P-Value  | Decision         | (a:1%)           |                |                |
| Variance       |        | Levene Ed     | ruality i | of Va | riance '    | Test |               | 3.624                                  | 13.75            | 0.1056   | Equal Va         |                  |                |                |
| v dilailoc     |        | Mod Leve      |           |       |             |      | Test          | 3.327                                  | 13.75            | 0.1030   | Equal Va         |                  |                |                |
|                |        | Variance I    |           |       | , valla     |      | 1001          | 2.183                                  | 47.47            | 0.5378   | Equal Va         |                  |                |                |
| Distribution   |        | Anderson-     |           | 1000  | Fact        |      |               | 0.5108                                 | 3.878            | 0.2001   |                  | Distribution     |                |                |
| DISTRIBUTION   |        | Kolmogori     |           |       |             |      |               | 0.2304                                 | 0.3313           | 0.2686   |                  | Distribution     |                |                |
|                |        | Shapiro-W     |           |       |             | st   |               | 0.8677                                 | 0.6451           | 0.1431   |                  | Distribution     |                |                |
| Proportion N   | orma   |               | 7.12.4.01 |       |             | 100  |               | 7.77                                   | The state of     | - CC /C1   |                  |                  |                |                |
| Conc-%         | Jillia | Code          | Cour      | nt.   | Mear        |      | 95% LCL       | 95% UCL                                | Median           | Min  | Max              | Std Err          | CV%            | %Effect        |
| 0              |        | BC            | 4         | ii.   | 0.936       |      | 0.9125        | 0.9602                                 | 0.9353           | 0.9233   | 0.9517           | 0.0075           | 1.60%          | 1.02%          |
| 0              |        | D             | 4         |       | 0.946       |      | 0.9309        | 0.9612                                 | 0.9353           | 0.9233   | 0.9564           | 0.0075           | 1.00%          | 0.00%          |
| Angular (Cor   | racta  |               | -         | umm   |             |      |               | 7                                      | 270.753          |  | 3-75-70          | 100-5-60         | 70.5698        | 11.32.90       |
|                | recte  |               |           |       | ary<br>Mear |      | 05% 1.01      | 05% 1101                               | Median           | Min  | May              | Q44 E            | CV9/           | 0/ E#act       |
| Conc-%         |        | Code          | Cour      | it    |             |      | 95% LCL       | 95% UCL                                | 4-10-20-21       | Min  | Max              | Std Err          | CV%            | %Effect        |
| 0              |        | BC<br>D       | 4         |       | 1.317       |      | 1.2680        | 1.3660<br>1.3700                       | 1.3140<br>1.3380 | 1.2900   | 1.3490<br>1.3600 | 0.0155<br>0.0105 | 2.35%<br>1.57% | 1.49%<br>0.00% |
|                | 0.000  | 7 1 1 2 1 1 1 | 7         | _     | 1.007       | ×    | 1.0010        | 1.07.00                                | 1.0000           | 1.0110   | 1.0000           | 0.0100           | 1.57 70        | 0.0070         |
| Proportion N   | orma   |               | 12.0      |       | 2.3         |      | 1671.4        | 200                                    |                  |  |                  |                  |                |                |
| Conc-%         |        | Code          | Rep       |       | Rep         |      | Rep 3         | Rep 4                                  |                  |  |                  | -                |                |                |
| 0              |        | BC            | 0.923     |       | 0.923       |      | 0.9517        | 0.9468                                 |                  |  |                  |                  |                |                |
| 0              |        | D             | 0.943     | 38    | 0.934       | 1    | 0.9564        | 0.9500                                 |                  |  |                  |                  |                |                |

Report Date: Test Code/ID:

Editor ID:

22 Feb-24 12:07 (p 4 of 7) P240130.03BC / 19-6883-4716

**Bivalve Larval Survival and Development Test** 

**EcoAnalysts** 

Analysis ID: 08-5822-2281

Endpoint: Proportion Normal

CETIS Version: CETISv2.1.4

Analyzed: Edit Date: 22 Feb-24 12:05 22 Feb-24 12:02

Analysis: Parametric-Two Sample

MD5 Hash: BE57D742474734BD8D48921A36256946

Status Level:

003-841-189-5

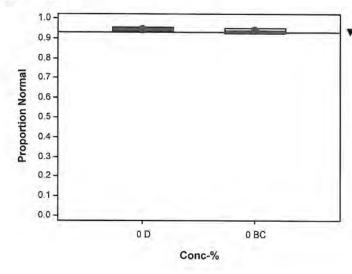
Angular (Corrected) Transformed Detail

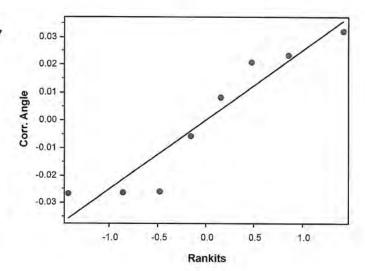
| Conc-% | Code | Rep 1  | Rep 2  | Rep 3  | Rep 4  |  |
|--------|------|--------|--------|--------|--------|--|
| 0      | BC   | 1.2910 | 1.2900 | 1.3490 | 1.3380 |  |
| 0      | D    | 1.3310 | 1.3110 | 1.3600 | 1.3450 |  |

### **Proportion Normal Binomials**

| Conc-% | Code | Rep 1   | Rep 2   | Rep 3   | Rep 4   |
|--------|------|---------|---------|---------|---------|
| 0      | BC   | 230/249 | 265/287 | 256/269 | 267/282 |
| 0      | D    | 235/249 | 255/273 | 263/275 | 228/240 |

# Graphics





Report Date: Test Code/ID: 22 Feb-24 12:07 (p 5 of 7) P240130.03BC / 19-6883-4716

| Analyzed: 22 Fel Edit Date: 22 Fel Batch ID: 13-63: Start Date: 30 Jar Ending Date: 01 Fel Test Length: 47h  Sample ID: 18-65: Sample Date: 30 Jar Receipt Date: 30 Jar Receipt Date: 30 Jar Sample Age: 7h (5.6)  Data Transform  Angular (Corrected)  Bonferroni Adj t Tes Control vs  Dilution Water  Test Acceptability C Attribute | 11-6400<br>b-24 12:04<br>b-24 12:02<br>18-1280<br>n-24 16:10<br>b-24 15:21<br>59-3037<br>n-24 09:35<br>n-24 11:54<br>6 °C)  | End<br>Ana<br>MDS<br>Test<br>Prof<br>Spe<br>Taxe<br>Cod<br>Mate      | point:   | 22-5-09-12  | tiple Compa<br>956DE2BE5<br>curvival<br>136 (1995)<br>ovincialis |               | LOE >69 | Analy<br>Dilue<br>Brine<br>Sour<br>Proje<br>Sour<br>Statio | yst: Dent: Le: E   |   | 1.4<br>189-5<br>n<br>vater<br>water       |           |
|---|---|--|--|---|--|---------------|---------|--|--|---|---|-----------|
| Analyzed: 22 Fel Edit Date: 22 Fel Batch ID: 13-63: Start Date: 30 Jar Ending Date: 01 Fel Test Length: 47h  Sample ID: 18-65: Sample Date: 30 Jar Receipt Date: 30 Jar Receipt Date: 30 Jar Sample Age: 7h (5.6)  Data Transform  Angular (Corrected)  Bonferroni Adj t Tes Control vs  Dilution Water  Test Acceptability C Attribute | b-24 12:04<br>b-24 12:02<br>18-1280<br>n-24 16:10<br>b-24 15:21<br>59-3037<br>n-24 09:35<br>n-24 11:54<br>6 °C)<br>st<br>Conc-%<br>6.25<br>12.5<br>25<br>50<br>69.7 | Ana MDS Test Prof Spe Tax Cod Matt CAS Clie  Alt Hyp C > T  df 5 6 6 | ysis:   F   F   F   F   F   F   F   F   F  | Parametric-Mul<br>31C2B66CA089<br>Development-S<br>EPA/600/R-95/<br>Mytilus gallopro<br>Bivalvia<br>P240130.03BC<br>Treated Ground<br>Jacobs Wyckof | tiple Compa<br>956DE2BE5<br>curvival<br>136 (1995)<br>ovincialis | 695EA5097     | LOE     | Analy<br>Dilue<br>Brine<br>Sour<br>Proje<br>Sour<br>Statio | is Level: or ID: yst: D int: L e: E ce: T ect: V ce: J on: 2     | 1<br>003-841-1<br>vanielle Mulligar<br>aboratory Seave<br>vaporated Seave<br>aylor Shellfish<br>vyckoff Eagle H<br>acobs Wyckoff<br>4052146_1 | 189-5<br>n<br>vater<br>water<br>darbor GW | TP 2024/W |
| Edit Date: 22 Fel Batch ID: 13-63: Start Date: 30 Jar Ending Date: 01 Fel Test Length: 47h  Sample ID: 18-65: Sample Date: 30 Jar Receipt Date: 30 Jar Receipt Date: 37h (5.6)  Data Transform  Angular (Corrected)  Bonferroni Adj t Test Control vs  Dilution Water  Test Acceptability C  Attribute                                  | b-24 12:02<br>18-1280<br>n-24 16:10<br>b-24 15:21<br>59-3037<br>n-24 09:35<br>n-24 11:54<br>6 °C)<br>et<br>Conc-%<br>6.25<br>12.5<br>25<br>50<br>69.7               | Test Prof Spe Tax Cod Matt CAS Clie  Alt Hyp C > T                   | trype: It rype: It ry | 31C2B66CA089 Development-S EPA/600/R-95/ Mytilus gallopro Bivalvia P240130.03BC Freated Ground Jacobs Wyckof  | 956DE2BE5<br>urvival<br>136 (1995)<br>ovincialis<br>dwater       | 695EA5097     | LOE     | Analy<br>Dilue<br>Brine<br>Sour<br>Proje<br>Sour<br>Statio | or ID:  yst: D  yst: D  ce: E  ce: T  cet: V  ce: J  ce: J  TOEL | 003-841-1 Danielle Mulligar aboratory Seave vaporated Seave aylor Shellfish Vyckoff Eagle H acobs Wyckoff 4052146_1  Tox Units                | n<br>vater<br>water<br>darbor GW          | TP 2024/W |
| Batch ID: 13-63: Start Date: 30 Jar Ending Date: 01 Fel Test Length: 47h  Sample ID: 18-65: Sample Date: 30 Jar Receipt Date: 30 Jar Sample Age: 7h (5.6)  Data Transform  Angular (Corrected)  Bonferroni Adj t Test Control vs  Dilution Water  Test Acceptability C  Attribute   | 18-1280<br>n-24 16:10<br>b-24 15:21<br>59-3037<br>n-24 09:35<br>n-24 11:54<br>6 °C)<br>st<br>Conc-%<br>6.25<br>12.5<br>25<br>50<br>69.7                             | Test Prof Spe Tax Cod Matr CAS Clie  Alt Hyp C > T                   | t Type: It tocol: It tocol | Development-S EPA/600/R-95/ Mytilus gallopro Bivalvia P240130.03BC Freated Ground Jacobs Wyckof   | urvival<br>136 (1995)<br>vincialis<br>dwater                     | NOEL          | LOE     | Analy<br>Dilue<br>Brine<br>Sour<br>Proje<br>Sour<br>Statio | yst: Dent: Le: Ece: Toet: Vice: Jon: 2                           | anielle Mulligar<br>aboratory Seav<br>vaporated Seav<br>aylor Shellfish<br>Vyckoff Eagle H<br>acobs Wyckoff<br>4052146_1                      | n<br>vater<br>water<br>darbor GW          | TP 2024/W |
| Start Date: 30 Jar Ending Date: 01 Fel Test Length: 47h  Sample ID: 18-658 Sample Date: 30 Jar Receipt Date: 30 Jar Sample Age: 7h (5.6)  Data Transform  Angular (Corrected)  Bonferroni Adj t Test Control vs  Dilution Water  Test Acceptability C  Attribute  | n-24 16:10<br>b-24 15:21<br>59-3037<br>n-24 09:35<br>n-24 11:54<br>6 °C)<br>st<br>Conc-%<br>6.25<br>12.5<br>25<br>50<br>69.7  | Prof<br>Spe<br>Tax<br>Cod<br>Matr<br>CAS<br>Clie<br>Alt Hyp<br>C > T | rocol: I cies: | EPA/600/R-95/<br>Mytilus gallopro<br>Bivalvia<br>P240130.03BC<br>Treated Ground<br>Jacobs Wyckof  | 136 (1995)<br>ovincialis<br>dwater                               |               |         | Dilue<br>Brine<br>Sour<br>Proje<br>Sour<br>Statio          | ent: L e: E ce: T ect: V ce: J on: 2                             | aboratory Seave vaporated Seave aylor Shellfish Vyckoff Eagle Hacobs Wyckoff 4052146_1  Tox Units   | vater<br>water<br>darbor GW               | PMSD      |
| Ending Date: 01 Fel Test Length: 47h  Sample ID: 18-655 Sample Date: 30 Jar Receipt Date: 30 Jar Sample Age: 7h (5.6  Data Transform  Angular (Corrected)  Bonferroni Adj t Test Control vs  Dilution Water  Test Acceptability C  Attribute  | 59-3037<br>n-24 09:35<br>n-24 11:54<br>6 °C)<br>est<br>Conc-%<br>6.25<br>12.5<br>25<br>50<br>69.7   | Prof<br>Spe<br>Tax<br>Cod<br>Matr<br>CAS<br>Clie<br>Alt Hyp<br>C > T | rocol: I cies: | EPA/600/R-95/<br>Mytilus gallopro<br>Bivalvia<br>P240130.03BC<br>Treated Ground<br>Jacobs Wyckof  | 136 (1995)<br>ovincialis<br>dwater                               |               |         | Dilue<br>Brine<br>Sour<br>Proje<br>Sour<br>Statio          | ent: L e: E ce: T ect: V ce: J on: 2                             | aboratory Seave vaporated Seave aylor Shellfish Vyckoff Eagle Hacobs Wyckoff 4052146_1  Tox Units   | vater<br>water<br>darbor GW               | TP 2024/W |
| Test Length: 47h Sample ID: 18-65: Sample Date: 30 Jar Receipt Date: 30 Jar Receipt Date: 7h (5.6  Data Transform Angular (Corrected)  Bonferroni Adj t Test Control vs  Dilution Water  Test Acceptability C  Attribute  | 59-3037<br>n-24 09:35<br>n-24 11:54<br>6 °C)<br>st<br>Conc-%<br>6.25<br>12.5<br>25<br>50<br>69.7  | Spe Tax Cod Matr CAS Clie  Alt Hyp C>T  df  5 6 6 6                  | cies:   fon:   le:   fon:   le:   fon:   le:   fon:   fon: | Mytilus gallopro<br>Bivalvia<br>P240130.03BC<br>Freated Ground<br>Jacobs Wyckof   | ovincialis<br>Iwater   |               |         | Brine<br>Sour<br>Proje<br>Sour<br>Statio                   | e: E ce: T ect: V ce: J on: 2                                    | vaporated Sear<br>aylor Shellfish<br>Vyckoff Eagle H<br>acobs Wyckoff<br>4052146_1<br>Tox Units   | water larbor GW                           | TP 2024/W |
| Test Length: 47h Sample ID: 18-65: Sample Date: 30 Jar Receipt Date: 30 Jar Receipt Date: 7h (5.6  Data Transform Angular (Corrected)  Bonferroni Adj t Test Control vs Dilution Water  Test Acceptability C  Attribute   | 59-3037<br>n-24 09:35<br>n-24 11:54<br>6 °C)<br>st<br>Conc-%<br>6.25<br>12.5<br>25<br>50<br>69.7  | Cod<br>Mate<br>CAS<br>Clie<br>Alt Hyp<br>C>T                         | e: I erial: i (PC): nt:  | Bivalvia P240130.03BC Freated Ground Jacobs Wyckof  | iwater<br>f  |               |         | Proje<br>Sour<br>Statio                                    | ce: Tect: Vice: Ji<br>con: 2                                     | aylor Shellfish Vyckoff Eagle H acobs Wyckoff 4052146_1 Tox Units   | farbor GW                                 | TP 2024/W |
| Sample Date: 30 Jar Receipt Date: 30 Jar Receipt Date: 30 Jar Rample Age: 7h (5.6  Data Transform Angular (Corrected)  Bonferroni Adj t Tes Control vs Dilution Water  Test Acceptability C  Attribute  | n-24 09:35<br>n-24 11:54<br>6 °C)<br>est<br>Conc-%<br>6.25<br>12.5<br>25<br>50<br>69.7  | Mate CAS Clie  Alt Hyp  C > T  df  5 6 6                             | erial:<br>; (PC):<br>nt:<br>Test St  | Treated Ground Jacobs Wyckof  | iwater<br>f  |               |         | Sour   | ce: Jon: 2   | acobs Wyckoff<br>4052146_1<br>Tox Units   | MSDu                                      | PMSD      |
| Sample Date: 30 Jar Receipt Date: 30 Jar Receipt Date: 30 Jar Rample Age: 7h (5.6  Data Transform Angular (Corrected)  Bonferroni Adj t Tes Control vs Dilution Water  Test Acceptability C  Attribute  | n-24 09:35<br>n-24 11:54<br>6 °C)<br>est<br>Conc-%<br>6.25<br>12.5<br>25<br>50<br>69.7  | Mate CAS Clie  Alt Hyp  C > T  df  5 6 6                             | erial:<br>; (PC):<br>nt:<br>Test St  | Treated Ground Jacobs Wyckof  | iwater<br>f  |               |         | Sour   | ce: Jon: 2   | acobs Wyckoff<br>4052146_1<br>Tox Units   | MSDu                                      | PMSD      |
| Receipt Date: 30 Jar Sample Age: 7h (5.6)  Data Transform Angular (Corrected)  Bonferroni Adj t Tes Control vs Dilution Water  Test Acceptability C Attribute   | n-24 11:54<br>6 °C)<br>st<br>Conc-%<br>6.25<br>12.5<br>25<br>50<br>69.7   | CAS<br>Clie<br>Alt Hyp<br>C > T<br>df<br>5<br>6<br>6                 | Test St  | Jacobs Wyckof   | f  |               |         | Statio   | on: 2  | 4052146_1<br>Tox Units  | MSDu                                      |           |
| Sample Age: 7h (5.6  Data Transform  Angular (Corrected)  Bonferroni Adj t Tes  Control vs  Dilution Water  Test Acceptability C  Attribute   | 6 °C)  st  Conc-% 6.25 12.5 25 50 69.7  | Clie Alt Hyp C > T  df 5 6 6   | Test St  | at Critical   | 1  |               |         | L  | TOEL   | Tox Units   |   |           |
| Data Transform  Angular (Corrected)  Bonferroni Adj t Tes  Control vs  Dilution Water  Test Acceptability C  Attribute  | Conc-%<br>6.25<br>12.5<br>25<br>50<br>69.7  | Alt Hyp<br>C > T<br>df<br>5<br>6<br>6                                | Test St  | at Critical   | 1  |               |         |  |  |   |   |           |
| Angular (Corrected)  Bonferroni Adj t Tes  Control vs  Dilution Water  Test Acceptability C  Attribute  | Conc-%<br>6.25<br>12.5<br>25<br>50<br>69.7  | C > T  df 5 6 6  | -1.275   | 22-5-09-12  | I  |               |         |  |  |   |   |           |
| Bonferroni Adj t Tes Control vs Dilution Water  Test Acceptability C  | Conc-%<br>6.25<br>12.5<br>25<br>50<br>69.7  | df<br>5<br>6   | -1.275   | 22-5-09-12  | e.l.   | 00.7          | - 00    | .,   | 1.00   | 1.0   | 0.00001                                   | 3,2370    |
| Control vs  Dilution Water  Test Acceptability C  Attribute   | Conc-%<br>6.25<br>12.5<br>25<br>50<br>69.7  | 5<br>6<br>6  | -1.275   | 22-5-09-12  |  |               |         |  |  |   |   |           |
| Dilution Water  Test Acceptability C  Attribute   | 6.25<br>12.5<br>25<br>50<br>69.7  | 5<br>6<br>6  | -1.275   | 22-5-09-12  | MED  | D.T           | n.v.    | al   | D  | m/m/F0/3  |   |           |
| Test Acceptability C<br>Attribute   | 12.5<br>25<br>50<br>69.7  | 6  | 2.00   | 2.567   | MSD<br>0.2299  | P-Type<br>CDF | 1.00    | alue   |  | on(α:5%)<br>gnificant Effect  |   |           |
| Test Acceptability C<br>Attribute   | 25<br>50<br>69.7  | 6  |  | 2.567   | 0.2129   | CDF           | 1.00    |  |  | gnificant Effect  |   |           |
| Test Acceptability C<br>Attribute   | 50<br>69.7  | 12   | 0.1535   | 2.567   | 0.2129   | CDF           | 1.00    |  |  | gnificant Effect  |   |           |
| Test Acceptability C<br>Attribute   | 69.7  | 0  | -0.3594  | A. A. A. A. A.  | 0.2129   | CDF           | 1.00    |  |  | gnificant Effect  |   |           |
| Attribute   | ritoria   | 6  | 0.03023  |   | 0.2129   | CDF           | 1.00    |  |  | gnificant Effect  |   |           |
| Attribute   | litelia   | TAC L  | imite  |   | V  |               |         | 9121   | 101.2  | *) W 1 5 - 18-10  |   |           |
| Cartes   Dates  | Test Stat   |  | Upper  | Overlap   | Decision   |               |         |  |  |   |   |           |
| Control Resp  | 0.9666  | 0.5  | <<   | Yes   | Passes Cr  | iteria        |         |  |  |   |   |           |
| ANOVA Table   |   |  |  |   |  |               |         |  |  |   |   |           |
| Source  | Sum Squar   | res  | Mean S   | Square  | DF   | F Stat        | P-V     | alue   | Decisio  | on(a:5%)  |   |           |
| F-10-11-1   | 0.0493728   |  | 0.0098   | -7  | 5  | 0.718         | 0.61    | 88   |  | gnificant Effect  |   |           |
| Error   | 0.233814  |  | 0.0137   |   | 17   | 500 (5)       | 2.3     | 100  | General.   | 311111111111111111111111111111111111111   |   |           |
|   | 0.283187  |  | AVE 4.6.   |   | 22   | -             |         |  |  |   |   |           |
| ANOVA Assumption  | s Tests   |  |  |   |  |               |         |  |  |   |   |           |
| Attribute   | Test  |  |  |   | Test Stat  | Critical      | P-V     | alue   | Decisio  | on(a:1%)  |   |           |
| Variance  | Bartlett Equ  | ality of Va  | riance Te  | est   | 54.8   | 15.09         | <1.0    | E-05   | Unequa   | al Variances  |   |           |
|   | Levene Equ  |  |  |   | 4.292  | 4.336         | 0.01    |  | A  | /ariances   |   |           |
|   | Mod Leven   |  |  |   | 1.008  | 4.437         | 0.44    |  |  | /ariances   |   |           |
|   | Anderson-D  |  |  | 921/921   | 0.6206   | 3.878         | 0.10    |  |  | Distribution  |   |           |
|   | D'Agostino  |  |  |   | 0.1493   | 2.576         | 0.88    |  |  | Distribution  |   |           |
|   | D'Agostino  |  |  |   | 1.474  | 2.576         | 0.14    |  |  | Distribution  |   |           |
|   | D'Agostino-   |  |  | us Test   | 2.194  | 9.21          | 0.33    |  |  | Distribution  |   |           |
|   | Kolmogorov  |  |  | 40 1000   | 0.1522   | 0.2097        | 0.17    |  |  | Distribution  |   |           |
|   | Shapiro-Wil   |  |  |   | 0.9259   | 0.88          | 0.08    |  |  | Distribution  |   |           |
| Proportion Survived   | Summary   |  |  |   |  |               |         |  |  |   |   |           |
|   |   | Count  | Mean   | 95% LCL   | 95% UCL  | Median        | Min     |  | Max  | Std Err   | CV%                                       | %Effect   |
| 0   | D   | 4  | 0.9666   | 0.9013  | 1.0000   | 0.9835        | 0.91    |  | 1.0000   | 0.0205  | 4.25%                                     | 0.00%     |
| 6.25  |   | 3  | 1.0000   | 1.0000  | 1.0000   | 1.0000        | 1.00    | 000  | 1.0000   | 0.0000  | 0.00%                                     | -3.46%    |
| 12.5  |   | 4  | 0.9952   | 0.9800  | 1.0000   | 1.0000        | 0.98    | 309  | 1.0000   | 0.0048  | 0.96%                                     | -2.96%    |
| 25  |   | 4  | 0.9685   | 0.9219  | 1.0000   | 0.9714        | 0.93    |  | 1.0000   | 0.0147  | 3.02%                                     | -0.20%    |
|   |   | 4  | 0.9676   |   | 1.0000   | 1.0000        | 0.87    |  | 1.0000   | 0.0324  | 6.71%                                     | -0.10%    |
| 50  |   |  | 0.9656   |   | 1.0000   | 0.9809        | 0.07    | 20   | 110000   | 0.0024  | J.1 170                                   | U. 10 /0  |

Report Date: Test Code/ID: 22 Feb-24 12:07 (p 6 of 7) P240130.03BC / 19-6883-4716

### **Bivalve Larval Survival and Development Test**

**EcoAnalysts** 

Analysis ID: 16-5011-6400

Endpoint: Proportion Survived

CETIS Version:

Analyzed: 22 Feb-24 12:04 Edit Date: 22 Feb-24 12:02 Analysis: Parametric-Multiple Comparison
MD5 Hash: 81C2B66CA08956DE2BE5695EA5097439

Status Level:

Editor ID:

CETISv2.1.4 1 003-841-189-5

# Angular (Corrected) Transformed Summary

| Conc-% | Code | Count | Mean   | 95% LCL | 95% UCL | Median | Min    | Max    | Std Err | CV%    | %Effect |
|--------|------|-------|--------|---------|---------|--------|--------|--------|---------|--------|---------|
| 0      | D    | 4     | 1.4260 | 1.2110  | 1.6400  | 1.4750 | 1.2770 | 1.5400 | 0.0674  | 9.46%  | 0.00%   |
| 6.25   |      | 3     | 1.5400 | 1.5390  | 1.5410  | 1.5400 | 1.5400 | 1.5400 | 0.0000  | 0.00%  | -8.01%  |
| 12.5   |      | 4     | 1.5130 | 1.4270  | 1.5990  | 1.5400 | 1.4320 | 1.5400 | 0.0269  | 3.56%  | -6.12%  |
| 25     |      | 4     | 1.4130 | 1.2550  | 1.5710  | 1.4030 | 1.3060 | 1.5400 | 0.0496  | 7.02%  | 0.89%   |
| 50     |      | 4     | 1.4550 | 1.1870  | 1.7240  | 1.5400 | 1.2020 | 1.5400 | 0.0844  | 11.60% | -2.09%  |
| 69.7   |      | 4     | 1.4230 | 1.2070  | 1.6400  | 1.4700 | 1.2840 | 1.5400 | 0.0680  | 9.56%  | 0.18%   |

# **Proportion Survived Detail**

| Conc-% | Code | Rep 1  | Rep 2  | Rep 3  | Rep 4  |
|--------|------|--------|--------|--------|--------|
| 0      | D    | 0.9504 | 1.0000 | 1.0000 | 0.9160 |
| 6.25   |      | 1.0000 | 1.0000 | 1.0000 |        |
| 12.5   |      | 1.0000 | 0.9809 | 1.0000 | 1.0000 |
| 25     |      | 0.9313 | 0.9809 | 1.0000 | 0.9618 |
| 50     |      | 1.0000 | 1.0000 | 1.0000 | 0.8702 |
| 69.7   |      | 0.9427 | 1.0000 | 0.9198 | 1.0000 |

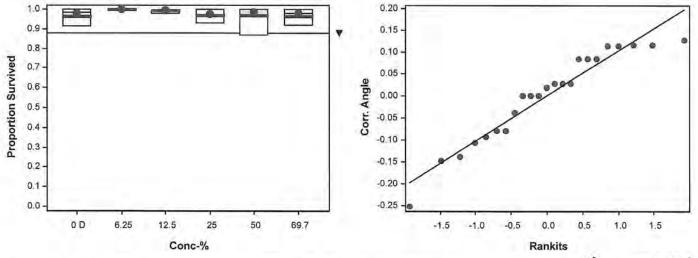
### Angular (Corrected) Transformed Detail

| Conc-% | Code | Rep 1  | Rep 2  | Rep 3  | Rep 4  |
|--------|------|--------|--------|--------|--------|
| 0      | D    | 1.3460 | 1.5400 | 1,5400 | 1.2770 |
| 6.25   |      | 1.5400 | 1.5400 | 1.5400 |        |
| 12.5   |      | 1.5400 | 1.4320 | 1.5400 | 1.5400 |
| 25     |      | 1.3060 | 1.4320 | 1.5400 | 1.3740 |
| 50     |      | 1.5400 | 1.5400 | 1.5400 | 1.2020 |
| 69.7   |      | 1.3290 | 1.5400 | 1.2840 | 1.5400 |

### **Proportion Survived Binomials**

| Conc-% | Code | Rep 1   | Rep 2   | Rep 3   | Rep 4   |  |
|--------|------|---------|---------|---------|---------|--|
| 0      | D    | 249/262 | 262/262 | 262/262 | 240/262 |  |
| 6,25   |      | 262/262 | 262/262 | 262/262 |         |  |
| 12.5   |      | 262/262 | 257/262 | 262/262 | 262/262 |  |
| 25     |      | 244/262 | 257/262 | 262/262 | 252/262 |  |
| 50     |      | 262/262 | 262/262 | 262/262 | 228/262 |  |
| 69.7   |      | 247/262 | 262/262 | 241/262 | 262/262 |  |

# Graphics



Convergent Rounding (4 sf)

CETIS™ v2.1.4.6 x64 (003-841-189-5)



a Mara

Report Date: Test Code/ID: 22 Feb-24 12:07 (p 7 of 7) P240130.03BC / 19-6883-4716

|                         |          |             |                                |         |          |        |             |                 |              | Test     | Codenib.          | 1 2401              | 30.03BC / | 19-0003-47 |
|-------------------------|----------|-------------|--------------------------------|---------|----------|--------|-------------|-----------------|--------------|----------|-------------------|---------------------|-----------|------------|
| Bivalve Larva           | I Surv   | vival and D | evelop                         | men     | t Test   |        |             |                 |              |          |                   |                     | I         | EcoAnalyst |
| Analysis ID:            | 13-92    | 281-0414    |                                | Endp    | point:   | Prop   | ortion Surv | rived           |              | CE       | TIS Version       | : CETISV            | 2.1.4     |            |
| Analyzed:               | 22 Fe    | b-24 12:05  |                                | Anal    | ysis:    |        | metric-Two  |                 |              | St       | atus Level:       | 1                   | 77.7      |            |
| Edit Date:              | 22 Fe    | b-24 12:02  |                                | MD5     | Hash:    | 52BI   | DD65087D    | 82905B17C       | FFDB855A     | 024A Ec  | litor ID:         | 003-841             | -189-5    |            |
| Batch ID:               | 13-63    | 18-1280     | 1                              | Test    | Type:    | Deve   | elopment-S  | urvival         |              | Ar       | alyst: Da         | nielle Mullig       | an        |            |
| Start Date:             | 30 Ja    | n-24 16:10  |                                |         | ocol:    |        | /600/R-95/  |                 |              |          |                   | oratory Sea         |           |            |
| Ending Date:            | 01 Fe    | b-24 15:21  |                                | Spec    | ies:     |        | us gallopro |                 |              | Br       |                   | aporated Se         |           |            |
| Test Length:            |          |             |                                | Taxo    |          | Biva   | 2.72        |                 |              | 100      |                   | ylor Shellfish      |           | Age: <4    |
| Sample ID:              | 18-65    | 559-3037    |                                | Code    | e:       | P240   | 0130.03BC   |                 |              | Pr       | oject: Wy         | ckoff Eagle         | Harbor GV | VTP 2024A  |
| Sample Date:            | 30 Ja    | n-24 09:35  |                                | Mate    | rial:    | Trea   | ted Ground  | lwater          |              |          |                   | cobs Wycko          |           |            |
| Receipt Date:           | 30 Ja    | n-24 11:54  |                                | CAS     | (PC):    |        |             |                 |              |          |                   | 052146_1            |           |            |
| Sample Age:             | 7h (5    | .6 °C)      |                                | Clier   | 100      | Jaco   | bs Wyckof   | f               |              |          |                   | -                   |           |            |
| Data Transfor           | m        |             | Alt H                          | lyp     |          |        |             |                 | Comparis     | son Resu | lt                |                     |           | PMSD       |
| Angular (Corre          | cted)    |             | C > T                          |         |          |        |             |                 |              |          | d proportion      | survived en         | dpoint    | 5.96%      |
| Equal Variano           | e t Tv   | vo-Sample   | Test                           |         |          |        |             |                 |              |          |                   |                     |           |            |
| Control I               | vs       | Control II  |                                | df      | Test S   | Stat   | Critical    | MSD             | P-Type       | P-Value  | Decision          | n(a:5%)             |           |            |
| Dilution Water          |          | Brine Cont  | trol                           | 6       | -0.792   | 22     | 1.943       | 0.1613          | CDF          | 0.7708   | Non-Sigr          | ificant Effec       | et -      |            |
| Test Acceptat           | oility ( | Criteria    | т/                             | AC Li   | mite     |        |             |                 |              |          |                   |                     |           |            |
| Attribute               |          | Test Stat   |                                |         | Uppe     | r .    | Overlap     | Decision        |              |          |                   |                     |           |            |
| Control Resp            |          | 0.9666      | 0.5                            |         | <<       |        | Yes         | Passes Ci       | riteria      |          |                   |                     |           |            |
| Control Resp            |          | 0.9876      | 0.5                            |         | <<       |        | Yes         | Passes Ci       | 2.27         |          |                   |                     |           |            |
| ANOVA Table             |          |             |                                |         |          |        |             |                 |              |          |                   |                     |           |            |
| Source                  |          | Sum Squa    | ares                           |         | Mean     | Squa   | are         | DF              | F Stat       | P-Value  | Decision          | ı(a:5%)             |           |            |
| Between                 |          | 0.0086525   | i                              |         | 0.008    | 6525   |             | 1               | 0.6275       | 0.4584   | Non-Sign          | ificant Effect      | :t        |            |
| Error                   |          | 0.082732    |                                |         | 0.013    | 7887   |             | 6               |              |          | 323 731           |                     |           |            |
| Total                   |          | 0.0913845   |                                |         |          |        |             | 7               |              |          |                   |                     |           |            |
| ANOVA Assur             | mptio    | ns Tests    |                                |         |          |        |             |                 |              |          |                   |                     |           |            |
| Attribute               |          | Test        |                                |         |          |        |             | Test Stat       | Critical     | P-Value  | Decision          | n(a:1%)             |           |            |
| Variance                |          | Levene Eq   | quality o                      | of Var  | riance 1 | Test   |             | 2.195           | 13.75        | 0.1890   | Equal Va          | Equal Variances     |           |            |
|                         |          | Mod Lever   | ne Equa                        | ality o | of Varia | nce T  | est         | 1.635           | 13.75        | 0.2483   | 3 Equal Variances |                     |           |            |
|                         |          | Variance F  | Ratio F                        | F Test  |          |        |             | 1.939           | 47.47        | 0.6003   | Equal Va          | Equal Variances     |           |            |
| Distribution            |          | Anderson-   | Darling                        | A2 T    | est      |        |             | 0.6526          | 3.878        | 0.0889   | Normal D          | Normal Distribution |           |            |
|                         |          | Kolmogoro   | Kolmogorov-Smirnov D Test 0.29 |         | 0.297    | 0.3313 | 0.0363      | Normal D        | Distribution |          |                   |                     |           |            |
|                         |          | Shapiro-W   | ilk W N                        | Norma   | ality Te | st     |             | 0.8404          | 0.6451       | 0.0761   | Normal [          | Distribution        |           |            |
| Proportion Su           | ırvive   | d Summar    | У                              |         |          |        |             |                 |              |          |                   |                     |           |            |
| Conc-%                  |          | Code        | Coun                           | it      | Mean     |        | 95% LCL     |                 |              | Min      | Max               | Std Err             | CV%       | %Effect    |
| 0                       |          | BC          | 4                              |         | 0.987    |        | 0.9481      | 1.0000          | 1.0000       | 0.9504   | 1.0000            | 0.0124              | 2.51%     | -2.17%     |
| 0                       |          | D           | 4                              |         | 0.966    | 6      | 0.9013      | 1.0000          | 0.9835       | 0.9160   | 1.0000            | 0.0205              | 4,25%     | 0.00%      |
| Angular (Corr           | ected    | ) Transform | med Su                         | ımm     | ary      |        |             |                 |              |          |                   |                     |           |            |
| Conc-%                  |          | Code        | Coun                           | t       | Mean     |        | 95% LCL     | 95% UCL         | Median       | Min      | Max               | Std Err             | CV%       | %Effect    |
| 0                       |          | BC          | 4                              |         | 1.491    | 0      | 1.3370      | 1.6460          | 1.5400       | 1.3460   | 1.5400            | 0.0484              | 6.50%     | -4.61%     |
| 0                       |          | D           | 4                              |         | 1.426    | 0      | 1.2110      | 1.6400          | 1.4750       | 1.2770   | 1.5400            | 0.0674              | 9.46%     | 0.00%      |
|                         |          | d Detail    |                                |         |          |        |             |                 |              |          |                   |                     |           |            |
| Proportion Su           | ırvive   | u Detail    |                                |         |          |        |             |                 |              |          |                   |                     |           |            |
| Proportion Su<br>Conc-% | ırvive   | Code        | Rep 1                          | 1       | Rep 2    |        | Rep 3       | Rep 4           |              |          |                   |                     |           |            |
|                         | urvive   |             | Rep 1                          |         | Rep 2    |        | Rep 3       | Rep 4<br>1.0000 |              |          |                   |                     |           |            |

Report Date: Test Code/ID: 22 Feb-24 12:07 (p 8 of 7) P240130.03BC / 19-6883-4716

**Bivalve Larval Survival and Development Test** 

**EcoAnalysts** 

Analysis ID: 13-9281-0414

Endpoint: Proportion Survived

**CETIS Version:** 

ECOAnalyst

Analyzed: 22 Feb-24 12:05

Analysis: Parametric-Two Sample

MD5 Hash: 52BDD65087D82905B17CFFDB855A024A Editor ID:

Status Level:

CETISv2.1.4 1 003-841-189-5

Angular (Corrected) Transformed Detail

22 Feb-24 12:02

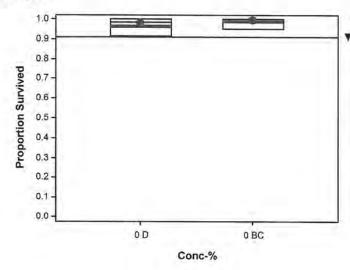
| Conc-% | Code | Rep 1  | Rep 2  | Rep 3  | Rep 4  |
|--------|------|--------|--------|--------|--------|
| 0      | BC   | 1.3460 | 1.5400 | 1.5400 | 1.5400 |
| 0      | D    | 1.3460 | 1.5400 | 1.5400 | 1.2770 |

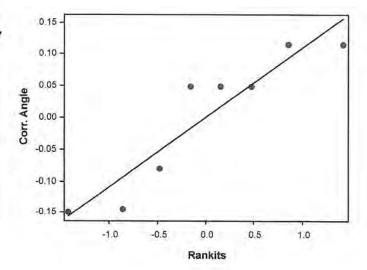
### **Proportion Survived Binomials**

| Conc-% | Code | Rep 1   | Rep 2   | Rep 3   | Rep 4   |  |
|--------|------|---------|---------|---------|---------|--|
| 0      | BC   | 249/262 | 262/262 | 262/262 | 262/262 |  |
| 0      | D    | 249/262 | 262/262 | 262/262 | 240/262 |  |

### Graphics

**Edit Date:** 





Report Date:

22 Feb-24 12:07 (p 1 of 4)

| . 6. 70.00    | A Date of the Land | 27.       |  |                 |                       |           |         | Test C   | ode/ID:    | P240130         | .03BC / 1 | 9-6883-471  |
|---------------|--------------------|-----------|--|-----------------|-----------------------|-----------|---------|----------|------------|-----------------|-----------|-------------|
| Bivalve Larva | al Survival and D  | evelopmen | t Test                                 |                 |                       |           |         |          |            |                 | E         | coAnalysts  |
| Analysis ID:  | 20-2099-4460       | End       | point: P                               | oportion Norn   | nal                   |           |         | CET      | IS Version | : CETISv2.      | 1.4       |             |
| Analyzed:     | 22 Feb-24 12:04    | 200       | ************************************** | near Interpola  | and the second second |           |         | Stat     | us Level:  | 1               |           |             |
| Edit Date:    | 22 Feb-24 12:02    | MD5       | Hash: A                                | 74253BF098E     | 20B839E1              | A95914D   | 9D385   | Edit     | or ID:     | 003-841-1       | 89-5      |             |
| Batch ID:     | 13-6318-1280       | Test      | Type: De                               | evelopment-S    | urvival               |           |         | Ana      | lyst: Da   | nielle Mulligar |           |             |
| Start Date:   | 30 Jan-24 16:10    | Prot      | ocol: El                               | PA/600/R-95/    | 136 (1995)            |           |         | Dilu     | ent: La    | boratory Seaw   | ater      |             |
|               | 01 Feb-24 15:21    | Spe       | cies: M                                | ytilus gallopro | vincialis             |           |         | Brin     |            | aporated Seav   | water     |             |
| Test Length:  | 47h                | Taxo      | on: Bi                                 | valvia          |                       |           |         | Sou      | rce: Ta    | ylor Shellfish  |           | Age: <4h    |
| Sample ID:    | 18-6559-3037       | Cod       | e: P                                   | 240130.03BC     |                       |           |         | Proj     | ect: W     | yckoff Eagle H  | arbor GW  | /TP 2024/W  |
|               | : 30 Jan-24 09:35  |           |  | eated Ground    | water                 |           |         | Sou      |            | cobs Wyckoff    |           |             |
|               | : 30 Jan-24 11:54  |           | (PC):                                  | and the Control |                       |           |         | Stat     | ion: 24    | 052146_1        |           |             |
| Sample Age:   | 7h (5.6 °C)        | Clie      | nt: Ja                                 | cobs Wyckof     | f                     |           |         |          |            |                 |           |             |
| Linear Interp | olation Options    |           |  |                 |                       |           |         |          |            |                 |           |             |
| X Transform   | Y Transform        |           |  | Resamples       |                       |           | ethod   |          |            |                 |           |             |
| Log(X+1)      | Linear             | 9551      | 129                                    | 200             | Yes                   | T         | wo-Poin | t Interp | oolation   |                 |           |             |
| Test Accepta  | bility Criteria    | TAC L     | imits                                  |                 |                       |           |         |          |            |                 |           |             |
| Attribute     | Test Stat          | Lower     | Upper                                  | Overlap         | Decision              | 1         |         |          |            |                 |           |             |
| Control Resp  | 0.9461             | 0.9       | <<                                     | Yes             | Passes C              | riteria   |         |          |            |                 |           |             |
| Point Estima  | tes                |           |  |                 |                       |           |         |          |            |                 |           |             |
| Level %       | 95% LCL            | 95% UCL   | Tox Unit                               | ts 95% LCL      | 95% UCL               |           |         |          |            |                 |           |             |
| EC25 >69.     | 7                  | -         | <1.4                                   | 440             |                       |           |         |          |            |                 |           |             |
| EC50 >69.     | 7 —                |           | <1.4                                   | 4               |                       |           |         |          |            |                 |           |             |
| Proportion N  | formal Summary     |           |  |                 | Calculate             | d Variate | (A/B)   |          |            |                 | Isoto     | nic Variate |
| Conc-%        | Code               | Count     | Mean                                   | Median          | Min                   | Max       | CV      | 1%       | %Effect    | ΣΑ/ΣΒ           | Mean      | %Effect     |
| 0             | D                  | 4         | 0.9461                                 | 0.9469          | 0.9341                | 0.9564    | 9.000   | 00%      | 0.00%      | 981/1037        | 0.9460    | 0.00%       |
| 6.25          |                    | 3         | 0.9379                                 | 0.9398          | 0.9326                | 0.9414    |         | 0%       | 0.86%      | 756/806         | 0.9410    | 0.53%       |
| 12.5          |                    | 4         | 0.9355                                 | 0.9409          | 0.9097                | 0.9504    |         | 90%      | 1.12%      | 1029/1100       |           | 0.53%       |
| 25            |                    | 4         | 0.9324                                 | 0.9351          | 0.9139                | 0.9455    |         | 4%       | 1.44%      | 959/1028        |           | 0.53%       |
| 50<br>60 7    |                    | 4         | 0.9513                                 | 0.9537          | 0.9418                | 0.9561    |         | 8%       | -0.56%     | 1012/1064       |           | 0.53%       |
| 69.7          |                    | 4         | 0.9472                                 | 0.9536          | 0.9190                | 0.9627    | 2.0     | 14%      | -0.13%     | 973/1027        | 0.9410    | 0.53%       |
| Proportion N  |                    | - T T     | - P. S.                                | NOTE OF         | 50 V                  |           |         |          |            |                 |           |             |
| Conc-%        | Code               | Rep 1     | Rep 2                                  | Rep 3           | Rep 4                 |           |         |          |            |                 |           |             |
| 0             | D                  | 0.9438    | 0.9341                                 | 0.9564          | 0.9500                |           |         |          |            |                 |           |             |
| 6.25          |                    | 0.9398    | 0,9414                                 | 0.9326          |                       |           |         |          |            |                 |           |             |
| 12.5          |                    | 0.9097    | 0.9416                                 | 0.9401          | 0.9504                |           |         |          |            |                 |           |             |
| 25            |                    | 0.9139    | 0.9377                                 | 0.9455          | 0.9325                |           |         |          |            |                 |           |             |
| 50            |                    | 0.9418    | 0.9530                                 | 0.9544          | 0.9561                |           |         |          |            |                 |           |             |
| 69.7          |                    | 0.9190    | 0.9544                                 | 0.9627          | 0.9529                |           |         |          |            |                 |           |             |
| Proportion N  | lormal Binomials   |           |  |                 |                       |           |         |          |            |                 |           |             |
| Conc-%        | Code               | Rep 1     | Rep 2                                  | Rep 3           | Rep 4                 |           |         |          |            |                 |           |             |
| 0             | D                  | 235/249   | 255/273                                | 263/275         | 228/240               |           |         |          |            |                 |           |             |
| 6.25          |                    | 250/266   | 257/273                                | 249/267         |                       |           |         |          |            |                 |           |             |
| 12.5          |                    | 252/277   | 242/257                                | 267/284         | 268/282               |           |         |          |            |                 |           |             |
| 25            |                    | 223/244   | 241/257                                | 260/275         | 235/252               |           |         |          |            |                 |           |             |
| 50            |                    | 259/275   | 284/298                                | 251/263         | 218/228               |           |         |          |            |                 |           |             |

263/276

227/247 251/263 232/241

69.7

Report Date:

22 Feb-24 12:07 (p 2 of 4)

Test Code/ID:

P240130.03BC / 19-6883-4716

# **Bivalve Larval Survival and Development Test**

**EcoAnalysts** 

Analysis ID: Analyzed:

20-2099-4460

**Proportion Normal** Endpoint:

Linear Interpolation (ICPIN)

**CETIS Version:** 

CETISv2.1.4

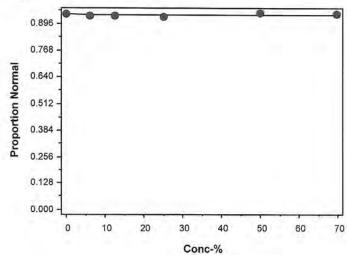
**Edit Date:** 

22 Feb-24 12:04 22 Feb-24 12:02 Analysis: MD5 Hash: A74253BF098E20B839E1A95914D9D385

Status Level: Editor ID:

003-841-189-5

Graphics



Report Date: Test Code/ID: 22 Feb-24 12:07 (p 3 of 4) P240130.03BC / 19-6883-4716

|  |  |   |  |  |   |                             |             |                  | rest (                              | Jode/ID:  |                            | P240130                                 | JUSBC / | 19-6883-4/1 |
|--|--|---|--|--|---|-----------------------------|-------------|------------------|-------------------------------------|---|----------------------------|---|---------|-------------|
| Bivalve  | Larva                                    | l Survival and D  | evelopme                               | nt Test  |   |                             |             |                  |                                     |   |                            |   | - 1     | coAnalysts  |
| Analysi<br>Analyze<br>Edit Da                              | alyzed: 22 Feb-24 12:04 Analysis: Linear |   |  | Linear Interpola   | oportion Survived<br>lear Interpolation (ICPIN)<br>C2B66CA08956DE2BE5695EA5097439 |                             |             |                  | TIS Version<br>tus Level<br>tor ID: | 3.14  | CETISv2.<br>1<br>003-841-1 |   |         |             |
| Batch I<br>Start Da<br>Ending<br>Test Le                   | ate:<br>Date:                            | 13-6318-1280<br>30 Jan-24 16:10<br>01 Feb-24 15:21<br>47h         | Pro<br>Spe                             | Test Type: Development-Survival Protocol: EPA/600/R-95/136 (1995) Species: Mytilus galloprovincialis Taxon: Bivalvia |   |                             | Dili<br>Bri | uent: L<br>ne: E | abor<br>Evapo                       | elle Mulligar<br>ratory Seaw<br>orated Seav<br>or Shellfish | ater                       | Age: <4                                 |         |             |
| Receipt  | Date:<br>t Date:                         | 18-6559-3037<br>30 Jan-24 09:35<br>30 Jan-24 11:54<br>7h (5.6 °C) |  | erial:<br>6 (PC):  | P240130.03BC<br>Treated Ground<br>Jacobs Wyckof                                   | dwater                      |             |                  | So                                  | oject: V<br>urce: J   |                            | off Eagle Harbor GWTP 202<br>os Wyckoff |         |             |
| Linear I   | Interpo                                  | lation Options  |  |  |   |                             |             |                  |                                     |   |                            |   |         |             |
| X Trans  | sform                                    | Y Transform   | See                                    | d  | Resamples   | Exp 95%                     | CL          | Method           | 1                                   |   |                            |   |         |             |
| Log(X+   | 1)                                       | Linear  | 108                                    | 6935   | 200   | Yes                         |             | Two-Po           | int Inter                           | polation  |                            |   |         |             |
| Test Ac  | ceptab                                   | oility Criteria   | TAC L                                  | imits  |   |                             |             |                  |                                     | n 422 a 4 b   |                            |   |         |             |
| Attribut   | te                                       | Test Stat   |  | Upper  | Overlap   | Decision                    |             |                  |                                     |   |                            |   |         |             |
| Control  | Resp                                     | 0.9666  | 0.5                                    | <<   | Yes   | Passes C                    | riteria     |                  |                                     |   |                            |   |         |             |
| Point E  | stimate                                  | es  |  |  |   |                             |             |                  |                                     |   |                            |   |         |             |
| Level  | %  | 95% LCL   | 95% UCL                                | Tox Ur   | nits 95% LCL  | 95% UCL                     |             |                  |                                     |   |                            |   |         |             |
| EC25   | >69.7                                    |   | ***                                    | <1.4   |   | _                           |             |                  |                                     |   |                            |   |         |             |
| EC50   | >69.7                                    | 12  | ***                                    | <1.4   |   | _                           |             |                  |                                     |   |                            |   |         |             |
| Proport  | tion Su                                  | rvived Summary  | y                                      |  |   | Calculate                   | d Vari      | ate(A/B)         |                                     |   |                            |   | Isoto   | nic Variate |
| Conc-%   | 6  | Code  | Count                                  | Mean   | Median  | Min                         | Max         |                  | cv%                                 | %Effec  | et                         | ΣΑ/ΣΒ                                   | Mean    | %Effect     |
| 0  |  | D   | 4                                      | 0.9666   | C 10 27.77  | 0.9160                      | 1.00        | 000 4            | .25%                                | 0.00%   | 7.77                       | 1013/1048                               | 0.9873  | 0.00%       |
| 6.25   |  |   | 3                                      | 1.0000   |   | 1.0000                      | 1.00        |                  | 0.00%                               | -3.46%  |                            | 786/786                                 | 0.9873  | 0.00%       |
| 12.5   |  |   | 4                                      | 0.9952   | 0.000   | 0.9809                      | 1.00        |                  | .96%                                | -2.96%  |                            | 1043/1048                               |         | 0.00%       |
| 25<br>50   |  |   | 4                                      | 0.9685   | 166.4 (17.6)  | 0.9313                      | 1.00        |                  | 3.02%                               | -0.20%  |                            | 1015/1048                               |         | 1.90%       |
| 69.7   |  |   | 4                                      | 0.9676   | 13215   | 0.8702                      | 1.00        |                  | 5.71%                               | -0.10%  |                            | 1014/1048                               |         | 2.00%       |
| 09.7   |  |   | 4                                      | 0.9656   | 0.9809  | 0.9198                      | 1.00        | 000 4            | .22%                                | 0.10%   |                            | 1012/1048                               | 0.9656  | 2.20%       |
| Proport  | tion Su                                  | rvived Detail   |  |  |   |                             |             |                  |                                     |   |                            |   |         |             |
| Conc-%   | 6  | Code  | Rep 1                                  | Rep 2  | Rep 3   | Rep 4                       |             |                  |                                     |   |                            |   |         |             |
| 0  |  | D   | 0.9504                                 | 1.0000   | 1.0000  | 0.9160                      |             |                  |                                     |   |                            |   |         |             |
| 6.25   |  |   | 1.0000                                 | 1,0000   | 1.0000  |                             |             |                  |                                     |   |                            |   |         |             |
| 12.5   |  |   | 1.0000                                 | 0.9809   | 1.0000  | 1.0000                      |             |                  |                                     |   |                            |   |         |             |
| 25   |  |   | 0.9313                                 | 0.9809   | 1.0000  | 0.9618                      |             |                  |                                     |   |                            |   |         |             |
|  |  |   | 1.0000                                 | 1.0000   | 1.0000  | 0.8702                      |             |                  |                                     |   |                            |   |         |             |
| 50   |  |   | 0.0407                                 | 1.0000   | 0.9198  | 1.0000                      |             |                  |                                     |   |                            |   |         |             |
|  | -  |   | 0.9427                                 | 1.0000   | -30100  |                             |             |                  |                                     |   |                            |   |         |             |
| 69.7   | tion Su                                  | rvived Binomial   |  | 1.0000   |   |                             |             |                  |                                     |   |                            |   |         |             |
| 69.7<br>Proport  |  | rvived Binomial<br>Code   |  | Rep 2  | Rep 3   | Rep 4                       |             |                  |                                     |   |                            |   |         |             |
| 69.7<br>Proport<br>Conc-%                                  |  |   | s                                      | 14.2.2   | Rep 3   |                             |             |                  |                                     |   |                            |   |         |             |
| 69.7<br>Proport<br>Conc-%                                  |  | Code  | s<br>Rep 1                             | Rep 2  | Rep 3<br>2 262/262  | Rep 4                       |             |                  |                                     |   |                            |   |         |             |
| 69.7<br>Proport<br>Conc-%<br>0<br>6.25                     |  | Code  | Rep 1<br>249/262                       | Rep 2<br>262/26  | Rep 3<br>2 262/262<br>2 262/262   | Rep 4                       |             |                  |                                     |   |                            |   |         |             |
| 50<br>69.7<br>Proport<br>Conc-%<br>0<br>6.25<br>12.5<br>25 |  | Code  | s<br>Rep 1<br>249/262<br>262/262       | Rep 2<br>262/26<br>262/26  | Rep 3 2 262/262 2 262/262 2 262/262   | Rep 4<br>240/262            |             |                  |                                     |   |                            |   |         |             |
| 69.7<br>Proport<br>Conc-%<br>0<br>6.25<br>12.5             |  | Code  | Rep 1<br>249/262<br>262/262<br>262/262 | Rep 2<br>262/26<br>262/26<br>257/26  | Rep 3 2 262/262 2 262/262 2 262/262 2 262/262                                     | Rep 4<br>240/262<br>262/262 |             |                  |                                     |   |                            |   |         |             |

Report Date: Test Code/ID:

Editor ID:

22 Feb-24 12:07 (p 4 of 4) P240130.03BC / 19-6883-4716

**Bivalve Larval Survival and Development Test** 

**EcoAnalysts** 

Analysis ID: 11-1031-6784

**Endpoint:** Proportion Survived

**CETIS Version:** 

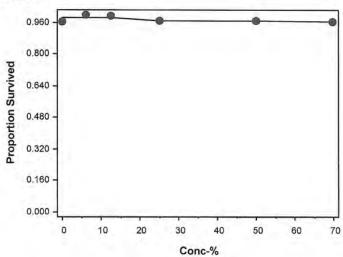
Analyzed: 22 Feb-24 12:04 **Edit Date:** 22 Feb-24 12:02

Linear Interpolation (ICPIN) Analysis: MD5 Hash: 81C2B66CA08956DE2BE5695EA5097439

CETISv2.1.4 Status Level: 1

003-841-189-5

Graphics



Sample Date: 30 Jan-24 09:35

Start Date:

End Date:

Report Date:

22 Feb-24 12:03 (p 1 of 1)

**EcoAnalysts** 

Test Code/ID: P240130.03BC / 19-6883-4716

# **Bivalve Larval Survival and Development Test**

01 Feb-24 15:21

30 Jan-24 16:10 Species: Mytilus galloprovincialis

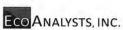
Protocol: EPA/600/R-95/136 (1995)

Material: Treated Groundwater

Sample Code: P240130.03BC

Sample Source: Jacobs Wyckoff Sample Station: 24052146\_1

| Conc-% | Code | Rep | Pos | Initial<br>Density | Final<br>Density | # Counted | # Normal | Notes |
|--------|------|-----|-----|--------------------|------------------|-----------|----------|-------|
| 0      | BC   | 1   | 9   | 262                | 249              | 249       | 230      |       |
| 0      | BC   | 2   | 5   | 262                | 287              | 287       | 265      |       |
| 0      | ВС   | 3   | 24  | 262                | 269              | 269       | 256      |       |
| 0      | BC   | 4   | 6   | 262                | 282              | 282       | 267      |       |
| 0      | D    | 1   | 10  | 262                | 249              | 249       | 235      |       |
| 0      | D    | 2   | 2   | 262                | 273              | 273       | 255      |       |
| 0      | D    | 3   | 25  | 262                | 275              | 275       | 263      |       |
| 0      | D    | 4   | 15  | 262                | 240              | 240       | 228      |       |
| 6.25   |      | 1   | 12  | 262                | 266              | 266       | 250      |       |
| 6.25   |      | 2   | 8   | 262                | 273              | 273       | 257      |       |
| 6.25   |      | 3   | 27  | 262                | 267              | 267       | 249      |       |
| 12.5   |      | 1   | 13  | 262                | 277              | 277       | 252      |       |
| 12.5   |      | 2   | 18  | 262                | 257              | 257       | 242      |       |
| 12.5   |      | 3   | 21  | 262                | 284              | 284       | 267      |       |
| 12.5   |      | 4   | 7   | 262                | 282              | 282       | 268      |       |
| 25     |      | 1   | 19  | 262                | 244              | 244       | 223      |       |
| 25     |      | 2   | 3   | 262                | 257              | 257       | 241      |       |
| 25     |      | 3   | 26  | 262                | 275              | 275       | 260      |       |
| 25     |      | 4   | 11  | 262                | 252              | 252       | 235      |       |
| 50     |      | 1   | 4   | 262                | 275              | 275       | 259      |       |
| 50     |      | 2   | 23  | 262                | 298              | 298       | 284      |       |
| 50     |      | 3   | 16  | 262                | 263              | 263       | 251      |       |
| 50     |      | 4   | 20  | 262                | 228              | 228       | 218      |       |
| 69.7   |      | 1   | 1   | 262                | 247              | 247       | 227      |       |
| 69.7   |      | 2   | 17  | 262                | 263              | 263       | 251      |       |
| 69.7   |      | 3   | 22  | 262                | 241              | 241       | 232      |       |
| 69.7   |      | 4   | 14  | 262                | 276              | 276       | 263      |       |



Version V.2

#### GENERAL

| 1                       | GENERAL   |   |
|-------------------------|---|---|
| Client                  | Jacobs Wyckoff  |   |
| Project                 | Wyckoff Eagle Harbor GWTP 2024/WA   |   |
| Project Number          | PG1958  |   |
| Project Manager         | M. Seibert  | Note: input lowest and highest decimal for temp |
| Date Sample Received    | 1/30/2024   |   |
| Test type               | 48-Hour Chronic Toxicity Using Bivalve Larvae   |   |
| Matrix                  | Liquid  |   |
| Test Acceptability      | ≥90% normal shell development, ≥50% survival (mussels) or ≥70% survival (oysters), MSD <25% | TEST S  |
| Test Start Date         | 01/30/24  | TES   |
| Test Species            | Mytilus spp.  |   |
| Organism Batch          | TS121523.01   |   |
| Organism Acquired       | 12/15/2023  |   |
| Organism Acclimation    | 46  |   |
| Organism Age            | <4 hr old embryos   |   |
| Test Protocol           | TOX 042   |   |
| Test Location           | Incubator 1   |   |
| Light Intensity         | 50-100 foot candles   |   |
| Light Cycle             | 16L:8D  | Salinity Adjustment CSMM<br>Batch #             |
| Water Description       | 0.45 um filtered seawater   | 62123   |
| Organisms per Replicate | 150 - 300   |   |
| Test Chamber Size       | 30 mL   | Formalin Lot #                                  |
| Exposure Volume         | 10 mL   | 230724-07                                       |
| Test Dissolved Oxygen   | > 4.0   |   |
| Test Temperature        | 16 ± 1  | Rose Bangel Batch #                             |
| Test Salinity           | 30 ± 2  | 5135  |
| Test pH                 | 8 ± 1   |   |
| _                       |   |   |

| 1        | est Parameters |     |
|----------|----------------|-----|
|          | Min            | Max |
| DO       | 4.0            |     |
| Temp     | 15             | 17  |
| Salinity | 28             | 32  |
| рН       | 7              | 9   |

TEST START TIME/INIT: 1610 TEST END TIME/INIT:

| CLIENT SAMPLE ID | LAB ID     |
|------------------|------------|
| 24052146-1       | P240130.03 |

| C | oncentrations |
|---|---------------|
| 1 | Control       |
| 2 | Brine Control |
| 3 | 6.25%         |
| 4 | 12.5%         |
| 5 | 25%           |
| 6 | 50%           |
| 7 | 69.7%         |
| 8 |               |
| 9 |               |

| Only red chara     | cters and green   | cells are chan | geable.       |                  |                       |                |
|--------------------|-------------------|----------------|---------------|------------------|-----------------------|----------------|
|                    |                   |                | ORGANISM      | CLIENT           | CLIENT SAMPLE ID      | DATE           |
|                    |                   |                | M. sp.        | Jacobs Wyckoff   | 24052146-1            | 1/30/24        |
| Volume per Co      | ncentration (mls  | s) -           | 200           |                  |                       |                |
| Test Paramete      | rs                | ppt            |               |                  |                       |                |
| Salinity of Brin   | е                 | 98.00          |               |                  |                       |                |
| Salinity of Sam    | ple               | 0.40           |               |                  |                       |                |
| Test Salinity      |                   | 30.00          |               |                  |                       |                |
|                    |                   |                |               | Test Dilution Pr | eparation (List highe | st to lowest!) |
| Salinity Adjusti   | ment Multiplier = |                | 0.44          | Concentration    | Amount of Adjusted    | Amount of      |
|                    |                   | grams added    |               | (%)              | Sample (gms.)         | Seawater (gms. |
| mls. Sample*       | 600.00            | 599.1          |               | 69.7             | 204.2                 | 0.0            |
| mls. Brine         | 261.18            | 280.4          |               | 50.00            | 146.6                 | 57.7           |
|                    |                   |                |               | 25.00            | 73.3                  | 131.0          |
| *Adjust volume     | so C16>F19        | 879.46         |               | 12.50            | 36.6                  | 167.6          |
| Post Adjustme      | nt Concentration  | n (%) =        | 69.67         | 6.25             | 18.3                  | 185.9          |
|                    |                   |                |               |                  | 0.0                   | 204.2          |
|                    |                   |                |               |                  | 479.07                |                |
|                    |                   |                |               |                  |                       |                |
| Brine Control      | Preparation       |                |               |                  |                       |                |
| S                  | Salinity Adjustme | ent            | highest       | Amount Brine     | Amount DI             | Amount Seawate |
| Sample Number/Name | Multiplier        | Volume BC      | concentration | (grams)          | (grams)               | (grams)        |
| 24052146-1         | 0.44              | 200            | 69.7          | 63.8             | 134.6                 | 5.9            |
| Workshoot Pr       | eparation Date    | / Initiale     |               |                  |                       |                |
| 1/30/2024          | MS MS             | / Illitials    |               |                  |                       |                |
|                    |                   |                |               |                  |                       |                |
| Dilution Prepa     | aration Date / In | itials         |               |                  |                       |                |
| 1/30/2024          | MS                |                |               |                  |                       |                |
|                    |                   |                |               |                  |                       |                |



| V.2 | CLIENT           | Jacobs Wyckoff                 | DATE RECEIVED   | 1/30/24 | PROTOCOL         | TOX 042      |
|-----|------------------|--------------------------------|-----------------|---------|------------------|--------------|
|     | PROJECT          | coff Eagle Harbor GWTP 2024/WA | TEST START DATE | 1/30/24 | PROJECT MANAGER  | M. Seibert   |
|     | CLIENT SAMPLE ID | 24052146-1                     | TEST END DATE   | 2/1/24  | SPECIES          | Mytilus spp. |
|     | LAB SAMPLE ID    | P240130.03                     | MATRIX          | Liquid  | NO. OF ORGANISMS | 150 - 300    |

| 48-Hour C | Chronic | Toxicity | Using | Bivalve | Larvae |
|-----------|---------|----------|-------|---------|--------|
|-----------|---------|----------|-------|---------|--------|

|               |                   | DO (mg/L) | TEMP (°C) | SALINITY (ppt) | pH       |
|---------------|-------------------|-----------|-----------|----------------|----------|
|               | Concentration (%) | > 4.0     | 15 - 17   | 28 - 32        | 7 - 9    |
| Day 0         | Control           | 0.8 880   | Dtatizz   | 28             | D 79 7.7 |
| Stock         | Brine Control     | 8-3       | 17.3      | 29             | 7.9      |
| Date 1/30/24  | 6.25%             | 8-7       | 16.6      | 28             | 7.8      |
| Time 1415     | 12.5%             | 8.7       | ile-7     | 28             | 7-8      |
| Tech RG       | 25%               | 8-7       | 14-8      | 28             | 7.7      |
| Meter # 9/8   | 50%               | 8-4       | 17-2      | 29             | 7.6      |
| , -           | 69.7%             | 8.4       | @ 4517.3  | 29             | 7-4      |
| Day 1         | Control           |           | 25.9 3    |                |          |
| Surrogate     | Brine Control     |           | 15.9      |                |          |
| Date 02/32/24 | 6.25%             |           | 15.9 ③    |                |          |
| Time 0101     | 12.5%             |           | 15.9 3    |                |          |
| Tech SR       | 25%               |           | 25.9      |                |          |
| Meter# T16    | 50%               |           | 25.9      |                |          |
|               | 69.7%             |           | 15.9      |                |          |
| Day 2         | Control           | 8.0       | 15.6      | 29             | 7.9      |
| Surrogate     | Brine Control     | 7.7       | 15.6      | 29             | 7.8      |
| Date 2/1/24   | 6.25%             | 7.9       | 15.4      | 85             | 7.9      |
| Time 1454     | 12.5%             | 7.9       | 15.6      | 28             | 8.0      |
| Tech VG       | 25%               | 7.9       | 15.5      | 28             | 8.0      |
| Meter# &      | 50%               | 7.4       | 15.3      | 29             | 8.1      |
|               | 69.7%             | 8.0       | 15.6      | 29             | 8.2      |

3 Temp blank used - SR 02/32/24

1 Remode D water - LG 130 180 P. Checked temp. Ms 1/30

| V.2 | CLIENT           | Jacobs Wyckoff                    | DATE RECEIVED   | 1/30/24 | PROTOCOL         | TOX 042      |
|-----|------------------|-----------------------------------|-----------------|---------|------------------|--------------|
|     | PROJECT          | Wyckoff Eagle Harbor GWTP 2024/WA | TEST START DATE | 1/30/24 | PROJECT MANAGER  | M. Seibert   |
|     | CLIENT SAMPLE ID | 24052146-1                        | TEST END DATE   | 2/1/24  | SPECIES          | Mytilus spp. |
|     | LAB SAMPLE ID    | P240130.03                        | MATRIX          | Liquid  | NO. OF ORGANISMS | 150 - 300    |

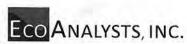
### 48-Hour Chronic Toxicity Using Bivalve Larvae

| SPAWNING METHOD<br>Heat Shock |              | INITIAL SPAWNING TIME<br>12:29 | FINAL SPAWNING TIME<br>13:25 |  |
|-------------------------------|--------------|--------------------------------|------------------------------|--|
| MALES<br>4                    | FEMALES<br>6 | SPERM VIABILITY Good           | EGG CONDITION Good           |  |
| BEGIN FERTILIZATION<br>13:25  |              | END FERTILIZATION<br>14:54     | CONDITION OF EMBRYOS Good    |  |

| TIME OF INITIATION | INITIALS |  |
|--------------------|----------|--|
|                    |          |  |

### **EMBRYO DENSITY CALCULATIONS**

| # of embryos i | n 1 mL of 100X diluted en | nbryo stock                    | # embryos in original stock = # of embryos in diluted stock x 100  |
|----------------|---------------------------|--------------------------------|--|
| Count 1        | Count 2 M                 | lean                           |  |
|                | 400 384                   | 392                            | 39200  |
| ercentage of   | embryo stock needed = 2   | 700 embryos per 1 mL/# embr    | os in original stock   |
|                | 0.07                      |                                |  |
|                | 0.07                      |                                |  |
|                |                           | ve total volume = percentage o | f embro stock needed * 40 mL (or desired volume of embryo stock)   |
| mL of egg stoc | k to add to FSW to achiev |                                | f embro stock needed * 40 mL (or desired volume of embryo stock) desired volume of embryo stock) with FSW = final embryo stock |



| CLIENT     |                     | Jacobs Wyckoff      | DATE RECEIVED   | 1/30/24 | PROTOCOL         | TOX 042      |
|------------|---------------------|---------------------|-----------------|---------|------------------|--------------|
| PROJECT W  | yckoff Eagle Harbor | <b>GWTP 2024/WA</b> | TEST START DATE | 1/30/24 | PROJECT MANAGER  | M. Seibert   |
| CLIENT SAM | PLE ID              | 24052146-1          | TEST END DATE   | 2/1/24  | SPECIES          | Mytilus spp. |
| LAB SAMPLE | ID                  | P240130.03          | MATRIX          | Liquid  | NO. OF ORGANISMS | 150 - 300    |

# 48-Hour Chronic Toxicity Using Bivalve Larvae

| Concentration (%) | REP | Normal | Abnormal | Date    | Tech  | Comments/QA Counts                            |
|-------------------|-----|--------|----------|---------|-------|---|
|                   | 1   | 265    |          | 2/13/24 | WALL  |   |
|                   | 2   | 264    |          | 2/13/24 | Marie | X=242   |
| Stanling Dancita  | 3   | 266    |          | 2/13/24 | MARLY | A   |
| Stocking Density  | 4   | 246    |          | 2/13/24 | MARLE |   |
|                   | 5   | 255    |          | 2/13/24 | MARLY |   |
|                   | 6   | 276    |          | 2/13/24 | MARH  |   |
|                   | 1   | 235    | 14       | 2/18/24 | me    |   |
| Control           | 2   | 255    | 18       | 2/13/24 | me    |   |
| Control           | 3   | 243    | 12       | 2/13/24 | me    |   |
|                   | 4   | NB     | 12       | 2/13/24 | me    |   |
|                   | 1   | 230    | 19       | 2/2/24  | me    | C/A MANUEN 235 A 21 D=0.                      |
| Brine Control     | 2   | 265    | n        | 2/13/24 | Mic   |   |
| Billie Control    | 3   | 250    | 13       | 2/13/24 | me    |   |
|                   | 4   | 267    | 15       | Us by   | me    |   |
|                   | 1   | 250    | 16       | 2/13/24 | me    |   |
| 6.25%             | 2   | 257    | 16       | Us m    | me    | la company de la                              |
| 0.23%             | 3   | 0      | 251      | 2/13/24 | mu    | will compromited. Drug<br>from state. Mk 2/13 |
|                   | 4   | 249    | 18       | 2/13/24 | MK    |   |
|                   | 1   | 252    | 25       | 2/13/24 | MK    | 04 MARGE 260 N 22A                            |
| 12.5%             | 2   | 242    | 15       | 2/13/21 | mu    | D= 1.19.                                      |
| 12.576            | 3   | 267    | 17       | 2/13/24 | MIC   |   |
|                   | 4   | 268    | 14       | 213/24  | mu    |   |
|                   | 1   | ws     | 21       | 2/13/24 | MK    |   |
| 25%               | 2   | 241    | 10       | 2/13/24 | me    |   |
| 2370              | 3   | 260    | 15       | 2/13/24 | mk    |   |
|                   | 4   | 235    | 17       | 2/13/24 | me    |   |
|                   | 1   | 259    | 16       | 2/7/24  | me    |   |
| 50%               | 2   | 284    | 14       | 2/13/24 | MK    |   |
| 3070              | 3   | 251    | 12       | 2/13/24 | me    |   |
|                   | 4   | 218    | 10       | 2/13/24 | mu    |   |
|                   | 1   | 227    | 20       | 2/7/24  | mk    | DAMANU 228 N 19A                              |
| 69.7%             | 2   | 251    | 12       | 2/13/24 | MK    | A=0.4%  |
| 03.770            | 3   | 232    | 9        | 2/13/24 | me    |   |
|                   | 4   | 263.   | 13       | 2/13 /m | mel   |   |

# **CETIS Summary Report**

Report Date: Test Code/ID: 20 Feb-24 17:45 (p 1 of 3) P240130.03SC / 08-4830-1359

|   |   |  |  |                                      |  |                    |  | ode/ID:  | 1 - 10 10  | 0.038C/08  | 7000     |      |
|---|---|--|--|--------------------------------------|--|--------------------|--|--|--|--|----------|------|
| Bivalve Larva   | al Survival and Devel   | opment Test                                    |  |                                      |  |                    |  |  |  | Ed   | oAnaly   |      |
| Batch ID:<br>Start Date:<br>Ending Date:<br>Test Length:                    | 03-0659-8360<br>30 Jan-24 16:07<br>01 Feb-24 15:20<br>47h   | Test Type:<br>Protocol:<br>Species:<br>Taxon:  | Development<br>EPA/600/R-5<br>Mytilus gallo<br>Bivalvia          |                                      |  | Diluent:<br>Brine: |  | Danielle Mulligan<br>Laboratory Seawater<br>Crystal Sea Marine Mix<br>Taylor Shellfish |  | Age:   |          |      |
| Sample ID:  | 06-0001-8496  | Code:  | P240130.03   | SC.                                  |  |                    | Droi   | 40 - A   |  |  | 1        | V.   |
| the harmon has been been  | 30 Jan-24 09:35   | Material:                                      | Treated Gro  |                                      |  |                    | Proje  |  | Vyckoff Eagle I  |  | P 2024   | 1/VV |
|   | 30 Jan-24 11:54   | CAS (PC):                                      | Ticalca Gio  | ulidwatei                            |  |                    | Sour   |  | acobs Wyckoff  |  |          |      |
| Sample Age:   |   | Client:  | Jacobs Wyc   | koff                                 |  |                    | Stau   | on: 2  | 4052146_1  |  |          |      |
| Single Compa  | arison Summary  |  |  |                                      |  |                    |  |  |  |  |          | _    |
| Analysis ID   | Endpoint  | Com  | parison Meth   | od                                   |  |                    | P-Value  | Comps  | rison Result   |  |          |      |
| 06-1083-4347  | Proportion Normal   |  |  | vo-Sample Tes                        | t  | _                  | 0.0326   |  |  |  | nol.     |      |
|   | Proportion Survived   |  |  | Two-Sample 1                         |  |                    | 0.0326   |  | ntrol failed pro<br>introl passed p                                  |  |          | 1    |
| Multiple Com  | parison Summary   | 2003   | na farantesa   | 901                                  | -  | 0.0400             | Sait Oc  | miror passed p   | roportion su   | vived  |          |      |
| Analysis ID   | Endpoint  | Comp   | arison Meth  | od                                   |  | 1                  | NOEL   | LOEL   | TOEL   | PMSD   | TU       |      |
| 09-0655-3543  | Proportion Normal   |  |  |                                      | •  | 100                | >100   | TOEL   | 2.5%   | 1  | 5        |      |
|   | Proportion Survived   |  | Dunnett Multiple Comparison Test<br>Steel Many-One Rank Sum Test |                                      |  |                    | 100  | >100   |  | 7.94%  | 1        |      |
| Point Estimat   | e Summary   |  |  | 200-200-0                            | -  |                    |  |  |  | 7.5-770  |          |      |
| Analysis ID   | Endpoint  | Point  | Estimate Me  | thod                                 |  | ./                 | Level  | %  | 95% LCL  | 05% 1101   | ~        |      |
| V4 50 15 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2                                | Proportion Normal   |  | Interpolation  |                                      |  | _                  | EC15   | >100   | 95% LCL  | 95% UCL  | TU<br><1 | _ 5  |
|   | 77 77 C - 2 C - 3 | 2,1,00   | interpolation  | (IOI III)                            |  |                    | EC20   | >100   |  | -  |          |      |
|   |   |  |  |                                      |  |                    | EC25   | >100   |  |  | <1       |      |
|   |   |  |  |                                      |  | 1                  | EC40   | >100   |  |  | <1       |      |
|   |   |  |  |                                      |  |                    |  |  | -  |  | <1       |      |
| 15-5364-4792  | Proportion Survived   | Linco  | - Intomalation   | /ICDIAIS                             | _  | _                  | EC50   | >100   |  | 725  | <1       | _    |
| 10-0004-4732  | r roportion Survived  | Linear   | Interpolation  | (ICPIN)                              |  | 1                  | EC15   | >100   | (Fee)  |  | <1       | - 4  |
|   |   |  |  |                                      |  |                    | 0.44   |  |  | 10.7   |          |      |
|   |   |  |  |                                      |  | 1                  |  | >100   | F .  | ***  | <1       |      |
|   |   |  |  |                                      |  | 1                  | EC25   | >100   | =  | _  | <1<br><1 |      |
|   |   |  |  |                                      |  | 111                | EC25<br>EC40   | >100<br>>100   |  |  |          |      |
|   |   |  |  |                                      |  | 111                | EC25   | >100   |  | -  | <1       |      |
| Test Acceptat   | oility  | - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1        |  |                                      |  | インノン               | EC25<br>EC40<br>EC50                                       | >100<br>>100   | _  | _  | <1<br><1 |      |
| Analysis ID   | Endpoint  | Attrib   | ute  | Test Stat                            |  | インノン               | EC25<br>EC40<br>EC50                                       | >100<br>>100   |  | _  | <1<br><1 |      |
| Analysis ID   | Endpoint Proportion Normal  | - 100  | ute<br>ol Resp   | Test Stat                            | TAC                                      | インノン               | EC25<br>EC40<br>EC50                                       | >100<br>>100<br>>100   |  |  | <1<br><1 |      |
| Analysis ID<br>06-1083-4347   | Endpoint Proportion Normal Proportion Normal  | Contro   |  | 2 3 2 1 2 3 N T                      | TAC<br>Lower                             | インノン               | EC25<br>EC40<br>EC50<br>mits<br>Upper                      | >100<br>>100<br>>100<br>Overla   | <br><br>Decision   |  | <1<br><1 |      |
| Analysis ID<br>06-1083-4347<br>09-0655-3543                                 | Endpoint Proportion Normal Proportion Normal Proportion Normal  | Contro   | ol Resp  | 0.9209                               | TAC<br>Lower<br>0.9                      | インノン               | EC25<br>EC40<br>EC50<br>mits<br>Upper                      | >100<br>>100<br>>100<br>>100<br>Overlap  | Decision Passes Cr   | iteria   | <1<br><1 |      |
| Analysis ID<br>06-1083-4347<br>09-0655-3543<br>20-8186-9544                 | Endpoint Proportion Normal Proportion Normal Proportion Normal Proportion Normal  | Contro<br>Contro                               | ol Resp<br>ol Resp   | 0.9209<br>0.9442                     | TAC<br>Lower<br>0.9<br>0.9               | インノン               | EC25<br>EC40<br>EC50<br>mits<br>Upper                      | >100<br>>100<br>>100<br>>100<br>Overlar<br>Yes<br>Yes                                  | Decision Passes Cr Passes Cr Passes Cr                               | iteria   | <1<br><1 |      |
| Analysis ID<br>06-1083-4347<br>09-0655-3543<br>20-8186-9544                 | Endpoint Proportion Normal Proportion Normal Proportion Normal  | Contro<br>Contro<br>Contro                     | ol Resp<br>ol Resp<br>ol Resp                                    | 0.9209<br>0.9442<br>0.9442           | TAC<br>Lower<br>0.9<br>0.9<br>0.9        | インノン               | EC25<br>EC40<br>EC50<br>mits<br>Upper<br><<<br><<          | >100<br>>100<br>>100<br>Overlap<br>Yes<br>Yes<br>Yes                                   | Decision Passes Cr   | iteria<br>iteria<br>iteria<br>iteria                           | <1<br><1 |      |
| Analysis ID<br>06-1083-4347<br>09-0655-3543<br>20-8186-9544                 | Endpoint Proportion Normal Proportion Normal Proportion Normal Proportion Normal  | Contro<br>Contro<br>Contro<br>Contro           | ol Resp<br>ol Resp<br>ol Resp<br>ol Resp                         | 0.9209<br>0.9442<br>0.9442<br>0.9442 | TAC<br>Lower<br>0.9<br>0.9<br>0.9<br>0.9 | インノン               | EC25<br>EC40<br>EC50<br>mits<br>Upper                      | >100<br>>100<br>>100<br>Overla<br>Yes<br>Yes<br>Yes<br>Yes                             | Decision Passes Cr Passes Cr Passes Cr Passes Cr Passes Cr Passes Cr | iteria<br>iteria<br>iteria<br>iteria<br>iteria                 | <1<br><1 |      |
| Analysis ID<br>06-1083-4347<br>09-0655-3543<br>20-8186-9544<br>04-1777-5456 | Endpoint Proportion Normal Proportion Normal Proportion Normal Proportion Normal Proportion Survived  | Contro<br>Contro<br>Contro<br>Contro<br>Contro | ol Resp<br>ol Resp<br>ol Resp<br>ol Resp<br>ol Resp              | 0.9209<br>0.9442<br>0.9442<br>0.9442 | TAC<br>Lower<br>0.9<br>0.9<br>0.9<br>0.9 | インノン               | EC25<br>EC40<br>EC50<br>mits<br>Upper << << << << << << << | >100<br>>100<br>>100<br>Overla<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes                      | Decision Passes Cr Passes Cr Passes Cr Passes Cr                     | riteria<br>riteria<br>riteria<br>riteria<br>riteria<br>riteria | <1<br><1 |      |

Report Date: Test Code/ID: 20 Feb-24 17:45 (p 2 of 3) P240130.03SC / 08-4830-1359

|               |                |           |          |         |  |        | 1 GOL C | oue/ID.   | P24013     | 10.035670 | 18-4830-135    |
|---------------|----------------|-----------|----------|---------|--|--------|---------|-----------|------------|-----------|----------------|
| Bivalve Larva | I Survival and | Developme | ent Test |         |  |        |         |           |            |           | coAnalyst      |
| Proportion No | ormal Summa    | ry        |          |         |  |        |         |           |            |           | 11111111111111 |
| Conc-%        | Code           | Count     | Mean     | 95% LCL | 95% UCL  | Min    | Max     | Std Err   | Std Dev    | CV%       | %Effect        |
| 0             | D              | 4         | 0.9442   | 0.9269  | 0.9615   | 0.9319 | 0.9544  | 0.0054    | 0.0109     | 1.15%     | 0.00%          |
| 0             | SC             | 4         | 0.9209   | 0.8916  | 0.9503   | 0.8949 | 0.9377  | 0.0092    | 0.0185     | 2.00%     | 2.46%          |
| 6.25          |                | 4         | 0.9387   | 0.9279  | 0.9496   | 0.9289 | 0.9444  | 0.0034    | 0.0068     | 0.73%     | 0.58%          |
| 12.5          |                | 4         | 0.9251   | 0.8906  | 0.9595   | 0.9048 | 0.9544  | 0.0108    | 0.0216     | 2.34%     | 2.02%          |
| 25            |                | 4         | 0.9469   | 0.9354  | 0.9585   | 0.9363 | 0.9524  | 0.0036    | 0.0073     | 0.77%     | -0.29%         |
| 50            |                | 4         | 0.9375   | 0.9183  | 0.9567   | 0.9200 | 0.9476  | 0.0060    | 0.0121     | 1.29%     | 0.71%          |
| 69.7          |                | 4         | 0.9448   | 0.9368  | 0.9529   | 0.9378 | 0.9496  | 0.0025    | 0.0051     | 0.54%     | -0.07%         |
| 100           |                | 4         | 0.9505   | 0.9216  | 0.9793   | 0.9274 | 0.9717  | 0.0091    | 0.0181     | 1.91%     | -0.67%         |
| Proportion Su | rvived Summ    | ary       |          |         |  |        |         |           |            |           |                |
| Conc-%        | Code           | Count     | Mean     | 95% LCL | 95% UCL  | Min    | Max     | Std Err   | Std Dev    | CV%       | %Effect        |
| 0             | D              | 4         | 0.9666   | 0.9095  | 1.0240   | 0.9198 | 1.0000  | 0.0179    | 0.0359     | 3.71%     | 0.00%          |
| 0             | SC             | 4         | 1.0000   | 1.0000  | 1.0000   | 1.0000 | 1.0000  | 0.0000    | 0.0000     | 0.00%     | -3.46%         |
| 6.25          |                | 4         | 0.9656   | 0.9478  | 0.9835   | 0.9542 | 0.9809  | 0.0056    | 0.0112     | 1.16%     | 0.10%          |
| 12.5          |                | 4         | 0.9800   | 0.9393  | 1.0210   | 0.9466 | 1.0000  | 0.0128    | 0.0256     | 2.61%     | -1.38%         |
| 25            |                | 4         | 0.9800   | 0.9431  | 1.0170   | 0.9580 | 1.0000  | 0.0116    | 0.0232     | 2.37%     | -1.38%         |
| 50            |                | 4         | 0.9752   | 0.9293  | 1.0210   | 0.9466 | 1.0000  | 0.0144    | 0.0288     | 2.95%     | -0.89%         |
| 69.7          |                | 4         | 0.9637   | 0.8964  | 1.0310   | 0.9198 | 1.0000  | 0.0212    | 0.0423     | 4.39%     | 0.30%          |
| 100           |                | 4         | 0.9695   | 0.9232  | 1.0160   | 0.9427 | 1.0000  | 0.0145    | 0.0291     | 3.00%     | -0.30%         |
| Proportion No | ormal Detail   |           |          |         |  |        | MD      | 5: A8ED07 | 9D90F89A7I | F8752D76E | 33DD45227      |
| Conc-%        | Code           | Rep 1     | Rep 2    | Rep 3   | Rep 4  |        |         |           |            |           |                |
| 0             | D              | 0.9319    | 0.9544   | 0.9522  | 0.9382   |        |         |           |            |           |                |
| 0             | SC             | 0.9223    | 0.9377   | 0.9288  | 0.8949   |        |         |           |            |           |                |
| 6.25          |                | 0.9289    | 0.9400   | 0.9416  | 0.9444   |        |         |           |            |           |                |
| 12.5          |                | 0.9274    | 0.9544   | 0.9048  | 0.9137   |        |         |           |            |           |                |
| 25            |                | 0.9482    | 0.9509   | 0.9524  | 0.9363   |        |         |           |            |           |                |
| 50            |                | 0.9401    | 0.9422   | 0.9476  | 0.9200   |        |         |           |            |           |                |
| 69.7          |                | 0.9451    | 0.9469   | 0.9496  | 0.9378   |        |         |           |            |           |                |
| 100           |                | 0.9530    | 0.9498   | 0.9274  | 0.9717   |        |         |           |            |           |                |
| Proportion Su | rvived Detail  | 272.330   |          | 237.7   | 7050 04  |        | MD      | 5: CFB4F2 | 4B0402BD0  | 25200242  | 446505442      |
| Conc-%        | Code           | Rep 1     | Rep 2    | Rep 3   | Rep 4  |        | IVID    | o. Orbarz | +D3432DD9, | 1000C3A34 | HOFUFA43       |
| 0             | D              | 1.0000    | 0.9198   | 0.9580  | 0.9885   |        |         |           |            |           |                |
| 0             | sc             | 1.0000    | 1.0000   | 1.0000  | 1.0000   |        |         |           |            |           |                |
| 6.25          | 2.3            | 0.9656    | 0.9542   | 0.9809  | 0.9618   |        |         |           |            |           |                |
| 12.5          |                | 0.9466    |          |         |  |        |         |           |            |           |                |
| 25            |                |           | 1.0000   | 1.0000  | 0.9733   |        |         |           |            |           |                |
|               |                | 0.9580    | 1.0000   | 0.9618  | 1.0000   |        |         |           |            |           |                |
| 50            |                | 1.0000    | 1.0000   | 0.9466  | 0.9542   |        |         |           |            |           |                |
| 69.7          |                | 1.0000    | 0.9351   | 1.0000  | 0.9198   |        |         |           |            |           |                |
| 100           |                | 1 0000    |          |         | THE RESERVE OF THE PARTY OF THE |        |         |           |            |           |                |

1.0000

0.9885

0.9466

0.9427

100

12.5

25

50

69.7

100

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**Bivalve Larval Survival and Development Test** 

248/262

251/262

262/262

262/262

262/262

262/262

262/262

262/262

245/262

262/262

252/262

248/262

262/262

259/262 248/262

**EcoAnalysts** 

| Proportion N  | ormal Binomia | als     |         |         |         |  |
|---------------|---------------|---------|---------|---------|---------|--|
| Conc-%        | Code          | Rep 1   | Rep 2   | Rep 3   | Rep 4   |  |
| 0             | D             | 260/279 | 230/241 | 239/251 | 243/259 |  |
| 0             | SC            | 261/283 | 271/289 | 261/281 | 247/276 |  |
| 6.25          |               | 235/253 | 235/250 | 242/257 | 238/252 |  |
| 12.5          |               | 230/248 | 251/263 | 247/273 | 233/255 |  |
| 25            |               | 238/251 | 271/285 | 240/252 | 250/267 |  |
| 50            |               | 251/267 | 261/277 | 235/248 | 230/250 |  |
| 69.7          |               | 258/273 | 232/245 | 264/278 | 226/241 |  |
| 100           |               | 284/298 | 246/259 | 230/248 | 240/247 |  |
| Proportion Su | urvived Binom | ials    |         |         | 41      |  |
| Conc-%        | Code          | Rep 1   | Rep 2   | Rep 3   | Rep 4   |  |
| 0             | D             | 262/262 | 241/262 | 251/262 | 259/262 |  |
| 0             | SC            | 262/262 | 262/262 | 262/262 | 262/262 |  |
| 6.25          |               | 253/262 | 250/262 | 257/262 | 252/262 |  |
|               |               |         |         |         |         |  |

255/262

262/262

250/262

241/262

247/262

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| Bivalve Larva                           | al Sur | vival and D                            | evelop   | men    | t Test    |          |          |   |          |         |              |             |                        |           | EcoAnalysts |
|---|--------|--|----------|--------|-----------|----------|----------|---|----------|---------|--------------|-------------|------------------------|-----------|-------------|
| Analysis ID:<br>Analyzed:<br>Edit Date: | 20 F   | 083-4347<br>eb-24 17:38<br>eb-24 17:29 |          | Ana    | lysis:    |          | etric-Tw | mal<br>o Sample<br>3C686406B2           | 50B7042C |         | CETIS Status |             | CETISV<br>1<br>004-244 |           |             |
| Batch ID:                               | 03-0   | 659-8360                               |          | Test   | Type:     | Develop  | ment-S   | Survival                                |          | -       | Analyst      | h Dani      | elle Mullig            | an        |             |
| Start Date:                             | 30 J   | an-24 16:07                            |          |        |           |          |          | (136 (1995)                             |          |         | Diluent      |             | ratory Sea             |           |             |
| Ending Date:                            | 01 F   | eb-24 15:20                            |          | 37.35  |           |          |          | ovincialis                              | Brine:   |         |              |             | tal Sea Ma             |           |             |
| Test Length:                            | 47h    |  |          | Taxo   |           | Bivalvia |          | .,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |          |         | Source       | 100         | or Shellfish           |           | Age: <4     |
| Sample ID:                              | 06-0   | 001-8496                               |          | Cod    | e:        | P24013   | 0.0350   | ;                                       |          | F       | roject       | · Wyc       | koff Fagle             | Harbor GI | NTP 2024/W  |
| Sample Date:                            | 30 J   | an-24 09:35                            |          |        |           | Treated  | Groun    | dwater                                  |          |         | Source       |             | bs Wycko               |           | 2024/11     |
| Receipt Date:                           | 30 J   | an-24 11:54                            |          | CAS    | (PC):     |          |          | 100000                                  |          |         | Station      |             | 2146_1                 |           |             |
| Sample Age:                             | 7h (5  | 5.6 °C)                                |          | Clie   | 200       | Jacobs   | Wycko    | ff                                      |          |         |              |             |                        |           |             |
| Data Transfor                           | rm     |  | Alt H    | ур     |           |          |          |   | Compari  | son Res | ult          |             |                        |           | PMSD        |
| Angular (Corre                          | ected) |  | C > T    |        |           |          |          |   |          |         |              | rtion norm  | al endpoir             | it        | 2.03%       |
| Equal Variance                          | ce t T | wo-Sample                              | Test     |        |           |          |          |   |          |         |              |             |                        |           |             |
| Control I                               | vs     | Control II                             | 0.750    | df     | Test S    | tat Cri  | itical   | MSD                                     | P-Type   | P-Vali  | ие г         | Decision(   | a:5%\                  |           |             |
| Dilution Water                          |        | Salt Contro                            | ol*      | 6      | 2.253     |          | 943      | 0.03969                                 | CDF      | 0.0326  |              | Significant |                        |           |             |
| Test Acceptab                           | bility | Criteria                               | т/       | AC Li  | mita      |          |          |   |          |         |              |             | -                      |           |             |
| Attribute                               |        | Test Stat                              | Lowe     |        | Upper     | Ov       | erlap    | Decision                                |          |         |              |             |                        |           |             |
| Control Resp                            |        | 0.9209                                 | 0.9      |        | <<        | Ye       |          | Passes C                                | riteria  |         |              |             | _                      |           | _           |
| Control Resp                            |        | 0.9442                                 | 0.9      |        | <<        | Ye       | C,       | Passes C                                | 36076    |         |              |             |                        |           |             |
| ANOVA Table                             | ( )    |  |          |        |           |          |          |   |          |         |              | _           |                        |           |             |
| Source                                  |        | Sum Squa                               | ires     |        | Mean      | Square   |          | DF                                      | F Stat   | P-Vali  | ue D         | Decision(   | 7:5%)                  |           |             |
| Between                                 | -      | 0.0042333                              |          |        | 0.0042    |          | _        | 1                                       | 5.074    | 0.0652  |              |             | icant Effec            | +         |             |
| Error                                   |        | 0.0050058                              |          |        | 0.0008    |          |          | 6                                       | 0.07     | 0.000.  |              | on Olgini.  | ioani Liioc            |           |             |
| Total                                   |        | 0.0092391                              |          |        |           |          |          | 7                                       |          |         |              |             |                        |           |             |
| ANOVA Assur                             | mptio  | ns Tests                               |          |        |           |          |          |   |          |         |              |             |                        |           |             |
| Attribute                               |        | Test                                   |          |        |           |          |          | Test Stat                               | Critical | P-Valu  | ue D         | Decision(   | 7:1%)                  |           |             |
| Variance                                |        | Levene Eq                              | uality o | of Var | iance T   | est      |          | 0.1036                                  | 13.75    | 0.7585  |              | qual Varia  |                        |           |             |
|   |        | Mod Lever                              |          |        |           |          |          | 0.0552                                  | 13.75    | 0.822   | 7            | qual Varia  |                        |           |             |
|   |        | Variance F                             | Ratio F  | Test   |           |          |          | 1.99                                    | 47.47    | 0.5862  |              | qual Varia  |                        |           |             |
| Distribution                            |        | Anderson-                              | Darling  | A2 T   | est       |          |          | 0.2899                                  | 3.878    | 0.6427  | 7 N          | Iormal Dis  | stribution             |           |             |
|   |        | Kolmogoro                              |          |        |           |          |          | 0.1956                                  | 0.3313   | 0.5854  |              | lormal Dis  | stribution             |           |             |
|   |        | Shapiro-W                              | ilk W N  | lorma  | ality Tes | t        |          | 0.9407                                  | 0.6451   | 0.6176  | 5 N          | lormal Dis  | stribution             |           |             |
| Proportion No                           | ormal  | Summary                                |          |        |           |          |          |   |          |         |              |             |                        |           |             |
| Conc-%                                  |        | Code                                   | Coun     | t      | Mean      |          |          | 95% UCL                                 |          | Min     | N            | lax         | Std Err                | CV%       | %Effect     |
| 0                                       |        | D                                      | 4        |        | 0.9442    |          | 269      | 0.9615                                  | 0.9452   | 0.9319  | 9 0          | .9544       | 0.0054                 | 1.15%     | 0.00%       |
| 0                                       |        | SC                                     | 4        |        | 0.9209    | 0.8      | 916      | 0.9503                                  | 0.9255   | 0.8949  | 9 0          | .9377       | 0.0092                 | 2.00%     | 2.46%       |
| Angular (Corre                          | ected  | ) Transform                            | ned Su   | ımma   | ary       |          |          |   |          |         |              |             |                        |           |             |
| Conc-%                                  | 11     | Code                                   | Coun     | t      | Mean      | 959      | % LCL    | 95% UCL                                 | Median   | Min     | N            | lax         | Std Err                | CV%       | %Effect     |
| 0                                       |        | D                                      | 4        |        | 1.3330    | 1.2      | 950      | 1.3710                                  | 1.3350   | 1.3070  | 1            | .3550       | 0.0118                 | 1.77%     | 0.00%       |
| 0                                       |        | SC                                     | 4        |        | 1.2870    | 1.2      | 340      | 1.3400                                  | 1.2940   | 1.2410  |              | .3190       | 0.0167                 | 2.59%     | 3.45%       |
| Proportion No                           | ormal  | Detail                                 |          |        |           |          |          |   |          |         |              |             |                        |           |             |
| Conc-%                                  |        | Code                                   | Rep 1    |        | Rep 2     | Re       | р3       | Rep 4                                   |          |         |              |             |                        |           |             |
| 0 ,                                     |        | D                                      | 0.9319   | _      | 0.9544    |          | 522      | 0.9382                                  |          |         |              |             |                        | _         |             |
|   |        | SC                                     | 0.9223   |        | 0.9377    |          | 288      | 0.8949                                  |          |         |              |             |                        |           |             |

Report Date: Test Code/ID:

20 Feb-24 17:45 (p 2 of 10) P240130.03SC / 08-4830-1359

**EcoAnalysts** 

**Bivalve Larval Survival and Development Test** Analysis ID:

06-1083-4347

Endpoint: Proportion Normal

Parametric-Two Sample Analysis:

**CETIS Version:** 

CETISv2.1.4

Analyzed: 20 Feb-24 17:38 Edit Date: 20 Feb-24 17:29

MD5 Hash: 8592D4BBD28C686406B250B7042C76D2

Status Level: Editor ID:

004-244-315-2

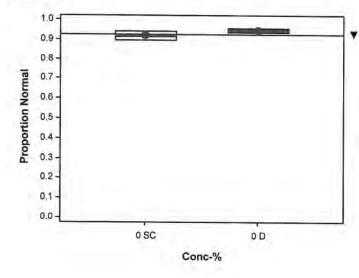
## Angular (Corrected) Transformed Detail

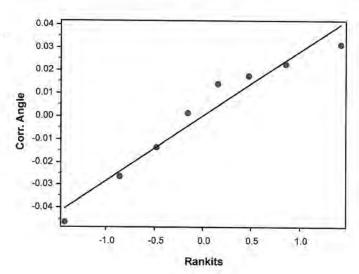
| Conc-% | Code | Rep 1  | Rep 2  | Rep 3  | Rep 4  |  |
|--------|------|--------|--------|--------|--------|--|
| 0      | D    | 1.3070 | 1.3550 | 1.3500 | 1.3200 |  |
| 0      | SC   | 1.2880 | 1.3190 | 1.3010 | 1.2410 |  |

#### **Proportion Normal Binomials**

| Conc-% | Code | Rep 1   | Rep 2   | Rep 3   | Rep 4   |
|--------|------|---------|---------|---------|---------|
| 0      | D    | 260/279 | 230/241 | 239/251 | 243/259 |
| 0      | SC   | 261/283 | 271/289 | 261/281 | 247/276 |

## Graphics





Report Date: Test Code/ID: 20 Feb-24 17:45 (p 3 of 10) P240130.03SC / 08-4830-1359

|  |        |   |  |  |   |   |   | 163   |   |   |  |                                  | 0-4030-133                        |
|--|--------|---|--|--|---|---|---|---|---|---|--|----------------------------------|-----------------------------------|
| Bivalve Larva                                      | al Su  | vival and [   | Developme  | nt Test  |   |   |   |   |   |   |  |                                  | coAnalyst                         |
| Analysis ID:                                       | 09-0   | 655-3543  | En   | dpoint:  | Proportion No   | ormal   |   |   | CETIS Vers  | ion.  | CETISv2  |                                  |                                   |
| Analyzed:  | 20 F   | eb-24 17:4  |  | alysis:  | Parametric-C  |   | atments   |   | Status Leve   | 2.34  | 1  | 1.7                              |                                   |
| Edit Date:   | 20 F   | eb-24 17:29   |  |  | EDBAE943D   |   |   |   |   |   | 004-244-   | 315-2                            |                                   |
| Batch ID:  | 03-0   | 659-8360  | Tes  | st Type:   | Development   | -Survival   |   |   | Analyst:  | Danie   | elle Mulliga   |                                  |                                   |
| Start Date:  |        | an-24 16:07   |  | tocol:   | EPA/600/R-9   |   |   |   | Diluent:  |   | ratory Seav  |                                  |                                   |
| Ending Date:                                       |        |   |  | ecies:   | Mytilus gallop  |   |   |   |   |   |  |                                  |                                   |
| Test Length:                                       |        | CO 24 10.20   |  | con:   | Bivalvia  | TOVITCIAIIS   |   |   | Brine:  |   | al Sea Mar   | ine Mix                          | - CO / 2-8                        |
| - 27 10 10 2                                       | 7.0    | 05 1.71 05  | Tal  | KOII.  | Divaivia  |   |   | - '   | Source:   | Taylo   | r Shellfish  |                                  | Age: <4                           |
| Sample ID:   |        | 001-8496  |  | de:  | P240130.03S   |   |   |   | Project:  |   | off Eagle H  |                                  | TP 2024/V                         |
| Sample Date:                                       |        |   |  | terial:  | Treated Grou  | ndwater   |   |   | Source:   | Jacol   | os Wyckoff   |                                  |                                   |
| Receipt Date:                                      |        |   |  | S (PC):  | And Live  |   |   |   | Station:  | 2405  | 2146_1   |                                  |                                   |
| Sample Age:  | 7h (   | 5.6 °C)   | Cli  | ent:   | Jacobs Wyck   | off   |   |   |   |   |  |                                  |                                   |
| Data Transfor                                      | rm     |   | Alt Hyp  |  |   |   | NOEL  | LOEL  | TOEL  | V   | Tox Units  | MSDu                             | PMSD                              |
| Angular (Corre                                     | ected  |   | C > T  |  |   |   | 100   | >100  |   |   | 1  | 0.02361                          | 2.50%                             |
| Dunnett Multi                                      | iple C | Comparisor  | Test   |  |   |   |   |   |   |   |  |                                  |                                   |
| Control  | vs     | Conc-%  | d  | f Test S   | tat Critical  | MSD   | P-Type  | P-Val   | ue Decis  | sion(o  | ı:5%)  |                                  |                                   |
| Dilution Water                                     |        | 6,25  | 6  | 0.6182   | (55)5)   (5-5840 P-840)                                   | 0.04799   | CDF   | 0.629   |   |   | cant Effect  |                                  |                                   |
| - Francis III and                                  |        | 12.5  | 6  | 1.899  | 2.448   | 0.04799   | CDF   | 0.029   |   | 7   | cant Effect  |                                  |                                   |
|  |        | 25  | 6  | -0.290   |   | 0.04799   | CDF   | 0.133   | 3/ 145910   |   | cant Effect  |                                  |                                   |
|  |        | 50  | 6  | 0.7249   |   | 0.04799   | CDF   | 0.580   |   |   | cant Effect  |                                  |                                   |
|  |        | 69.7  | 6  | -0.043   | 100   | 0.04799   | CDF   | 0.868   |   |   | cant Effect  |                                  |                                   |
|  |        | 100   | 6  | -0.823   | 640.13.2  | 0.04799   | CDF   | 0.979   |   |   | cant Effect  |                                  |                                   |
| Test Acceptal                                      | hility | Criteria  | 1,210  | 200  | 90.78   | 13/7/12/52  | 351   | 0.07.0  |   | J.griiii  | CONT ENDOL   |                                  |                                   |
| Attribute  |        | Test Stat   |  | Limits<br>Upper  | Overlap   | Decision  |   |   |   |   |  |                                  |                                   |
| Control Resp                                       | -      | 0.9442  | 0.9  | <<   | Yes   | Passes C  | ritorio   |   |   |   |  |                                  |                                   |
| 3 3 3 3 3  |        | 0.5742  | 0.5  | 33   | 165   | rasses C  | illeria   |   |   | _   |  |                                  |                                   |
| ANOVA Table  |        | Own Error   |  | 601.03   | 7   | -   |   |   |   |   |  |                                  |                                   |
| Source   |        | Sum Squ   |  |  | Square  | DF  | F Stat  | P-Val   |   | sion(a  |  |                                  |                                   |
| Between  |        | 0.0071623   | 9-   | 0.0011   | 17.5  | 6   | 1.553   | 0.210   | 2 Non-S   | Signifi   | cant Effect  |                                  |                                   |
| Error  | _      | 0.0161451   |  | 0.0007   | 688   | 21  | 23  |   |   |   |  |                                  |                                   |
| Total  |        | 0.0233073   | 3  |  |   | 27  |   |   |   |   |  |                                  |                                   |
| ANOVA Assu   | mptic  | ons Tests   |  |  |   |   |   |   |   |   |  |                                  |                                   |
| Attribute  |        | Test  |  |  |   | Test Stat   | Critical  | P-Val   | ue Decis  | ion(a   | :1%)   |                                  |                                   |
| Variance   | - 1    | Bartlett Ed   | quality of Va  | ariance T  | est   | 8.474   | 16.81   | 0.205   |   | Varia   |  |                                  |                                   |
|  |        |   | quality of Va  |  |   | 1.274   | 3.812   | 0.311   |   | Varia   |  |                                  |                                   |
|  |        |   |  |  |   |   |   |   |   |   |  |                                  |                                   |
|  |        | Mod Lever   | ne Equality  | of Variar  | ice Test  | 1.105   | 3.812   | 0.392   | 3 Equa  | Varia   |  |                                  |                                   |
| Distribution                                       |        |   |  |  | ice Test  |   | 3,812<br>3,878  |   |   |   |  |                                  |                                   |
| Distribution                                       |        | Anderson-   | ne Equality<br>Darling A2<br>Kurtosis 1  | Test   | ice Test  | 0.6745  | 3.878   | 0.078   | 3 Norm  | al Dis  | tribution  |                                  |                                   |
| Distribution                                       |        | Anderson-<br>D'Agostino   | Darling A2   | Test<br>Test   | ice Test  | 0.6745<br>1.124   | 3.878<br>2.576  | 0.078   | Norm Norm   | al Dis  | tribution<br>tribution   |                                  |                                   |
| Distribution                                       |        | Anderson-<br>D'Agostino<br>D'Agostino   | Darling A2<br>Kurtosis To<br>Skewness  | Test<br>Test<br>Test   |   | 0.6745<br>1.124<br>0.6371   | 3.878<br>2.576<br>2.576   | 0.078<br>0.260<br>0.524   | Norm Norm Norm  | al Dis<br>al Dis<br>al Dis  | tribution<br>tribution<br>tribution  |                                  |                                   |
| Distribution                                       |        | Anderson-<br>D'Agostino<br>D'Agostino<br>D'Agostino                           | Darling A2<br>Kurtosis To<br>Skewness<br>b-Pearson I   | Test<br>Fest<br>S Test<br>K2 Omnik   |   | 0.6745<br>1.124<br>0.6371<br>1.67   | 3.878<br>2.576<br>2.576<br>9.21   | 0.0783<br>0.2609<br>0.5240<br>0.4339  | Norm Norm Norm Norm Norm  | al Dis<br>al Dis<br>al Dis<br>al Dis  | tribution<br>tribution<br>tribution<br>tribution   |                                  |                                   |
| Distribution                                       |        | Anderson-<br>D'Agostino<br>D'Agostino<br>D'Agostino<br>Kolmogoro              | Darling A2<br>Kurtosis To<br>Skewness  | Test<br>Test<br>S Test<br>K2 Omnib<br>D Test   | ous Test  | 0.6745<br>1.124<br>0.6371   | 3.878<br>2.576<br>2.576   | 0.0783<br>0.2609<br>0.5240<br>0.4339<br>0.1209  | Norm Norm Norm Norm Norm Norm Norm  | al Dis<br>al Dis<br>al Dis<br>al Dis<br>al Dis  | tribution<br>tribution<br>tribution<br>tribution<br>tribution  |                                  |                                   |
|  | orma   | Anderson-<br>D'Agostino<br>D'Agostino<br>D'Agostino<br>Kolmogoro<br>Shapiro-W | Darling A2<br>o Kurtosis To<br>o Skewness<br>o-Pearson I<br>ov-Smirnov<br>Vilk W Norn  | Test<br>Test<br>S Test<br>K2 Omnib<br>D Test   | ous Test  | 0.6745<br>1.124<br>0.6371<br>1.67<br>0.1474   | 3.878<br>2.576<br>2.576<br>9.21<br>0.1914   | 0.0783<br>0.2609<br>0.5240<br>0.4339  | Norm Norm Norm Norm Norm Norm Norm  | al Dis<br>al Dis<br>al Dis<br>al Dis<br>al Dis  | tribution<br>tribution<br>tribution<br>tribution   |                                  |                                   |
| Proportion No                                      | orma   | Anderson-<br>D'Agostino<br>D'Agostino<br>D'Agostino<br>Kolmogoro<br>Shapiro-W | Darling A2<br>b Kurtosis I<br>b Skewnes:<br>b-Pearson I<br>bov-Smirnov<br>Jilk W Norn  | Test<br>Fest<br>s Test<br>K2 Omnit<br>D Test<br>nality Tes   | ous Test  | 0.6745<br>1.124<br>0.6371<br>1.67<br>0.1474<br>0.953  | 3.878<br>2.576<br>2.576<br>9.21<br>0.1914<br>0.8975   | 0.078<br>0.260<br>0.524<br>0.433<br>0.120<br>0.235  | Norm Norm Norm Norm Norm Norm Norm  | al Dis<br>al Dis<br>al Dis<br>al Dis<br>al Dis<br>al Dis                                | tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>tribution   | CVe                              | 0/ E#=                            |
| Proportion No<br>Conc-%                            | orma   | Anderson-<br>D'Agostino<br>D'Agostino<br>D'Agostino<br>Kolmogoro<br>Shapiro-W | Darling A2 Discrepance Discrep | Test Fest S Test K2 Omnik D Test hality Tes  Mean  | ous Test<br>t<br>95% LCI                                  | 0.6745<br>1.124<br>0.6371<br>1.67<br>0.1474<br>0.953  | 3.878<br>2.576<br>2.576<br>9.21<br>0.1914<br>0.8975   | 0.078<br>0.260<br>0.524<br>0.433<br>0.120<br>0.235  | Norm Norm Norm Norm Norm Norm Norm Max  | al Dis<br>al Dis<br>al Dis<br>al Dis<br>al Dis<br>al Dis                                | tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>tribution   | CV%                              | %Effect                           |
| Proportion No<br>Conc-%                            | orma   | Anderson-<br>D'Agostino<br>D'Agostino<br>D'Agostino<br>Kolmogoro<br>Shapiro-W | Darling A2 Discrepance of Kurtosis To Skewness Dependent of Count  Count   | Test Fest S Test C2 Omnik D Test nality Tes  Mean 0.9442   | 95% LCI   | 0.6745<br>1.124<br>0.6371<br>1.67<br>0.1474<br>0.953<br>- 95% UCL<br>0.9615                                       | 3.878<br>2.576<br>2.576<br>9.21<br>0.1914<br>0.8975<br>Median<br>0.9452   | 0.078:<br>0.260:<br>0.524:<br>0.433:<br>0.120:<br>0.235:<br>Min                               | 3 Norm 9 Norm 10 Norm 11 Norm 1 Max 9 0.954   | al Disi<br>al Disi<br>al Disi<br>al Disi<br>al Disi<br>al Disi                          | tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>tribution  | 1.15%                            | 0.00%                             |
| Proportion No<br>Conc-%<br>0<br>6.25               | orma   | Anderson-<br>D'Agostino<br>D'Agostino<br>D'Agostino<br>Kolmogoro<br>Shapiro-W | Darling A2 Controls To Skewness Department of | Test Fest S Test C2 Omnib D Test hality Tes  Mean 0.9442 0.9387  | 95% LCI<br>0.9269<br>0.9279                               | 0.6745<br>1.124<br>0.6371<br>1.67<br>0.1474<br>0.953<br>- 95% UCL<br>0.9615<br>0.9496                             | 3.878<br>2.576<br>2.576<br>9.21<br>0.1914<br>0.8975<br>Median<br>0.9452<br>0.9408                               | 0.0783<br>0.2600<br>0.5240<br>0.4333<br>0.1200<br>0.235<br>Min<br>0.9319<br>0.9289            | 3 Norm 9 Norm 1 Norm 1 Norm 1 Max 9 0.954   | al Disi<br>al Disi<br>al Disi<br>al Disi<br>al Disi<br>al Disi                          | tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>Std Err<br>0.0054<br>0.0034                                  | 1.15%<br>0.73%                   | 0.00%<br>0.58%                    |
| Proportion No<br>Conc-%<br>0<br>5.25<br>12.5       | orma   | Anderson-<br>D'Agostino<br>D'Agostino<br>D'Agostino<br>Kolmogoro<br>Shapiro-W | Darling A2 o Kurtosis T o Skewness o-Pearson I ov-Smirnov //ilk W Norn  Count 4 4 4  | Test Fest STest C2 Omnit D Test hality Tes  Mean 0.9442 0.9387 0.9251  | 95% LCI<br>0.9269<br>0.9279<br>0.8906                     | 0.6745<br>1.124<br>0.6371<br>1.67<br>0.1474<br>0.953<br>95% UCL<br>0.9615<br>0.9496<br>0.9595                     | 3.878<br>2.576<br>2.576<br>9.21<br>0.1914<br>0.8975<br>Median<br>0.9452<br>0.9408<br>0.9206                     | 0.0783<br>0.2600<br>0.5240<br>0.4333<br>0.1200<br>0.235<br>Min<br>0.9289<br>0.9040            | 3 Norm 9 Norm 1 Norm 1 Norm 1 Norm Max 9 0.954 9 0.954 3 0.954  | al Disi<br>al Disi<br>al Disi<br>al Disi<br>al Disi<br>al Disi                          | tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>Std Err<br>0.0054<br>0.0034<br>0.0108           | 1.15%<br>0.73%<br>2.34%          | 0.00%<br>0.58%<br>2.02%           |
| Proportion No<br>Conc-%<br>0<br>3.25<br>12.5<br>25 | orma   | Anderson-<br>D'Agostino<br>D'Agostino<br>D'Agostino<br>Kolmogoro<br>Shapiro-W | Darling A2 o Kurtosis T o Skewness o-Pearson I ov-Smirnov //ilk W Norm  Count 4 4 4 4  | Test Fest S Test C Omnit D Test nality Tes  Mean 0.9442 0.9387 0.9251 0.9469   | 95% LCI<br>0.9269<br>0.9279<br>0.8906<br>0.9354           | 0.6745<br>1.124<br>0.6371<br>1.67<br>0.1474<br>0.953<br>- 95% UCL<br>0.9615<br>0.9496<br>0.9595<br>0.9585         | 3.878<br>2.576<br>2.576<br>9.21<br>0.1914<br>0.8975<br>Median<br>0.9452<br>0.9408<br>0.9206<br>0.9495           | 0.078:<br>0.2600<br>0.5240<br>0.433:<br>0.1200<br>0.235:<br>Min<br>0.9319<br>0.9040<br>0.936: | 3 Norm 9 Norm 1 | al Disi<br>al Disi<br>al Disi<br>al Disi<br>al Disi<br>al Disi                          | tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>Std Err<br>0.0054<br>0.0034<br>0.0108<br>0.0036 | 1.15%<br>0.73%<br>2.34%<br>0.77% | 0.00%<br>0.58%<br>2.02%<br>-0.29% |
| Proportion Notice Conc-% 0 6.25 12.5 25 50         | orma   | Anderson-<br>D'Agostino<br>D'Agostino<br>D'Agostino<br>Kolmogoro<br>Shapiro-W | Darling A2 o Kurtosis T o Skewness o-Pearson I ov-Smirnov //ilk W Norm  Count 4 4 4 4  | Test<br>Fest<br>S Test<br>C2 Omnik<br>D Test<br>nality Tes<br>Mean<br>0.9442<br>0.9387<br>0.9251<br>0.9469<br>0.9375 | 95% LCI<br>0.9269<br>0.9279<br>0.8906<br>0.9354<br>0.9183 | 0.6745<br>1.124<br>0.6371<br>1.67<br>0.1474<br>0.953<br>95% UCL<br>0.9615<br>0.9496<br>0.9595<br>0.9585<br>0.9567 | 3.878<br>2.576<br>2.576<br>9.21<br>0.1914<br>0.8975<br>Median<br>0.9452<br>0.9408<br>0.9206<br>0.9495<br>0.9412 | 0.0783<br>0.2600<br>0.5240<br>0.4333<br>0.1200<br>0.235<br>Min<br>0.9289<br>0.9040            | 3 Norm 9 Norm 1 Norm 1 Norm 1 Norm 1 Norm 1 Norm 1 Norm 2 0.954 3 0.954 3 0.952   | al Disi<br>al Disi<br>al Disi<br>al Disi<br>al Disi<br>al Disi                          | tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>Std Err<br>0.0054<br>0.0034<br>0.0108           | 1.15%<br>0.73%<br>2.34%          | 0.00%<br>0.58%<br>2.02%           |
| Proportion No<br>Conc-%<br>0<br>6.25<br>12.5<br>25 | orma   | Anderson-<br>D'Agostino<br>D'Agostino<br>D'Agostino<br>Kolmogoro<br>Shapiro-W | Darling A2 o Kurtosis T o Skewness o-Pearson I ov-Smirnov //ilk W Norm  Count 4 4 4 4  | Test Fest S Test C Omnit D Test nality Tes  Mean 0.9442 0.9387 0.9251 0.9469   | 95% LCI<br>0.9269<br>0.9279<br>0.8906<br>0.9354<br>0.9183 | 0.6745<br>1.124<br>0.6371<br>1.67<br>0.1474<br>0.953<br>- 95% UCL<br>0.9615<br>0.9496<br>0.9595<br>0.9585         | 3.878<br>2.576<br>2.576<br>9.21<br>0.1914<br>0.8975<br>Median<br>0.9452<br>0.9408<br>0.9206<br>0.9495           | 0.078:<br>0.2600<br>0.5240<br>0.433:<br>0.1200<br>0.235:<br>Min<br>0.9319<br>0.9040<br>0.936: | 3 Norm 9 Norm 1 Norm 1 Norm 1 Norm 1 Norm 1 Norm 2 0.954 9 0.954 3 0.952 0 0.947  | al Disi<br>al Disi<br>al Disi<br>al Disi<br>al Disi<br>al Disi<br>4<br>4<br>4<br>4<br>4 | tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>tribution<br>Std Err<br>0.0054<br>0.0034<br>0.0108<br>0.0036 | 1.15%<br>0.73%<br>2.34%<br>0.77% | 0.00%<br>0.58%<br>2.02%<br>-0.29% |

Report Date: Test Code/ID:

20 Feb-24 17:45 (p 4 of 10) P240130.03SC / 08-4830-1359

**Bivalve Larval Survival and Development Test EcoAnalysts** 

Analysis ID: 09-0655-3543

Endpoint: Proportion Normal

**CETIS Version:** 

CETISv2.1.4

Analyzed: 20 Feb-24 17:41 **Edit Date:** 20 Feb-24 17:29

Analysis: Parametric-Control vs Treatments MD5 Hash: EDBAE943D5835730FDDC3062F5D56BB4 Editor ID:

Status Level:

004-244-315-2

| Angular | (Corrected) | Transformed Summary |  |
|---------|-------------|---------------------|--|
|---------|-------------|---------------------|--|

| Conc-% | Code | Count | Mean   | 95% LCL | 95% UCL | Median | Min    | Max    | Std Err | CV%   | %Effect |
|--------|------|-------|--------|---------|---------|--------|--------|--------|---------|-------|---------|
| 0      | D    | 4     | 1.3330 | 1.2950  | 1.3710  | 1.3350 | 1.3070 | 1.3550 | 0.0118  | 1.77% | 0.00%   |
| 6.25   |      | 4     | 1,3210 | 1.2990  | 1.3430  | 1.3250 | 1.3010 | 1.3330 | 0.0070  | 1.06% | 0.91%   |
| 12.5   |      | 4     | 1.2960 | 1.2270  | 1.3650  | 1.2850 | 1.2570 | 1.3560 | 0.0216  | 3.34% | 2.79%   |
| 25     |      | 4     | 1.3390 | 1.3140  | 1.3640  | 1.3440 | 1.3160 | 1.3510 | 0.0079  | 1.19% | -0.43%  |
| 50     |      | 4     | 1.3190 | 1.2800  | 1.3570  | 1.3260 | 1.2840 | 1.3400 | 0.0121  | 1.84% | 1.07%   |
| 69.7   |      | 4     | 1.3340 | 1.3160  | 1.3510  | 1.3360 | 1.3190 | 1.3440 | 0.0055  | 0.83% | -0.06%  |
| 100    |      | 4     | 1.3490 | 1.2820  | 1.4170  | 1.3490 | 1,2980 | 1.4020 | 0.0212  | 3.14% | -1.21%  |

### **Proportion Normal Detail**

| Conc-% | Code | Rep 1  | Rep 2  | Rep 3  | Rep 4  |  |
|--------|------|--------|--------|--------|--------|--|
| 0      | D    | 0.9319 | 0.9544 | 0.9522 | 0.9382 |  |
| 6.25   |      | 0.9289 | 0.9400 | 0.9416 | 0.9444 |  |
| 12.5   |      | 0.9274 | 0.9544 | 0.9048 | 0.9137 |  |
| 25     |      | 0.9482 | 0.9509 | 0.9524 | 0.9363 |  |
| 50     |      | 0.9401 | 0.9422 | 0.9476 | 0.9200 |  |
| 69.7   |      | 0.9451 | 0.9469 | 0.9496 | 0.9378 |  |
| 100    |      | 0.9530 | 0.9498 | 0.9274 | 0.9717 |  |

### Angular (Corrected) Transformed Detail

| Conc-% | Code | Rep 1  | Rep 2  | Rep 3  | Rep 4  |  |
|--------|------|--------|--------|--------|--------|--|
| 0      | D    | 1.3070 | 1.3550 | 1.3500 | 1.3200 |  |
| 6.25   |      | 1.3010 | 1.3230 | 1.3270 | 1.3330 |  |
| 12.5   |      | 1.2980 | 1.3560 | 1.2570 | 1.2730 |  |
| 25     |      | 1.3410 | 1.3470 | 1.3510 | 1.3160 |  |
| 50     |      | 1.3230 | 1.3280 | 1.3400 | 1.2840 |  |
| 69.7   |      | 1.3340 | 1.3380 | 1.3440 | 1.3190 |  |
| 100    |      | 1.3520 | 1.3450 | 1.2980 | 1.4020 |  |

#### **Proportion Normal Binomials**

| Conc-% | Code | Rep 1   | Rep 2   | Rep 3   | Rep 4   |  |
|--------|------|---------|---------|---------|---------|--|
| 0      | D    | 260/279 | 230/241 | 239/251 | 243/259 |  |
| 6.25   |      | 235/253 | 235/250 | 242/257 | 238/252 |  |
| 12.5   |      | 230/248 | 251/263 | 247/273 | 233/255 |  |
| 25     |      | 238/251 | 271/285 | 240/252 | 250/267 |  |
| 50     |      | 251/267 | 261/277 | 235/248 | 230/250 |  |
| 69.7   |      | 258/273 | 232/245 | 264/278 | 226/241 |  |
| 100    |      | 284/298 | 246/259 | 230/248 | 240/247 |  |
|        |      |         |         |         |         |  |

Report Date:

20 Feb-24 17:45 (p 5 of 10) P240130.03SC / 08-4830-1359

Test Code/ID:

**EcoAnalysts** 

**Bivalve Larval Survival and Development Test** 

09-0655-3543 Endpoint: Proportion Normal

Analyzed: 20 Feb-24 17:41 Edit Date: 20 Feb-24 17:29 Analysis:

Parametric-Control vs Treatments MD5 Hash: EDBAE943D5835730FDDC3062F5D56BB4 Editor ID:

**CETIS Version:** 

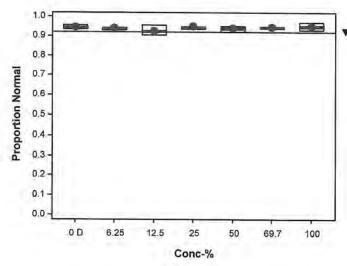
CETISv2.1.4

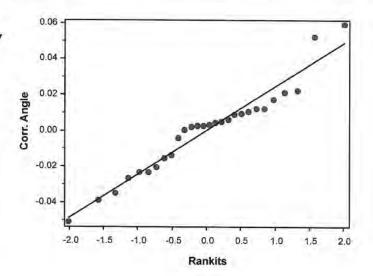
Status Level:

004-244-315-2

## Graphics

Analysis ID:





Report Date: Test Code/ID: 20 Feb-24 17:45 (p 6 of 10) P240130.03SC / 08-4830-1359

| Bivalve Larva                          | Surviv     | al and D           | evelop   | men   | t Test        |                           |              |           |            |               |                   |           | EcoAnalysts  |
|--|------------|--------------------|----------|-------|---------------|---------------------------|--------------|-----------|------------|---------------|-------------------|-----------|--------------|
| Analysis ID:                           | 04-177     |                    |          | End   |               | Proportion Su             |              |           | CET        | TIS Version:  | CETISV            | 2.1.4     |              |
| Analyzed:                              | 20 Feb     | -24 17:38          | 3        | Anal  | ysis:         | Parametric-Tv             | vo Sample    |           | Stat       | tus Level:    | 1                 |           |              |
| Edit Date:                             | 20 Feb     | -24 17:29          | 9        | MD5   | Hash:         | 00825521AF5               | 9237F1F178   | 8873E549E | 377 Edit   | tor ID:       | 004-244           | -315-2    |              |
| Batch ID:                              | 03-065     | 9-8360             |          | Test  | Type:         | Development-              | Survival     |           | Ana        | lyst: Dar     | ielle Mullig      | an        |              |
| Start Date:                            | 30 Jan-    | 24 16:07           |          | Prot  | ocol:         | EPA/600/R-95              | 5/136 (1995) |           |            |               | oratory Sea       |           |              |
| Ending Date:                           | 01 Feb     | -24 15:20          | )        | Spec  |               | Mytilus gallop            |              |           | Brin       |               | stal Sea Ma       |           |              |
| Test Length:                           | 47h        |                    |          | Taxo  | on:           | Bivalvia                  |              |           | Sou        |               | lor Shellfish     |           | Age: <4      |
| Sample ID:                             | 06-000     | 1-8496             |          | Code  | e:            | P240130.03S               | C            |           | Pro        | ject: Wy      | ckoff Eagle       | Harbor GV | VTP 2024/M   |
| Sample Date:                           | 30 Jan-    | 24 09:35           |          | Mate  | erial:        | Treated Groun             | ndwater      |           |            |               | obs Wycko         |           | and agreemen |
| Receipt Date:                          | 30 Jan-    | 24 11:54           |          | CAS   | (PC):         |                           |              |           | Stat       |               | 52146 1           |           |              |
| Sample Age:                            | 7h (5.6    | °C)                |          | Clier | nt:           | Jacobs Wycko              | off          |           | -          | 244           | 92/NJ=0           |           |              |
| Data Transfor                          | m          |                    | Alt H    | qv    |               |                           |              | Compari   | son Result |               |                   |           | PMSD         |
| Angular (Corre                         | ected)     |                    | C > T    | _     |               |                           |              |           |            | proportion su | rvived end        | point     | 4.99%        |
| Unequal Varia                          | ance t T   | wo-Sami            | ple Tes  | t     |               |                           |              |           |            |               |                   |           | 177          |
| Control I                              |            | ontrol II          | 7.4      |       | Test S        | tat Critical              | MSD          | P-Type    | P-Value    | Decision      | (a:5%)            |           |              |
| Dilution Water                         |            | alt Contr          |          | 3     | -2.265        |                           | 0.132        | CDF       | 0.9458     |               | ficant Effec      | t         | _            |
| Test Acceptab                          | oility Cri | teria              |          |       |               |                           |              |           |            |               |                   |           |              |
| Attribute                              | 100        | est Stat           |          |       | mits<br>Upper | Overlap                   | Decision     |           |            |               |                   |           |              |
| Control Resp                           | - 1        |                    | 0.5      |       | <<            | Yes                       | Passes C     | ritoria   |            |               |                   |           |              |
| Control Resp                           |            | 9666               | 0.5      |       | <<            | Yes                       | Passes C     | 1377.14   |            |               |                   |           |              |
| ANOVA Table                            |            |                    |          |       |               |                           | 2.00         | . 20.91   |            |               |                   |           |              |
| Source                                 | s          | um Squa            | ares     |       | Mean          | Square                    | DF           | F Stat    | P-Value    | Decision      | (a:5%)            |           |              |
| Between                                |            | 0322488            |          |       | 0.0322        |                           | 1            | 5.129     | 0.0641     |               | ficant Effec      | 4         |              |
| Error                                  |            | 0377248            |          |       | 0.0062        |                           | 6            | 0.120     | 0,0041     | Non-oigh      | ncant Lifet       |           |              |
| Total                                  | 0          | 0699737            | ,        |       |               |                           | 7            |           |            |               |                   |           |              |
| ANOVA Assur                            | nptions    | Tests              |          |       |               |                           |              |           |            |               |                   |           |              |
| Attribute                              |            | est                |          |       |               |                           | Test Stat    | Critical  | P-Value    | Decision      | (a:1%)            |           |              |
| Variance                               | L          | evene Eq           | uality o | f Var | iance T       | est                       | 15.35        | 13.75     | 0.0078     | Unequal \     |                   |           |              |
|  |            | lod Lever          |          |       |               |                           | 15.34        | 13.75     | 0.0078     | Unequal \     |                   |           |              |
|  |            | ariance F          |          |       |               |                           | 02027        | 75-12-    | 0.00,0     | Indetermin    |                   |           |              |
| Distribution                           | A          | nderson-           | Darling  | A2 T  | est           |                           | 0.5285       | 3.878     | 0.1811     | Normal Di     | stribution        |           |              |
|  |            | olmogoro           |          |       |               |                           | 0.25         | 0.3313    | 0.1599     | Normal Di     | en all market and |           |              |
|  | S          | hapiro-W           | ilk W N  | lorma | ality Tes     | t                         | 0.9205       | 0.6451    | 0.4336     | Normal Di     |                   |           |              |
| Proportion Su                          | rvived     | Summar             | у        |       |               |                           |              |           |            |               |                   |           |              |
| Conc-%                                 | C          | ode                | Count    | ť     | Mean          | 95% LCL                   | 95% UCL      | Median    | Min        | Max           | Std Err           | CV%       | %Effect      |
| 0                                      | D          |                    | 4        |       | 0.9666        | 0.9095                    | 1.0000       | 0.9733    | 0.9198     | 1.0000        | 0.0179            | 3.71%     | 0.00%        |
| 0                                      | S          | С                  | 4        |       | 1.0000        | 1.0000                    | 1.0000       | 1.0000    | 1.0000     | 1.0000        | 0.0000            | 0.00%     | -3.46%       |
| Angular (Corre                         | ected) 1   | ransform           | ned Su   | mma   | ary           |                           |              |           |            |               |                   |           |              |
| Conc-%                                 | C          | ode                | Count    | t     | Mean          | 95% LCL                   | 95% UCL      | Median    | Min        | Max           | Std Err           | CV%       | %Effect      |
| 0                                      | D          | L II               | 4        |       | 1.4130        | 1.2340                    | 1.5910       | 1.4140    | 1.2840     | 1.5400        | 0.0561            | 7.94%     | 0.00%        |
| 0                                      | S          | C                  | 4        |       | 1.5400        |                           | 1.5400       | 1.5400    | 1.5400     | 1.5400        | 0.0000            | 0.00%     | -8.99%       |
| Proportion Su                          | rvived     | Detail             |          |       |               |                           |              |           |            |               |                   |           |              |
| Conc-%                                 | C          | ode                | Rep 1    |       | Rep 2         | Rep 3                     | Rep 4        |           |            |               |                   |           |              |
|  |            | 241                |          |       |               |                           |              |           |            |               |                   |           |              |
|  |            |                    |          |       |               |                           |              |           |            |               |                   |           |              |
| O<br>Proportion Su<br>Conc-%<br>O<br>O | S          | C<br>Detail<br>ode |          | 0     |               | 1.5390<br>Rep 3<br>0.9580 |              |           |            |               |                   |           |              |

Analyst: M QAMSUS

Report Date: Test Code/ID: 20 Feb-24 17:45 (p 7 of 10) P240130.03SC / 08-4830-1359

**Bivalve Larval Survival and Development Test** 

**EcoAnalysts** 

Analysis ID: 04-1777-5456

Endpoint: Proportion Survived

**CETIS Version:** 

CETISv2.1.4

Analyzed: 20 Feb-24 17:38 Edit Date: 20 Feb-24 17:29

**Analysis:** Parametric-Two Sample **MD5 Hash:** 00825521AF59237F1F1788873E549B77

Status Level:

Editor ID:

1 004-244-315-2

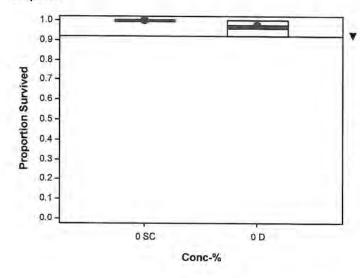
Angular (Corrected) Transformed Detail

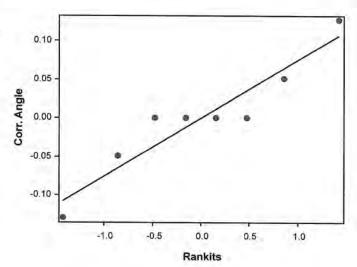
| Conc-% | Code | Rep 1  | Rep 2  | Rep 3  | Rep 4  |
|--------|------|--------|--------|--------|--------|
| 0      | D    | 1.5400 | 1.2840 | 1.3640 | 1.4640 |
| 0      | SC   | 1.5400 | 1.5400 | 1.5400 | 1.5400 |

#### **Proportion Survived Binomials**

| Conc-% | Code | Rep 1   | Rep 2   | Rep 3   | Rep 4   |  |
|--------|------|---------|---------|---------|---------|--|
| 0      | D    | 262/262 | 241/262 | 251/262 | 259/262 |  |
| 0      | SC   | 262/262 | 262/262 | 262/262 | 262/262 |  |

#### Graphics





Report Date: Test Code/ID:

20 Feb-24 17:45 (p 8 of 10) P240130.03SC / 08-4830-1359

| Divolve Laure     |        | ALL THE R      | ALLOW THE THE | 7-48     | -      |             |             |             | -    | esic | odeno:     |                | P24013       | 0.035070   | 8-4830-13 |
|-------------------|--------|----------------|---------------|----------|--------|-------------|-------------|-------------|------|------|------------|----------------|--------------|------------|-----------|
| Bivalve Larva     | CV.    | TOTAL CONTRACT | evelopme      | nt Test  |        |             |             |             |      |      |            |                |              | E          | coAnalys  |
|                   |        | 897-6287       |               | dpoint:  |        | ortion Sur  |             |             |      | CET  | IS Versio  | n:             | CETISv2      | .1.4       |           |
| Analyzed:         |        | eb-24 17:4     |               | alysis:  |        |             | -Control vs |             |      | Stat | tus Level: |                | 1            |            |           |
| Edit Date:        | 20 F   | eb-24 17:29    | 9 MD          | 5 Hash:  | 03B1   | 72A8E4A     | 5CBD6CED    | 01A944456   | SECE | Edit | tor ID:    |                | 004-244-     | 315-2      |           |
| Batch ID:         | 03-0   | 659-8360       | Tes           | t Type:  | Deve   | lopment-S   | Survival    |             |      | Ana  | lyst: D    | )aniel         | le Mulliga   | n          |           |
| Start Date:       | 30 J   | an-24 16:07    |               | tocol:   |        |             | 136 (1995)  |             |      |      |            |                | tory Sea     |            |           |
| Ending Date:      | 01 F   | eb-24 15:20    | O Spe         | ecies:   |        | us gallopro |             |             |      | Brin |            |                | Sea Mai      |            |           |
| Test Length:      | 47h    |                |               | on:      | Bival  |             |             |             |      |      |            |                | Shellfish    | IIIC IIIIX | Age: <    |
| Sample ID:        | 06-0   | 001-8496       | Cod           | le.      | POAN   | 130.03SC    | Y-1         |             |      | Deal |            | 3.00           | Carlo Car    | 1-4-014    |           |
| Sample Date:      |        |                |               | terial:  |        | ed Groun    |             |             |      |      |            |                |              | Harbor GW  | IP 2024/  |
| Receipt Date:     |        |                |               | S (PC):  | Tical  | ed Gibuin   | uwatei      |             |      |      |            |                | Wyckoff      |            |           |
| Sample Age:       |        |                | Clie          |          | Jacol  | bs Wycko    | ff          |             |      | Stat | ion: 2     | 4052           | 146_1        |            |           |
| Data Transform    | 14,117 |                | Alt Hyp       |          |        | 30 111000   |             | HOEL        |      |      | TAE!       |                |              |            | Various . |
| Angular (Corre    | _      |                | C > T         |          | _      |             |             | NOEL<br>100 | >10  |      | TOEL       | 1              | Tox Units    |            | PMSD      |
| ect a late in the |        |                |               |          |        |             |             | 100         | >10  | 0    |            | -              |              | 0.07678    | 7.94%     |
| Steel Many-Or     |        |                |               |          |        | 2.00        |             | 22.7        |      |      |            |                |              |            |           |
|                   | vs     | Conc-%         | di            | 1.0      |        | Critical    | Ties        | P-Type      | _    | alue | Decisio    |                |              |            |           |
| Dilution Water    |        | 6.25           | 6             | 17       |        | 10          | 0           | CDF         | 0.76 |      |            |                | ant Effect   |            |           |
|                   |        | 12.5           | 6             | 20       |        | 10          | 1           | CDF         | 0.96 |      |            |                | ant Effect   |            |           |
|                   |        | 25             | 6             | 20.5     |        | 10          | 2           | CDF         | 0.97 |      |            | Electronic and | ant Effect   |            |           |
|                   |        | 50             | 6             | 19       |        | 10          | 1           | CDF         | 0.92 |      |            | 2000           | ant Effect   |            |           |
|                   |        | 69.7           | 6             | 18.5     |        | 10          | 2           | CDF         | 0.89 |      |            |                | ant Effect   |            |           |
|                   |        | 100            | 6             | 18       |        | 10          | 2           | CDF         | 0.85 | 571  | Non-Sig    | gnifica        | ant Effect   |            |           |
| Test Acceptab     | ility  | Criteria       | TACL          | imits    |        |             |             |             |      |      |            |                |              |            |           |
| Attribute         |        | Test Stat      | Lower         | Upper    | r )    | Overlap     | Decision    |             |      |      |            |                |              |            |           |
| Control Resp      |        | 0.9666         | 0.5           | <<       |        | Yes         | Passes C    | riteria     |      |      |            |                |              |            |           |
| ANOVA Table       |        |                |               |          |        |             |             |             |      |      |            |                |              |            |           |
| Source            |        | Sum Squ        | ares          | Mean     | Squa   | re          | DF          | F Stat      | P-V  | alue | Decisio    | on(a:          | 5%)          |            |           |
| Between           |        | 0.0154108      | 3             | 0.002    | 5685   |             | 6           | 0.2363      | 0.95 | 96   |            | _              | ant Effect   |            |           |
| Error             |        | 0.228305       |               | 0.0108   | 8717   |             | 21          |             |      |      | 10-70-feb  |                | 11,-10-30    |            |           |
| Total             |        | 0.243716       |               |          |        |             | 27          |             |      |      |            |                |              |            |           |
| ANOVA Assum       | nptic  | ons Tests      |               |          |        |             |             |             |      |      |            |                |              |            |           |
| Attribute         |        | Test           |               |          |        |             | Test Stat   | Critical    | P-V  | alue | Decisio    | onla.          | 1%)          |            |           |
| Variance          |        |                | quality of Va | riance T | est    |             | 4.403       | 16.81       | 0.62 |      | Equal V    | _              |              |            |           |
|                   |        |                | quality of Va |          |        |             | 5.556       | 3.812       | 0.00 |      | Unequa     |                |              |            |           |
|                   |        |                | ne Equality   |          |        | est         | 4.623       | 3.812       | 0.00 |      | Unequa     |                |              |            |           |
| Distribution      |        |                | Darling A2    |          |        | C.          | 1.243       | 3.878       | 0.00 |      | 1          |                | Distribution | nn.        |           |
|                   |        |                | Kurtosis T    |          |        |             | 4.364       | 2.576       | 1.3E |      |            |                | Distribution |            |           |
|                   |        |                | Skewness      |          |        |             | 0.01439     | 2.576       | 0.98 |      | Normal     |                |              | 200        |           |
|                   |        | 4.50           | -Pearson k    |          | bus Te | est         | 19.04       | 9.21        | 7.3E |      |            |                | Distribution | on         |           |
|                   |        |                | ov-Smirnov    |          |        | 41          | 0.1764      | 0.1914      | 0.02 |      | Normal     |                |              |            |           |
|                   |        |                | ilk W Norm    |          | st     |             | 0.8902      | 0.8975      | 0.00 |      |            |                | Distribution | on         |           |
| Proportion Sur    | rvive  | ed Summar      | v             |          |        |             |             |             |      |      |            |                | ratifow.     |            |           |
| Conc-%            | . 1403 | Code           | Count         | Mean     |        | 95% LCL     | 95% UCL     | Median      | Min  |      | Max        |                | itd Err      | CV%        | %Effect   |
| )                 |        | D              | 4             | 0.9666   |        | 0.9095      | 1.0000      | 0.9733      | 0.91 |      | 1.0000     | _              | .0179        | 3.71%      | 0.00%     |
| 6.25              |        |                | 4             | 0.9656   |        | 0.9478      | 0.9835      | 0.9637      | 0.95 |      | 0.9809     |                | .0056        |            |           |
| 12.5              |        |                | 4             | 0.9800   |        | 0.9393      | 1,0000      | 0.9911      | 0.94 |      |            |                |              | 1.16%      | 0.10%     |
| 25                |        |                | 4             | 0.9800   |        | 0.9431      | 1.0000      | 0.9873      |      |      | 1.0000     |                | .0128        | 2.61%      | -1.38%    |
| 50                |        |                | 4             | 0.9752   |        | 0.9293      | 1.0000      |             | 0.95 |      | 1.0000     |                | .0116        | 2.37%      | -1.38%    |
| 69.7              |        |                |               |          |        |             |             | 0.9847      | 0.94 |      | 1.0000     |                | .0144        | 2.95%      | -0.89%    |
| 100               |        |                | 4             | 0.9637   |        | 0.8964      | 1.0000      | 0.9784      | 0.91 |      | 1.0000     |                | .0212        | 4.39%      | 0.30%     |
| 100               |        |                | 4             | 0.9695   | 0 (    | 0.9232      | 1.0000      | 0.9676      | 0.94 | 27   | 1.0000     | 0              | .0145        | 3.00%      | -0.30%    |

Report Date: Test Code/ID:

20 Feb-24 17:45 (p 9 of 10) P240130.03SC / 08-4830-1359

Bivalve Larval Survival and Development Test

**EcoAnalysts** 

| Analysis ID: | 04-3897-6287    |
|--------------|-----------------|
| Analyzed:    | 20 Feb-24 17:41 |

Endpoint: Proportion Survived

Nonparametric-Control vs Treatments

**CETIS Version:** 

CETISv2.1.4

Edit Date: 20 Feb-24 17:29 Analysis: MD5 Hash: 03B172A8E4A5CBD6CED01A944456ECE

Status Level: Editor ID:

004-244-315-2

| Angular (Correcte | d) Transformed | Summary |
|-------------------|----------------|---------|
|-------------------|----------------|---------|

| Conc-% | Code | Count | Mean   | 95% LCL | 95% UCL | Median | Min    | Max    | Std Err | CV%   | %Effect |
|--------|------|-------|--------|---------|---------|--------|--------|--------|---------|-------|---------|
| 0      | D    | 4     | 1.4130 | 1.2340  | 1.5910  | 1.4140 | 1.2840 | 1.5400 | 0.0561  | 7.94% | 0.00%   |
| 6.25   |      | 4     | 1.3860 | 1.3340  | 1.4390  | 1.3790 | 1.3550 | 1.4320 | 0.0164  | 2.37% | 1.87%   |
| 12.5   |      | 4     | 1.4560 | 1.2950  | 1.6170  | 1.4950 | 1.3380 | 1.5400 | 0.0505  | 6.93% | -3.05%  |
| 25     |      | 4     | 1.4550 | 1.2980  | 1.6110  | 1.4850 | 1.3640 | 1.5400 | 0.0493  | 6.78% | -2.95%  |
| 50     |      | 4     | 1.4430 | 1.2650  | 1.6210  | 1.4780 | 1.3380 | 1.5400 | 0.0560  | 7.76% | -2.14%  |
| 69.7   |      | 4     | 1.4190 | 1.1970  | 1.6420  | 1.4640 | 1.2840 | 1.5400 | 0.0700  | 9.86% | -0.44%  |
| 100    |      | 4     | 1.4180 | 1.2550  | 1.5800  | 1.4010 | 1.3290 | 1.5400 | 0.0511  | 7.21% | -0.33%  |

## **Proportion Survived Detail**

| Conc-% | Code | Rep 1  | Rep 2  | Rep 3  | Rep 4  |
|--------|------|--------|--------|--------|--------|
| 0      | D    | 1.0000 | 0.9198 | 0.9580 | 0.9885 |
| 6.25   |      | 0.9656 | 0.9542 | 0.9809 | 0.9618 |
| 12.5   |      | 0.9466 | 1.0000 | 1.0000 | 0.9733 |
| 25     |      | 0.9580 | 1.0000 | 0.9618 | 1.0000 |
| 50     |      | 1.0000 | 1.0000 | 0.9466 | 0.9542 |
| 69.7   |      | 1.0000 | 0.9351 | 1.0000 | 0.9198 |
| 100    |      | 1.0000 | 0.9885 | 0.9466 | 0.9427 |

#### Angular (Corrected) Transformed Detail

| Conc-% | Code | Rep 1  | Rep 2  | Rep 3  | Rep 4  |  |
|--------|------|--------|--------|--------|--------|--|
| 0      | D    | 1.5400 | 1.2840 | 1.3640 | 1.4640 |  |
| 6.25   |      | 1.3840 | 1.3550 | 1.4320 | 1.3740 |  |
| 12.5   |      | 1.3380 | 1.5400 | 1.5400 | 1.4070 |  |
| 25     |      | 1.3640 | 1.5400 | 1.3740 | 1.5400 |  |
| 50     |      | 1.5400 | 1.5400 | 1.3380 | 1.3550 |  |
| 69.7   |      | 1.5400 | 1.3130 | 1.5400 | 1.2840 |  |
| 100    |      | 1.5400 | 1.4640 | 1.3380 | 1.3290 |  |

### **Proportion Survived Binomials**

| Conc-% | Code | Rep 1   | Rep 2   | Rep 3   | Rep 4   |  |
|--------|------|---------|---------|---------|---------|--|
| 0      | D    | 262/262 | 241/262 | 251/262 | 259/262 |  |
| 6.25   |      | 253/262 | 250/262 | 257/262 | 252/262 |  |
| 12.5   |      | 248/262 | 262/262 | 262/262 | 255/262 |  |
| 25     |      | 251/262 | 262/262 | 252/262 | 262/262 |  |
| 50     |      | 262/262 | 262/262 | 248/262 | 250/262 |  |
| 69.7   |      | 262/262 | 245/262 | 262/262 | 241/262 |  |
| 100    |      | 262/262 | 259/262 | 248/262 | 247/262 |  |
|        |      |         |         |         |         |  |

Report Date: Test Code/ID:

20 Feb-24 17:45 (p 10 of 10) P240130.03SC / 08-4830-1359

**Bivalve Larval Survival and Development Test** 

**EcoAnalysts** 

Analysis ID: 04-3897-6287

Endpoint: Proportion Survived

Nonparametric-Control vs Treatments

**CETIS Version:** 

CETISv2.1.4

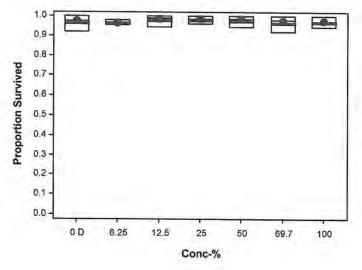
Analyzed: **Edit Date:** 

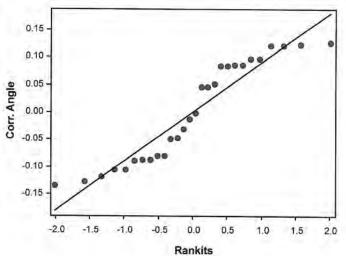
20 Feb-24 17:41 20 Feb-24 17:29 Analysis: MD5 Hash: 03B172A8E4A5CBD6CED01A944456ECE

Status Level: Editor ID:

004-244-315-2

## Graphics





Page 48 of 78

Report Date: Test Code/ID: 20 Feb-24 17:45 (p 1 of 4) P240130.03SC / 08-4830-1359

| _                            |           |                   |                                      |                                      |                            |                            |         | T         | est Code/II   | ):     | P24013        | 0.03SC /  | 08-4830-135 |
|------------------------------|-----------|-------------------|--------------------------------------|--------------------------------------|----------------------------|----------------------------|---------|-----------|---------------|--------|---------------|-----------|-------------|
| Bivalv                       | e Larva   | al Survival and D | evelopmer                            | nt Test                              |                            |                            |         |           |               |        |               |           | EcoAnalyst  |
|                              | sis ID:   | 20-8186-9544      |                                      | point:                               | Proportion Norr            | mal                        |         |           | CETIS Ve      | rsion: | CETISv2       | 1.4       |             |
| Analyz                       |           | 20 Feb-24 17:40   |                                      |                                      | Linear Interpola           |                            |         |           | Status Le     |        | 1             |           |             |
| Edit D                       | ate:      | 20 Feb-24 17:29   | ) MD                                 | 5 Hash:                              | EDBAE943D58                | 35730FDD                   | C3062   | 2F5D56BB4 | Editor ID:    |        | 004-244-3     | 315-2     |             |
| Batch                        |           | 03-0659-8360      |                                      |                                      | Development-S              |                            |         |           | Analyst:      | Dani   | ielle Mulliga | 1         |             |
| Start [                      |           | 30 Jan-24 16:07   |                                      | tocol:                               | EPA/600/R-95/              | 136 (1995)                 |         |           | Diluent:      | Labo   | ratory Seav   | vater     |             |
|                              |           | 01 Feb-24 15:20   | 12.07                                |                                      | Mytilus gallopro           | vincialis                  |         |           | Brine:        | Crys   | tal Sea Mar   | ine Mix   |             |
| Test L                       | ength:    | 47h               | Tax                                  | on:                                  | Bivalvia                   |                            |         |           | Source:       | Taylo  | or Shellfish  |           | Age: <4     |
| Sampl                        |           | 06-0001-8496      | Cod                                  | e: I                                 | P240130.03SC               |                            |         |           | Project:      | Wyc    | koff Eagle H  | larbor G\ | VTP 2024/W  |
|                              |           | 30 Jan-24 09:35   |                                      |                                      | Treated Ground             | lwater                     |         |           | Source:       | Jaco   | bs Wyckoff    |           |             |
|                              |           | 30 Jan-24 11:54   | CAS                                  | (PC):                                |                            |                            |         |           | Station:      | 2405   | 2146_1        |           |             |
| Sampl                        | e Age:    | 7h (5.6 °C)       | Clie                                 | nt: .                                | Jacobs Wyckoff             | •                          |         |           |               |        |               |           |             |
| Linear                       | Interpo   | olation Options   |                                      |                                      |                            |                            |         |           |               |        |               |           |             |
|                              | sform     | Y Transform       | See                                  | d                                    | Resamples                  | Exp 95%                    | CL      | Method    |               |        |               |           |             |
| Log(X+                       | -1)       | Linear            | 4704                                 | 117                                  | 200                        | Yes                        |         | Two-Point | Interpolation | ń      |               |           |             |
| Test A                       | cceptat   | oility Criteria   | TAC L                                | imits                                |                            |                            |         |           |               |        |               |           |             |
| Attribu                      | ite       | Test Stat         | Lower                                | Upper                                | Overlap                    | Decision                   |         |           |               |        |               |           |             |
| Contro                       | Resp      | 0.9442            | 0.9                                  | <<                                   | Yes                        | Passes C                   | riteria | Ç.,       |               |        | -             |           |             |
| Point I                      | Estimat   | 20                |                                      |                                      |                            |                            |         |           |               | _      |               |           |             |
| Level                        | %         | 95% LCL           | 95% UCL                              | Tox Un                               | its 95% LCL                | 059/ 1101                  |         |           |               |        |               |           |             |
| EC15                         | >100      |                   | OCL                                  | <1                                   |                            | 95% UCL                    |         |           |               |        |               |           |             |
| EC20                         | >100      |                   | _                                    | <1                                   | -2                         |                            |         |           |               |        |               |           |             |
| EC25                         | >100      |                   |                                      | <1                                   |                            |                            |         |           |               |        |               |           |             |
| EC40                         | >100      |                   |                                      | <1                                   |                            | 2                          |         |           |               |        |               |           |             |
| EC50                         | >100      | -                 |                                      | <1                                   | -                          | 44                         |         |           |               |        |               |           |             |
| Propoi                       | rtion No  | ormal Summary     |                                      |                                      |                            | Calculated                 | l Varia | ate(A/B)  |               |        |               | Isoto     | nic Variate |
| Conc-9                       | %         | Code              | Count                                | Mean                                 | Median                     | Min                        | Max     |           | %F1           | fect   | ΣΑ/ΣΒ         | Mean      | %Effect     |
| )                            |           | D                 | 4                                    | 0.9442                               | 0.9452                     | 0.9319                     | 0.95    |           |               |        | 972/1030      | 0.9437    | 0.00%       |
| 3.25                         |           |                   | 4                                    | 0.9387                               | 0.9408                     | 0.9289                     | 0.94    |           |               | 14/50  | 950/1012      | 0.9406    | 0.33%       |
| 12.5                         |           |                   | 4                                    | 0.9251                               | 0.9206                     | 0.9048                     | 0.95    | 76 772 0  |               |        | 961/1039      | 0.9406    | 0.33%       |
| 25                           |           |                   | 4                                    | 0.9469                               | 0.9495                     | 0.9363                     | 0.95    | 24 0.77   |               |        | 999/1055      | 0.9406    | 0.33%       |
| 50                           |           |                   | 4                                    | 0.9375                               | 0.9412                     | 0.9200                     | 0.94    |           |               | %      | 977/1042      | 0.9406    | 0.33%       |
| 39.7                         |           |                   | 4                                    | 0.9448                               | 0.9460                     | 0.9378                     | 0.94    | 96 0.54   | % -0.0        | 7%     | 980/1037      | 0.9406    | 0.33%       |
| 100                          |           |                   | 4                                    | 0.9505                               | 0.9514                     | 0.9274                     | 0.97    | 17 1.91   | % -0.6        | 7%     | 1000/1052     | 0.9406    | 0.33%       |
| Salara Van                   | tion No   | ormal Detail      |                                      |                                      |                            |                            |         |           |               |        |               |           |             |
| ropor                        |           | 0-4-              | Rep 1                                | Rep 2                                | Rep 3                      | Rep 4                      |         |           |               |        |               |           |             |
|                              | 6         | Code              | TOP !                                |                                      |                            |                            |         |           |               |        |               |           |             |
| Propor<br>Conc-9             | /6        | D                 | 0.9319                               | 0.9544                               | 0.9522                     | 0.9382                     |         |           |               |        |               |           |             |
| Conc-9                       | /6        |                   |                                      |                                      | 0.9522<br>0.9416           | 0.9382<br>0.9444           |         |           |               |        |               |           |             |
| Conc-9<br>0<br>3.25          | <u>/6</u> |                   | 0.9319                               | 0.9544                               |                            |                            |         |           |               |        |               |           |             |
| Conc-9<br>3.25<br>12.5       | /6        |                   | 0.9319<br>0.9289                     | 0.9544<br>0.9400                     | 0.9416                     | 0.9444                     |         |           |               |        |               |           |             |
| Conc-9<br>5.25<br>12.5<br>25 | /6        |                   | 0.9319<br>0.9289<br>0.9274           | 0.9544<br>0.9400<br>0.9544           | 0.9416<br>0.9048           | 0.9444<br>0.9137           |         |           |               |        |               |           |             |
| Conc-9                       | /o        |                   | 0.9319<br>0.9289<br>0.9274<br>0.9482 | 0.9544<br>0.9400<br>0.9544<br>0.9509 | 0.9416<br>0.9048<br>0.9524 | 0.9444<br>0.9137<br>0.9363 |         |           |               |        |               |           |             |

Report Date: Test Code/ID:

20 Feb-24 17:45 (p 2 of 4) P240130.03SC / 08-4830-1359

**Bivalve Larval Survival and Development Test** 

**EcoAnalysts** 

Analysis ID: 20-8186-9544 Analyzed: 20 Feb-24 17:40 **Endpoint:** Proportion Normal

**CETIS Version:** 

CETISv2.1.4

Edit Date: 20 Feb-24 17:29 Analysis: Linear Interpolation (ICPIN) MD5 Hash: EDBAE943D5835730FDDC3062F5D56BB4 Editor ID:

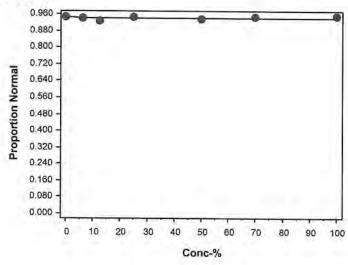
Status Level:

004-244-315-2

### **Proportion Normal Binomials**

| Code | Rep 1   | Rep 2  | Rep 3  | Rep 4  |
|------|---------|--|--|--|
| D    | 260/279 | 230/241  | 239/251  | 243/259  |
|      | 235/253 | 235/250  | 242/257  | 238/252  |
|      | 230/248 | 251/263  | 247/273  | 233/255  |
|      | 238/251 | 271/285  | 240/252  | 250/267  |
|      | 251/267 | 261/277  | 235/248  | 230/250  |
|      | 258/273 | 232/245  | 264/278  | 226/241  |
|      | 284/298 | 246/259  | 230/248  | 240/247  |
|      |         | D 260/279<br>235/253<br>230/248<br>238/251<br>251/267<br>258/273 | D 260/279 230/241<br>235/253 235/250<br>230/248 251/263<br>238/251 271/285<br>251/267 261/277<br>258/273 232/245 | D 260/279 230/241 239/251<br>235/253 235/250 242/257<br>230/248 251/263 247/273<br>238/251 271/285 240/252<br>251/267 261/277 235/248<br>258/273 232/245 264/278 |

### Graphics



Report Date: Test Code/ID: 20 Feb-24 17:45 (p 3 of 4) P240130.03SC / 08-4830-1359

| Bivalv  | e Larva | I Survival and D                | evelopmer | nt Test                          |                  |                  |          |                          | est code/iL   |             | F240130        |           | EcoAnalysts |
|---|---------|---------------------------------|-----------|----------------------------------|------------------|------------------|----------|--------------------------|---------------|-------------|----------------|-----------|-------------|
| Analys  | is ID:  | 15-5364-4792<br>20 Feb-24 17:40 | End       | point: I                         | Proportion Surv  |                  |          |                          | CETIS Ver     | sion:       | CETISv2.       |           | EcoAnalysis |
| Analyzed: 20 Feb-24 17:40<br>Edit Date: 20 Feb-24 17:29 |         | 0.000                           |           | Linear Interpola<br>03B172A8E4A5 |                  |                  | 14456ECE | Status Lev<br>Editor ID: | vel:          | 1 004-244-3 | 315-2          |           |             |
| Batch   | ID:     | 03-0659-8360                    | Tes       | Type: [                          | Development-S    | urvival          |          |                          | Analyst:      | Dan         | ielle Mulligar | 1         |             |
| Start D   | ate:    | 30 Jan-24 16:07                 | Prof      | tocol: E                         | EPA/600/R-95/    | 136 (1995)       |          |                          | Diluent:      | 7 7         | oratory Seaw   |           |             |
|   |         | 01 Feb-24 15:20                 | Spe       | cies: N                          | Mytilus gallopro | vincialis        |          |                          | Brine:        | Crys        | tal Sea Mari   | ine Mix   |             |
| Test L  | ength:  | 47h                             | Tax       | on: E                            | Bivalvia         |                  |          |                          | Source:       |             | or Shellfish   |           | Age: <4h    |
| Sampl   |         | 06-0001-8496                    | Cod       | e: F                             | P240130.03SC     |                  |          |                          | Project:      | Wyc         | koff Eagle H   | larbor G\ | NTP 2024/M  |
| -0.0  |         | 30 Jan-24 09:35                 |           |                                  | Freated Ground   | water            |          |                          | Source:       | Jaco        | bs Wyckoff     |           |             |
|   |         | 30 Jan-24 11:54                 |           | (PC):                            |                  |                  |          |                          | Station:      | 2405        | 52146_1        |           |             |
| Sampl   | e Age:  | 7h (5.6 °C)                     | Clie      | nt:                              | lacobs Wyckoff   | F)               |          |                          |               |             |                |           |             |
| Linear  | Interpo | olation Options                 |           |                                  |                  |                  |          |                          |               |             |                |           |             |
| X Tran  | 22.01.2 | Y Transform                     | See       | d                                | Resamples        | Exp 95%          | CL       | Method                   |               |             |                |           |             |
| Log(X+  | 1)      | Linear                          | 2986      | 575                              | 200              | Yes              |          | Two-Point                | Interpolation | 1           |                |           |             |
| Test A  | cceptal | oility Criteria                 | TAC L     | imits                            |                  |                  |          |                          |               |             |                |           |             |
| Attribu   | te      | Test Stat                       | Lower     | Upper                            | Overlap          | Decision         |          |                          |               |             |                |           |             |
| Contro  | Resp    | 0.9666                          | 0.5       | <<                               | Yes              | Passes C         | riteria  |                          |               |             |                |           |             |
| Point E   | stimat  | es                              |           |                                  |                  |                  |          |                          |               |             |                |           |             |
| Level   | %       | 95% LCL                         | 95% UCL   | Tox Un                           | its 95% LCL      | 95% UCL          |          |                          |               |             |                |           |             |
| EC15  | >100    |                                 |           | <1                               | -                |                  |          |                          |               |             |                |           |             |
| EC20  | >100    | <del>(</del> )                  |           | <1                               |                  |                  |          |                          |               |             |                |           |             |
| EC25  | >100    |                                 | -         | <1                               |                  |                  |          |                          |               |             |                |           |             |
| EC40  | >100    |                                 | -         | <1                               | -                |                  |          |                          |               |             |                |           |             |
| EC50  | >100    |                                 |           | <1                               |                  |                  |          |                          |               |             |                |           |             |
| Propor  | tion Su | irvived Summary                 | /         |                                  |                  | Calculated       | Varia    | ite(A/B)                 |               |             |                | Isoto     | nic Variate |
| Conc-   | 6       | Code                            | Count     | Mean                             | Median           | Min              | Max      | CV9                      | % %Ef         | fect        | ΣΑ/ΣΒ          | Mean      | %Effect     |
| )   |         | D                               | 4         | 0.9666                           | 0.9733           | 0.9198           | 1.00     | 00 3.71                  | % 0.00        | %           | 1013/1048      | 0.9735    | 0.00%       |
| 5.25  |         |                                 | 4         | 0.9656                           | 0.9637           | 0.9542           | 0.98     | 09 1.16                  | 0.10          | %           | 1012/1048      | 0.9735    | 0.00%       |
| 12.5  |         |                                 | 4         | 0.9800                           | 0.9911           | 0.9466           | 1.00     | 00 2.61                  | % -1.38       | 3%          | 1027/1048      | 0.9735    | 0.00%       |
| 25  |         |                                 | 4         | 0.9800                           | 0.9873           | 0.9580           | 1.00     |                          |               | 3%          | 1027/1048      | 0.9735    | 0.00%       |
| 50  |         |                                 | 4         | 0.9752                           | 0.9847           | 0.9466           | 1.00     |                          |               | 9%          | 1022/1048      | 0.9735    | 0.00%       |
| 69.7<br>100   |         |                                 | 4         | 0.9637                           | 0.9784           | 0.9198           | 1.00     |                          |               |             | 1010/1048      |           | 0.71%       |
|   | D.      | - Colonia                       | 4         | 0.9695                           | 0.9676           | 0.9427           | 1.00     | 00 3.00                  | -0.30         | 0%          | 1016/1048      | 0.9666    | 0.71%       |
|   |         | rvived Detail                   | E0.0 k    | Second.                          | 40.7-2           |                  |          |                          |               |             |                |           |             |
| Conc-%  | 0       | Code                            | Rep 1     | Rep 2                            | Rep 3            | Rep 4            |          |                          |               |             |                |           |             |
| )   |         | D                               | 1.0000    | 0.9198                           | 0.9580           | 0.9885           |          |                          |               |             |                |           |             |
| 5.25  |         |                                 | 0.9656    | 0.9542                           | 0.9809           | 0.9618           |          |                          |               |             |                |           |             |
| 12.5  |         |                                 | 0.9466    | 1.0000                           | 1.0000           | 0.9733           |          |                          |               |             |                |           |             |
|   |         |                                 | 0.9580    | 1.0000                           | 0.9618           | 1.0000           |          |                          |               |             |                |           |             |
|   |         |                                 | 1.0000    | 1 0000                           | 0.9466           | 0.9542           |          |                          |               |             |                |           |             |
| 50  |         |                                 |           | 1.0000                           |                  |                  |          |                          |               |             |                |           |             |
| 25<br>50<br>59.7<br>100                                 |         |                                 | 1.0000    | 0.9351<br>0.9885                 | 1.0000           | 0.9198<br>0.9427 |          |                          |               |             |                |           |             |

Report Date: Test Code/ID: 20 Feb-24 17:45 (p 4 of 4) P240130.03SC / 08-4830-1359

**Bivalve Larval Survival and Development Test** 

**EcoAnalysts** 

Analysis ID: 15-5364-4792 Analyzed: 20 Feb-24 17:40

Endpoint: Proportion Survived

d CETIS Version:

CETISv2.1.4

Edit Date:

20 Feb-24 17:40 20 Feb-24 17:29 Analysis: Linear Interpolation (ICPIN)
MD5 Hash: 03B172A8E4A5CBD6CED01A944456ECE

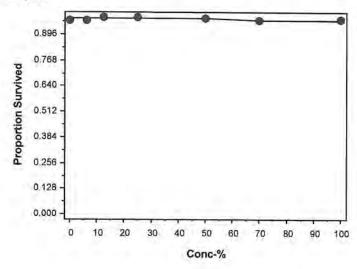
Status Level: Editor ID:

004-244-315-2

### **Proportion Survived Binomials**

| Conc-% | Code | Rep 1   | Rep 2   | Rep 3   | Rep 4   |
|--------|------|---------|---------|---------|---------|
| 0      | D    | 262/262 | 241/262 | 251/262 | 259/262 |
| 6.25   |      | 253/262 | 250/262 | 257/262 | 252/262 |
| 12.5   |      | 248/262 | 262/262 | 262/262 | 255/262 |
| 25     |      | 251/262 | 262/262 | 252/262 | 262/262 |
| 50     |      | 262/262 | 262/262 | 248/262 | 250/262 |
| 69.7   |      | 262/262 | 245/262 | 262/262 | 241/262 |
| 100    |      | 262/262 | 259/262 | 248/262 | 247/262 |

### Graphics



Report Date: Test Code/ID:

20 Feb-24 17:44 (p 1 of 1) P240130.03SC / 08-4830-1359

**Bivalve Larval Survival and Development Test** 

**EcoAnalysts** 

Start Date: 30 Jan-24 16:07 End Date: 01 Feb-24 15:20 Sample Date: 30 Jan-24 09:35

Species: Mytilus galloprovincialis Protocol: EPA/600/R-95/136 (1995) Material: Treated Groundwater

Sample Code: P240130.03SC Sample Source: Jacobs Wyckoff Sample Station: 24052146\_1

| Conc-% | Code | Rep | Pos | Initial<br>Density | Final<br>Density | # Counted | # Normal | Notes  |
|--------|------|-----|-----|--------------------|------------------|-----------|----------|--------|
| 0      | D    | 1   | 32  | 262                | 279              | 279       | 260      | 110100 |
| 0      | D    | 2   | 3   | 262                | 241              | 241       | 230      |        |
| 0      | D    | 3   | 9   | 262                | 251              | 251       | 239      |        |
| 0      | D    | 4   | 15  | 262                | 259              | 259       | 243      |        |
| 0      | SC   | 1   | 19  | 262                | 283              | 283       | 261      |        |
| 0      | SC   | 2   | 10  | 262                | 289              | 289       | 271      |        |
| 0      | SC   | 3   | 24  | 262                | 281              | 281       | 261      |        |
| 0      | SC   | 4   | 4   | 262                | 276              | 276       | 247      |        |
| 6.25   | -    | 1   | 2   | 262                | 253              | 253       | 235      |        |
| 6.25   |      | 2   | 14  | 262                | 250              | 250       | 235      |        |
| 6.25   |      | 3   | 18  | 262                | 257              | 257       | 242      |        |
| 6.25   |      | 4   | 12  | 262                | 252              | 252       | 238      |        |
| 12.5   |      | 1   | 23  | 262                | 248              | 248       | 230      |        |
| 12.5   |      | 2   | 26  | 262                | 263              | 263       | 251      |        |
| 12.5   |      | 3   | 16  | 262                | 273              | 273       | 247      |        |
| 12.5   |      | 4   | 1   | 262                | 255              | 255       | 233      |        |
| 25     |      | 1   | 22  | 262                | 251              | 251       | 238      |        |
| 25     |      | 2   | 21  | 262                | 285              | 285       | 271      |        |
| 25     |      | 3   | 28  | 262                | 252              | 252       | 240      |        |
| 25     |      | 4   | 30  | 262                | 267              | 267       | 250      |        |
| 50     |      | 1   | 5   | 262                | 267              | 267       | 251      |        |
| 50     |      | 2   | 7   | 262                | 277              | 277       | 261      |        |
| 50     |      | 3   | 17  | 262                | 248              | 248       | 235      |        |
| 50     |      | 4   | 13  | 262                | 250              | 250       | 230      |        |
| 69.7   |      | 1   | 31  | 262                | 273              | 273       | 258      |        |
| 69.7   |      | 2   | 8   | 262                | 245              | 245       | 232      |        |
| 69.7   | 1    | 3   | 27  | 262                | 278              | 278       | 264      |        |
| 69.7   |      | 4   | 25  | 262                | 241              | 241       | 226      |        |
| 100    |      | 1   | 6   | 262                | 298              | 298       | 284      |        |
| 100    |      | 2   | 29  | 262                | 259              | 259       | 246      |        |
| 100    |      | 3   | 20  | 262                | 248              | 248       | 230      |        |
| 100    |      | 4   | 11  | 262                | 247              | 247       | 240      |        |



Version V.2

#### GENERAL

| .2                      | out the same of th |   |
|-------------------------|--|---|
| Client                  | Jacobs Wyckoff   |   |
| Project                 | Wyckoff Eagle Harbor GWTP 2024/WA  |   |
| Project Number          | PG1958   |   |
| Project Manager         | M. Seibert   | Note: input lowest and highest decimal for temp |
| Date Sample Received    | 1/30/2024  |   |
| Test type               | 48-Hour Chronic Toxicity Using Bivalve Larvae  |   |
| Matrix                  | Liquid   |   |
| Test Acceptability      | ≥90% normal shell development, ≥50% survival (mussels) or ≥70% survival (oysters), MSD <25%  | TEST S  |
| Test Start Date         | 01/30/24   | TES   |
| Test Species            | Mytilus spp.   |   |
| Organism Batch          | TS121523.01  |   |
| Organism Acquired       | 12/15/2023   |   |
| Organism Acclimation    | 46   |   |
| Organism Age            | <4 hr old embryos  |   |
| Test Protocol           | TOX 042  |   |
| Test Location           | Incubator 1  |   |
| Light Intensity         | 50-100 foot candles  |   |
| Light Cycle             | 16L:8D   | Salinity Adjustment CSMM<br>Batch #             |
| Water Description       | 0.45 um filtered seawater  | 62123   |
| Organisms per Replicate | 150 - 300  |   |
| Test Chamber Size       | 30 mL  | Formalin Lot #                                  |
| Exposure Volume         | 10 mL  | 230724-07                                       |
| Test Dissolved Oxygen   | > 4.0  |   |
| Test Temperature        | 16 ± 1   | Rose Bangel Batch #                             |
| Test Salinity           | 30 ± 2   | 5135  |
| Test pH                 | 8±1  |   |

| 1        | est Parameters |     |
|----------|----------------|-----|
|          | Min            | Max |
| DO       | 4.0            |     |
| Temp     | 15             | 17  |
| Salinity | 28             | 32  |
| nH       | 7              | 9   |

TEST START TIME/INIT: 1607 LG/MS TEST END TIME/INIT: 1520

| CLIENT SAMPLE ID | LAB ID     |  |  |  |
|------------------|------------|--|--|--|
| 24052146-1       | P240130.03 |  |  |  |

| c | oncentrations |
|---|---------------|
| 1 | Control       |
| 2 | Salt Control  |
| 3 | 6.25%         |
| 4 | 12.5%         |
| 5 | 25%           |
| 5 | 50%           |
| 7 | 69.7%         |
| В | 100%          |
| 9 |               |

| CLIENT           | Jacobs Wyckoff                    | DATE RECEIVED   | 1/30/24 | PROTOCOL         | TOX 042      |
|------------------|-----------------------------------|-----------------|---------|------------------|--------------|
| PROJECT          | Wyckoff Eagle Harbor GWTP 2024/WA | TEST START DATE | 1/30/24 | PROJECT MANAGER  | M. Seibert   |
| CLIENT SAMPLE ID | 24052146-1                        | TEST END DATE   | 2/1/24  | SPECIES          | Mytilus spp. |
| LAB SAMPLE ID    | P240130.03                        | MATRIX          | Liquid  | NO. OF ORGANISMS | 150 - 300    |

# 48-Hour Chronic Toxicity Using Bivalve Larvae

| SPAWNING METHOD<br>Heat Shock |              | INITIAL SPAWNING TIME<br>12:29 | FINAL SPAWNING TIME<br>13:25 |  |
|-------------------------------|--------------|--------------------------------|------------------------------|--|
| MALES<br>4                    | FEMALES<br>6 | SPERM VIABILITY Good           | EGG CONDITION<br>Good        |  |
| BEGIN FERTILIZATION<br>1325   |              | END FERTILIZATION<br>14:54     | CONDITION OF EMBRYOS Good    |  |

| INITIALS |
|----------|
| LG/MS    |
|          |

### **EMBRYO DENSITY CALCULATIONS**

| # of embryos in 1 mL of 100X diluted embryo stock |                                    |                              | # embryos in original stock = # of embryos in diluted stock x 100 |
|---|------------------------------------|------------------------------|---|
| Count 1   | Count 2 Me                         | an                           |   |
|   | 400 384                            | 392                          | 39200   |
|   |                                    |                              |   |
|   |                                    |                              |   |
| rcentage of                                       | embryo stock needed = 27           | 00 embryos per 1 ml/# embry  | vos in original stock   |
|   |                                    | 00 embryos per 1 mL/# embry  | yos in original stock   |
|   | embryo stock needed = 27           | 00 embryos per 1 mL/# embry  | yos in original stock   |
|   | 0.07                               |                              |   |
| L of egg sto                                      | 0.07<br>k to add to FSW to achieve | total volume = percentage of | f embro stock needed * 40 mL (or desired volume of embryo stock)  |
| L of egg sto                                      | 0.07<br>k to add to FSW to achieve | total volume = percentage of |   |
| L of egg sto                                      | 0.07<br>k to add to FSW to achieve | total volume = percentage of | f embro stock needed * 40 mL (or desired volume of embryo stock)  |



| 1.2 | CLIENT           | Jacobs Wyckoff                    | DATE RECEIVED   | 1/30/24 | PROTOCOL         | TOX 042      |
|-----|------------------|-----------------------------------|-----------------|---------|------------------|--------------|
|     | PROJECT          | Wyckoff Eagle Harbor GWTP 2024/WA | TEST START DATE | 1/30/24 | PROJECT MANAGER  | M. Seibert   |
|     | CLIENT SAMPLE ID | 24052146-1                        | TEST END DATE   | 2/1/24  | SPECIES          | Mytilus spp. |
|     | LAB SAMPLE ID    | P240130.03                        | MATRIX          | Liquid  | NO. OF ORGANISMS | 150 - 300    |

# 48-Hour Chronic Toxicity Using Bivalve Larvae

| Test Parameters    |     |  |
|--------------------|-----|--|
| Salinity of Sample | 0.4 |  |
| Test Salinity      | 30  |  |

| CSMM Bate | ch Number |
|-----------|-----------|
|           | 62123     |

| Salinity Adjustment Multiplier | 29.6 |
|--------------------------------|------|
|--------------------------------|------|

| Coarse salinity adjustment |        |
|----------------------------|--------|
| mLs. Sample*               | 1250.0 |
| Grams CSMM                 | 37.0   |

<sup>\*</sup> Adjust volume so that it equals total volume of sample needed for all dilutions

| Fine Salinity Adjustment                               |      |  |  |  |
|--|------|--|--|--|
| Salinity of coarse-adjusted Sample                     | 30   |  |  |  |
| Test Salinity  | 30   |  |  |  |
| Ratio  | 1.00 |  |  |  |
| Grams additional CSMM needed to reach tartget salinity | 0    |  |  |  |

| Final salinity | 30 |
|----------------|----|
| i mai summey   | 30 |

## Salinity Adjustment Date / Initials

1/30/2024 MS



| .2 | CLIENT           | Jacobs Wyckoff                    | DATE RECEIVED   | 1/30/24 | PROTOCOL         | TOX 042      |
|----|------------------|-----------------------------------|-----------------|---------|------------------|--------------|
|    | PROJECT          | Wyckoff Eagle Harbor GWTP 2024/WA | TEST START DATE | 1/30/24 | PROJECT MANAGER  | M. Seibert   |
|    | CLIENT SAMPLE ID | 24052146-1                        | TEST END DATE   | 2/1/24  | SPECIES          | Mytilus spp. |
| 1  | LAB SAMPLE ID    | P240130.03                        | MATRIX          | Liquid  | NO. OF ORGANISMS | 150 - 300    |

| 48-Hour Chronic Toxicity Using Bivalve Larvae |               |                                    |                         |                   |              |     |
|---|---------------|------------------------------------|-------------------------|-------------------|--------------|-----|
| Day of Test                                   | Concentration | Vol. Effluent Sample<br>Added (mL) | Vol. Diluent Added (mL) | Total Volume (mL) | Diluent Type | FSW |
|   | 0%            | 0                                  | 200.0                   | 200               |              |     |
|   | Salt Control  | #VALUE!                            | #VALUE!                 | 200               |              |     |
|   | 6.25%         | 12.5                               | 187.5                   | 200               |              |     |
| 0   | 12.5%         | 25                                 | 175.0                   | 200               |              |     |
|   | 25%           | 50                                 | 150.0                   | 200               |              |     |
|   | 50%           | 100                                | 100.0                   | 200               |              |     |
|   | 69.7%         | 139.4                              | 60.6                    | 200               |              |     |
|   | 100%          | 200                                | 0.0                     | 200               |              |     |

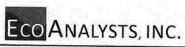
| Test Dilution P | rep        |                |                |          |
|-----------------|------------|----------------|----------------|----------|
| Date            | Balance ID | Sample ID (P#) | Water Batch ID | Initials |
| 113024          | 7          | P240130.03     | FSWOBOZYOL     | Uo       |



| 3.          |                 |            |
|-------------|-----------------|------------|
| 1/30/24     | PROTOCOL        | TOX 042    |
| 1/30/24     | PROJECT MANAGER | M. Seibert |
| 1.00 100 10 | August 1977     |            |

| .2 CLIENT             | Jacobs Wyckoff DATE RECEIVED        | 1/30/24 | PROTOCOL         | TOX 042      |
|-----------------------|-------------------------------------|---------|------------------|--------------|
| PROJECT WWL.off Eagle | Harbor GWTP 2024/WA TEST START DATE | 1/30/24 | PROJECT MANAGER  | M. Seibert   |
| CLIENT SAMPLE ID      | 24052146-1 TEST END DATE            | 2/1/24  | SPECIES          | Mytilus spp. |
| LAB SAMPLE ID         | P240130.03 MATRIX                   | Liquid  | NO. OF ORGANISMS | 150 - 300    |

|               | 4                 | 8-Hour Chroni | Toxicity Using Biv | alve Larvae    |     |  |
|---------------|-------------------|---------------|--------------------|----------------|-----|--|
|               |                   | DO (mg/L)     | TEMP (°C)          | SALINITY (ppt) | pH  |  |
|               | Concentration (%) | > 4.0         | 15 - 17            | 28 - 32        | 7-9 |  |
| Day 0         | Control           | 7.8           | 16.3               | 28             | 7.6 |  |
| Stock         | Salt Control      | 8.1           | 173                | 30             | 8.3 |  |
| Date 1/30/24  | 6.25%             | 8.1           | 16,6               | 28             | 7.7 |  |
| Time 1542     | 12.5%             | 8.1           | 16.4               | 28             | 7.7 |  |
| Tech UG       | 25%               | 8.1           | 16.5               | 29             | 7-  |  |
| Meter# 8      | 50%               | 81            | 16.8               | 29             | 7.7 |  |
|               | 69.7%             | 8.1           | 171                | 29             | 7.7 |  |
|               | 100%              | 1.8           | 17.4               | 29             | 7.7 |  |
| Day 1         | Control           |               | 15.9               |                |     |  |
| Surrogate     | Salt Control      |               | 25.9               |                |     |  |
| Date 01/31/24 | 6.25%             |               | 15.9               |                |     |  |
| Time 0901     | 12.5%             |               | 25.9               |                |     |  |
| Tech SR       | 25%               |               | 25.9               |                |     |  |
| Meter # T16   | 50%               |               | 15.9               |                |     |  |
|               | 69.7%             |               | 15.9               |                |     |  |
|               | 100%              |               | 15.9               |                |     |  |
| Day 2         | Control           | 8.0           | 15.7               | 28             | 7,9 |  |
| Surrogate     | Salt Control      | 7.9           | 15.5               | 30             | 8.0 |  |
| Date 2/1/24   | 6.25%             | 8.1           | 15.A               | 29             | 7.9 |  |
| Time 1502     | 12.5%             |               | 15:8               | 29             | 8.0 |  |
| Tech Us       | 25%               | 8.0           | 15.7               | 29             | 8.0 |  |
| Meter# 8      | 50%               | 7.9           | 15.9               | 29             | 8.2 |  |
|               | 69.7%             | 8.0           | 15.9               | 29             | 8.2 |  |
|               | 100%              | 8.1           | 15.7               | 30             | 8.3 |  |



| CLIENT                  | Jacobs Wyckoff      | DATE RECEIVED   | 1/30/24 | PROTOCOL         | TOX 042      |
|-------------------------|---------------------|-----------------|---------|------------------|--------------|
| PROJECT Wyckoff Eagle I | Harbor GWTP 2024/WA | TEST START DATE | 1/30/24 | PROJECT MANAGER  | M. Seibert   |
| CLIENT SAMPLE ID        | 24052146-1          | TEST END DATE   | 2/1/24  | SPECIES          | Mytilus spp. |
| LAB SAMPLE ID           | P240130.03          | MATRIX          | Liquid  | NO. OF ORGANISMS | 150 - 300    |

| 48-Hour Chronic | Toxicity | Using | Bivalve | Larvae |
|-----------------|----------|-------|---------|--------|
|-----------------|----------|-------|---------|--------|

| Concentration (%) | REP | Normal    | Abnormal | Date    | Tech  | Comments/QA Count  |
|-------------------|-----|-----------|----------|---------|-------|--|
|                   | 1   | 265       |          | 2/13/24 | MANU  |  |
|                   | 2   | 264       |          | 2/13/24 | MARK  |  |
| Stocking Density  | 3   | 266       |          | 2/13/24 | MARCH | X=262  |
| Stocking Density  | 4   | 246       |          | 2/13/24 | MARL  | N Y STATE OF THE S |
|                   | 5   | 255       |          | 2/13/24 | MARH  |  |
|                   | 6   | 276       |          | 2/13/24 | MANH  |  |
|                   | 1   | 260       | 19       | 2/7/24  | Me    | QA MARUN 263N ZIA  |
| Control           | 2   | 230       | 11       | 2/7/24  | MK    | D = 0.69.  |
| Control           | 3   | 279       | 12       | 2/7/24  | MC    |  |
|                   | 4   | 243       | 16       | 2/7/24  | we    |  |
|                   | 1   | Uel       | w        | 2/7/24  | MC    |  |
| Salt Control      | 2   | 271       | 18       | 2/7/24  | ime   |  |
| Suit Control      | 3   | 261       | 20       | 2/7/24  | ML    |  |
|                   | 4   | 247       | 29       | 2/7/24  | ML    |  |
|                   | 1   | 275       | 18       | 2/7/24  | me    |  |
| 6.25%             | 2   | 235       | 15       | 2/7/24  | mk    |  |
| 0.2370            | 3   | 242       | 15       | 217/24  | MK    |  |
|                   | 4   | 238       | 14       | 2/7/24  | me    | R L  |
|                   | 1   | O 338 230 | OH3 18   | 217/24  | MK    |  |
| 12.5%             | 2   | ODS1 251  | Otle 12  | 2/7/24  | Me    |  |
| 12.370            | 3   | 247       | 26       | 2/7/24  | me    |  |
|                   | 4   | 233       | 22       | 2/7/24  | me    |  |
|                   | 1   | 075+238   | 07613    | 2/2/24  | MK    | QAMALLY 240 N 15 A   |
| 25%               | 2   | 271       | 14       | 2/8/24  | mk    | D= 0.7%  |
| 2370              | 3   | 240       | 12       | 2/8/24  | me    |  |
|                   | 4   | 250       | 17       | 2/8/24  | MIL   |  |
|                   | 1   | 0258-251  | 07516    | 2/7/24  | Me    |  |
| 50%               | 2   | rel       | 16       | 2/8/24  | me    |  |
| 3070              | 3   | 235       | 13       | 2/8/24  | me    |  |
|                   | 4   | 230       | 20       | 2/8/24  | nue   |  |

Owc. mk 2/7.



| <sup>2</sup> CLIENT |                    | Jacobs Wyckoff | DATE RECEIVED | 1/30/24                   | PROTOCOL         | TOX 042      |
|---------------------|--------------------|----------------|---------------|---------------------------|------------------|--------------|
| PROJECT             | Wyckoff Eagle Harb |                |               |                           | PROJECT MANAGER  | M. Seibert   |
| CLIENT SA           | AMPLE ID           | 24052146-1     | TEST END DATE | The state of the state of | SPECIES          | Mytilus spp. |
| LAB SAM             | PLE ID             | P240130.03     | MATRIX        | Liquid                    | NO. OF ORGANISMS | 150 - 300    |

# 48-Hour Chronic Toxicity Using Bivalve Larvae

| Concentration (%) | REP | Normal | Abnormal | Date   | Tech | Comments/QA Counts |
|-------------------|-----|--------|----------|--------|------|--------------------|
|                   | 1   | 258    | 15       | 2/7/24 | MC   |                    |
| 69.7%             | 2   | 232    | 13       | 218/24 | wa   |                    |
| 03.770            | 3   | 264    | 14       | 2/8/24 | me   |                    |
|                   | 4   | 226    | 15       | 2/8/24 | MIC  |                    |
|                   | 1   | 284    | 14       | 2/7/24 | mu   | OAMAU 786N 14A     |
| 100%              | 2   | 246    | 13       | 2/8/24 | Me   | N=0.0°10           |
| 100%              | 3   | 230    | 18       | 2/8/24 | me   |                    |
|                   | 4   | 240    | 7        | 2/8/24 | MIC  |                    |

Report Date:

22 Feb-24 11:11 (1 of 1)

### **Bivalve Larval Survival and Development Test**

All Matching Labs

Test Type: Development-Survival

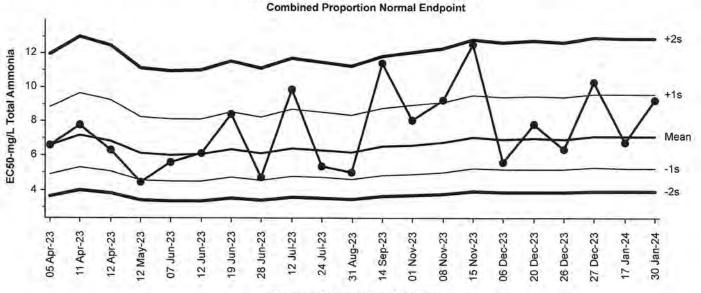
Organism: Mytilus galloprovincialis Protocol: All Protocols

Endpoint: Combined Proportion Normal

Material: Source:

Total Ammonia Reference Toxicant-REF

Bivalve Larval Survival and Development Test



#### Lognormal Cumulative Mean Plot

Mean: 7.114 20 Count: -1s Warning Limit: 5.28 Sigma: NA 30.40% +1s Warning Limit: 9.58

-2s Action Limit: 3.93 +2s Action Limit: 12.9

| Point | Year | Month | Day | Time  | QC Data | Delta   | Sigma   | Warning | Action | Test ID           | Analysis ID  | Laboratory  |
|-------|------|-------|-----|-------|---------|---------|---------|---------|--------|-------------------|--------------|-------------|
| 1     | 2023 | Apr   | 5   | 15:18 | 6.581   | -0.5325 | -0.2617 |         |        |                   | 07-2069-0121 |             |
| 2     |      |       | 11  | 16:37 | 7.809   | 0.6957  | 0.3139  |         |        | The second second | 15-2064-5147 |             |
| 3     |      |       | 12  | 15:13 | 6.298   | -0.8151 | -0.4093 |         |        |                   | 12-4981-2785 |             |
| 4     |      | May   | 12  | 15:35 | 4.42    | -2.694  | -1.601  | (-)     |        | 02-3839-1595      | 05-0285-3181 | EcoAnalysts |
| 5     |      | Jun   | 7   | 16:24 | 5.621   | -1.492  | -0.7919 |         |        | 16-8311-5218      | 04-7873-2197 | EcoAnalysts |
| 6     |      |       | 12  | 18:29 | 6.154   | -0.9595 | -0.4874 |         |        | 19-7480-8941      | 04-9719-6422 | EcoAnalysts |
| 7     |      |       | 19  | 16:20 | 8.423   | 1.309   | 0.5682  |         |        | 16-3224-4662      | 15-6769-3694 | EcoAnalysts |
| 8     |      |       | 28  | 15:18 | 4.725   | -2.389  | -1.376  | (-)     |        | 10-1014-4768      | 17-1187-2841 | EcoAnalysts |
| 9     |      | Jul   | 12  | 12:57 | 9.89    | 2.777   | 1.108   | (+)     |        | 02-0009-8192      | 04-6529-8407 | EcoAnalysts |
| 10    |      |       | 24  | 17:06 | 5.374   | -1.739  | -0.9432 |         |        | 05-3985-4386      | 13-9086-0827 | EcoAnalysts |
| 11    |      | Aug   | 31  | 16:54 | 5.053   | -2.061  | -1.15   | (-)     |        | 16-1472-3265      | 15-9433-1311 | EcoAnalysts |
| 12    |      | Sep   | 14  | 13:50 | 11.43   | 4.315   | 1.595   | (+)     |        | 10-9810-7803      | 01-3503-3195 | EcoAnalysts |
| 13    |      | Nov   | 1   | 17:40 | 8.055   | 0.9413  | 0.418   |         |        | 08-2875-4322      | 08-8063-5388 | EcoAnalysts |
| 14    |      |       | 8   | 15:55 | 9.251   | 2.138   | 0.8838  |         |        | 13-4824-7359      | 00-4887-4658 | EcoAnalysts |
| 15    |      |       | 15  | 14:38 | 12.55   | 5.438   | 1.91    | (+)     |        | 04-7650-2671      | 01-5035-4681 | EcoAnalysts |
| 16    |      | Dec   | 6   | 17:35 | 5.604   | -1.509  | -0.8021 |         |        | 07-4908-4729      | 09-1248-2427 | EcoAnalysts |
| 17    |      |       | 20  | 15:50 | 7.826   | 0.7125  | 0.3211  |         |        | 21-3057-6259      | 03-0359-1538 | EcoAnalysts |
| 18    |      |       | 26  | 17:01 | 6.393   | -0.7209 | -0.3594 |         |        | 09-3076-3716      | 00-6627-3829 | EcoAnalysts |
| 19    |      |       | 27  | 16:43 | 10.27   | 3.159   | 1.236   | (+)     |        | 05-3736-4406      | 14-3667-2208 | EcoAnalysts |
| 20    | 2024 | Jan   | 17  | 15:15 | 6.76    | -0.3532 | -0.1713 |         |        | 06-5202-1140      | 06-9659-2949 | EcoAnalysts |
| 21    |      |       | 30  | 16:45 | 9.227   | 2.114   | 0.875   |         |        | 00-0328-6111      | 17-2839-1252 | EcoAnalysts |

Report Date: 22 Feb-24 11:13 ( 1 of 1)

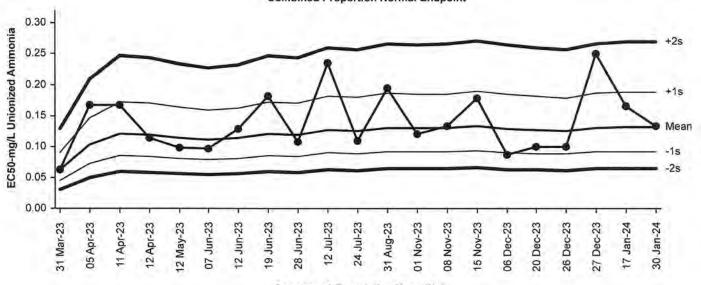
Bivalve Larval Survival and Development Test

All Matching Labs

Test Type: Development-Survival Organism: Mytilus galloprovincialis Material: Unionized Ammonia

Protocol; All Protocols Endpoint: Combined Proportion Normal Source: Reference Toxicant-REF

#### Bivalve Larval Survival and Development Test Combined Proportion Normal Endpoint



Lognormal Cumulative Mean Plot

 Mean:
 0.1324
 Count:
 20
 -1s Warning Limit:
 0.0928
 -2s Action Limit:
 0.0651

 Sigma:
 NA
 CV:
 36.70%
 +1s Warning Limit:
 0.189
 +2s Action Limit:
 0.27

|  | Qua | ity | Control | Data |
|--|-----|-----|---------|------|
|--|-----|-----|---------|------|

| Point | Year | Month | Day | Time  | QC Data | Delta    | Sigma    | Warning | Action | Test ID      | Analysis ID  | Laboratory  |
|-------|------|-------|-----|-------|---------|----------|----------|---------|--------|--------------|--------------|-------------|
| 1     | 2023 | Mar   | 31  | 16:54 | 0.06349 | -0.0689  | -2.067   | (-)     | (-)    | 01-2022-2925 | 11-3364-1842 | EcoAnalysts |
| 2     |      | Apr   | 5   | 15:18 | 0.1685  | 0.03615  | 0.6791   |         |        | 01-0596-2964 | 10-8703-5300 | EcoAnalysts |
| 3     |      |       | 11  | 16:37 | 0.1673  | 0.03495  | 0.659    |         |        | 13-1124-3474 | 18-0348-0749 | EcoAnalysts |
| 4     |      |       | 12  | 15:13 | 0.1148  | -0.0176  | -0.4011  |         |        | 18-5662-1396 | 07-7214-9910 | EcoAnalysts |
| 5     |      | May   | 12  | 15:35 | 0.09858 | -0.03381 | -0.8294  |         |        | 08-2245-0872 | 03-4589-6060 | EcoAnalysts |
| 6     |      | Jun   | 7   | 16:24 | 0.0976  | -0.03479 | -0.8575  |         |        | 18-8939-1974 | 09-3314-9652 | EcoAnalysts |
| 7     |      |       | 12  | 18:29 | 0.1293  | -0.00307 | -0.06589 |         |        | 09-8773-2984 | 16-9381-4730 | EcoAnalysts |
| 8     |      |       | 19  | 16:20 | 0.182   | 0,04957  | 0.8945   |         |        | 21-4361-0458 | 04-8703-0787 | EcoAnalysts |
| 9     |      |       | 28  | 15:18 | 0.1088  | -0.02354 | -0.5507  |         |        | 16-9844-0501 | 06-2488-5585 | EcoAnalysts |
| 10    |      | Jul   | 12  | 12:57 | 0.2364  | 0.104    | 1.63     | (+)     |        | 13-3479-3905 | 05-2583-6446 | EcoAnalysts |
| 11    |      |       | 24  | 17:06 | 0.1104  | -0.022   | -0.5112  |         |        | 08-8951-5421 | 04-1308-9826 | EcoAnalysts |
| 12    |      | Aug   | 31  | 16:54 | 0.1956  | 0.0632   | 1.098    | (+)     |        | 07-4158-0358 | 11-0996-2376 | EcoAnalysts |
| 13    |      | Nov   | 1   | 17:40 | 0.1213  | -0.01104 | -0.245   |         |        | 06-2464-1457 | 05-4038-7195 | EcoAnalysts |
| 14    |      |       | 8   | 15:55 | 0.1338  | 0.00137  | 0.02897  |         |        | 13-8700-3666 | 02-0586-1811 | EcoAnalysts |
| 15    |      |       | 15  | 14:38 | 0.1802  | 0.04777  | 0.8666   |         |        | 19-3724-7711 | 00-4487-8422 | EcoAnalysts |
| 16    |      | Dec   | 6   | 17:35 | 0.08732 | -0.04507 | -1.171   | (-)     |        | 11-7639-2844 | 02-1522-3004 | EcoAnalysts |
| 17    |      |       | 20  | 15:50 | 0.1006  | -0.03181 | -0.7731  |         |        | 09-2413-6838 | 00-3830-4602 | EcoAnalysts |
| 18    |      |       | 26  | 17:01 | 0.09993 | -0.03246 | -0.7914  |         |        | 07-1075-7212 | 13-4227-6824 | EcoAnalysts |
| 19    |      |       | 27  | 16:43 | 0.2498  | 0.1174   | 1.786    | (+)     |        | 21-2709-9990 | 17-0965-3961 | EcoAnalysts |
| 20    | 2024 | Jan   | 17  | 15:15 | 0.1665  | 0.03411  | 0.6449   |         |        | 15-5848-1090 | 20-9766-0257 | EcoAnalysts |
| 21    |      |       | 30  | 16:45 | 0.134   | 0.001602 | 0.03383  |         |        | 12-6773-1386 | 01-4900-2989 | EcoAnalysts |

# **CETIS Summary Report**

Report Date: Test Code/ID: 22 Feb-24 11:12 (p 1 of 1) P220819.118 / 00-0328-6111

|               |  |                 |                   |  |             |        |      |              | Cacilo.     |              | . 2200                     | 10.1107.00 | 0020011   |
|---------------|--|-----------------|-------------------|--|-------------|--------|------|--------------|-------------|--------------|----------------------------|------------|-----------|
| Bivalve Larva | al Survival and                                  | Developme       | ent Test          |  |             |        |      |              |             |              |                            | 7.02.11.44 | oAnalysts |
|               | 13-6318-1280<br>30 Jan-24 16:4<br>01 Feb-24 15:3 | 45 Pro<br>22 Sp | otocol:<br>ecies: | Development-S<br>EPA/600/R-95/<br>Mytilus gallopro | /136 (1995) |        |      | Dilu<br>Brir | ent:<br>ne: | Labo<br>Evap | sa Seibert<br>pratory Seav |            |           |
| Test Length:  | 4/n  | la              | xon:              | Bivalvia   |             |        |      | Sou          | rce:        | Tayl         | or Shellfish               |            | Age: <4h  |
| Sample ID:    | 11-7286-3678                                     | Co              | de:               | P220819.118  |             |        |      | Pro          | ject:       | Refe         | rence Toxic                | ant        |           |
| Sample Date:  | : 19 Aug-22                                      | Ma              | terial:           | Total Ammonia                                      | 3           |        |      | Sou          | rce:        | Refe         | rence Toxic                | ant        |           |
| Receipt Date: |  |                 | S (PC):           |  |             |        |      | Stat         | ion:        | P220         | 0819.118                   |            |           |
| Sample Age:   | 529d 17h   | Cli             | ent:              | Internal Lab                                       |             |        |      |              |             |              |                            |            |           |
| Multiple Com  | parison Summ                                     | nary            |                   |  |             |        |      |              |             |              |                            |            |           |
| Analysis ID   | Endpoint   |                 | Com               | parison Method                                     |             |        | / N  | OEL          | LOEL        |              | TOEL                       | PMSD       |           |
| 00-4889-2852  | Combined Pro                                     | portion Norr    | na Dunn           | ett Multiple Com                                   | parison Tes | t      | 3.   | 7            | 7.2         |              | 5.161                      | 10.0%      |           |
| Point Estimat | te Summary                                       |                 |                   |  |             |        |      |              |             |              |                            |            |           |
| Analysis ID   | Endpoint   |                 | Point             | Estimate Meth                                      | od          | 3      | / L  | evel         | mg/L        |              | 95% LCL                    | 95% UCL    | 4         |
| 17-2839-1252  | Combined Pro                                     | portion Norr    | na Trimn          | ned Spearman-F                                     | Kärber      |        | E    | C50          | 9.227       |              | 9.076                      | 9.381      |           |
| Test Acceptal | bility   |                 |                   |  |             | TAC    | Limi | ts           |             |              |                            |            |           |
| Analysis ID   | Endpoint   |                 | Attrib            | oute   | Test Stat   |        |      | pper         | Overla      | ар           | Decision                   |            |           |
| 00-4889-2852  | Combined Pro                                     | portion Norr    | na PMSI           | )  | 0.1001      | <<     | _    | 25           | No          |              | Passes Ci                  | riteria    |           |
| Combined Pr   | oportion Norm                                    | al Summar       | y                 |  |             |        |      |              |             |              |                            |            |           |
| Conc-mg/L     | Code   | Count           | Mean              | 95% LCL  | 95% UCL     | Min    | M    | ax           | Std E       | rr           | Std Dev                    | CV%        | %Effect   |
| 0             | D  | 4               | 0.950             | 4 0.8882   | 1.0130      | 0.9046 | 1.   | 0000         | 0.019       | 5            | 0.0391                     | 4.11%      | 0.00%     |
| 1.12          |  | 4               | 0.920             | 8 0.8180   | 1.0240      | 0.8626 | 1.   | 0000         | 0.0323      | 3            | 0.0646                     | 7.01%      | 3.11%     |
| 3.7           |  | 4               | 0,973             | 3 0.8883   | 1.0580      | 0.8931 | 1.   | 0000         | 0.026       | 7            | 0.0534                     | 5.49%      | -2.41%    |
| 7.2           |  | 4               | 0.787             |  | 0.8338      | 0.7443 | 0.   | 8092         | 0.014       | 7            | 0.0293                     | 3.72%      | 17.17%    |
| 15            |  | 4               | 0.002             |  | 0.0059      | 0.0000 |      | 0038         | 0.0010      | 0            | 0.0019                     | 66.67%     | 99.70%    |
| 24.8          |  | 4               | 0.000             | 0.0000   | 0.0000      | 0.0000 | 0.   | 0000         | 0.000       | 0            | 0.0000                     |            | 100.00%   |
| Combined Pr   | oportion Norm                                    | al Detail       |                   |  |             |        |      | ME           | 5: 828A     | 228          | D8B02667B                  | AACC19A8   | 5D547085  |
| Conc-mg/L     | Code   | Rep 1           | Rep 2             | Rep 3  | Rep 4       |        |      |              |             |              |                            |            |           |
| 0             | D  | 0.9466          | 0.904             | 6 1.0000   | 0.9504      |        |      |              |             |              |                            |            |           |
| 1.12          |  | 0.8740          | 0.946             | 6 1.0000   | 0.8626      |        |      |              |             |              |                            |            |           |
| 3.7           |  | 1.0000          | 1.000             | 0 1.0000   | 0.8931      |        |      |              |             |              |                            |            |           |
| 7.2           |  | 0.8092          | 0.744             |  | 0.7939      |        |      |              |             |              |                            |            |           |
| 15            |  | 0.0000          | 0.003             |  | 0.0038      |        |      |              |             |              |                            |            |           |
| 24.8          |  | 0.0000          | 0.000             |  | 0.0000      |        |      |              |             |              |                            |            |           |
|               | an author Mana                                   | 37000           |                   | , ,,,,,,,  | 8,4-36      |        |      |              |             |              |                            |            |           |
| Conc-mg/L     | oportion Norm<br>Code                            | Rep 1           | Rep 2             | Rep 3  | Rep 4       |        |      |              |             |              |                            |            |           |
| 0             | D  | 248/262         | 237/2             |  | 249/262     |        |      |              |             | -            |                            |            |           |
| 1.12          | J  | 229/262         | 248/2             |  | 226/262     |        |      |              |             |              |                            |            |           |
|               |  |                 |                   |  |             |        |      |              |             |              |                            |            |           |
| 3.7           |  | 263/263         | 281/2             |  | 234/262     |        |      |              |             |              |                            |            |           |
| 7.2           |  | 212/262         | 195/2             |  | 208/262     |        |      |              |             |              |                            |            |           |
| 15            |  | 0/262           | 1/262             |  | 1/262       |        |      |              |             |              |                            |            |           |
| 24.8          |  | 0/262           | 0/262             | 0/262  | 0/262       |        |      |              |             |              |                            |            |           |

# **CETIS Summary Report**

Report Date:

22 Feb-24 11:13 (p 1 of 1)

|                                       |                                |                    |                  |                          |                    |        |    | Test Co | ode/ID: |       | P220819.1       | 18 UIA / 12 | -6773-13 |
|---------------------------------------|--------------------------------|--------------------|------------------|--------------------------|--------------------|--------|----|---------|---------|-------|-----------------|-------------|----------|
| Bivalve Larva                         | al Survival and D              | Developmen         | t Test           |                          |                    |        |    |         |         |       |                 | Ec          | oAnalyst |
| Batch ID:                             | 13-6318-1280                   | Test               | Type:            | Development-S            | Survival           |        |    | Anal    | yst:    | Maris | a Seibert       |             |          |
| Start Date:                           | 30 Jan-24 16:45 Protocol:      |                    |                  | EPA/600/R-95/136 (1995)  |                    |        |    | Dilu    | 7       | Labo  | ratory Seav     | vater       |          |
| Ending Date:                          | 01 Feb-24 15:22                | 2 Spec             | cies:            | Mytilus gallopro         | vincialis          |        |    | Brin    | e:      | Evap  | orated Sea      | water       |          |
| Test Length:                          | 47h                            | Taxo               | n:               | Bivalvia                 |                    |        |    | Soul    | rce:    | Taylo | r Shellfish     |             | Age: <4  |
| Sample ID:                            | 17-4418-1481                   | Code               | e:               | P220819.118 U            | IIA                |        |    | Proj    | ect:    | Refer | rence Toxic     | ant         |          |
| Sample Date:                          | : 19 Aug-22                    | Mate               | rial:            | Unionized Amm            | nonia              |        |    | Sour    | rce:    | Refer | rence Toxic     | ant         |          |
| Receipt Date:                         | : 19 Aug-22                    | CAS                | (PC):            |                          |                    |        |    | Stati   | on:     | P220  | 819.118 UI      | A           |          |
| Sample Age:                           | 529d 17h                       | Clier              | nt:              | Internal Lab             |                    |        |    |         |         |       |                 |             |          |
| Multiple Com                          | parison Summa                  | ary                |                  |                          |                    |        |    |         |         |       |                 |             |          |
| Analysis ID                           | Endpoint                       |                    | Comp             | arison Method            |                    |        | 1  | NOEL    | LOEL    | J. I  | TOEL            | PMSD        |          |
| 04-2845-0057                          | Combined Prop                  | ortion Norma       | Dunne            | ett Multiple Comp        | parison Test       |        |    | 0.054   | 0.104   | -     | 0.07494         | 10.0%       |          |
| Point Estimat                         | te Summary                     |                    |                  |                          |                    |        |    |         |         |       |                 |             |          |
| Analysis ID                           | Endpoint                       |                    | Point            | Estimate Metho           | od                 |        | 1  | Level   | mg/L    | 1.    | 95% LCL         | 95% UCL     |          |
|                                       | Combined Prop                  | ortion Norma       |                  |                          |                    |        |    | EC50    | 0.134   |       | 0.1318          | 0.1362      |          |
| Test Acceptal                         | bility                         |                    |                  |                          |                    | TAC    | 11 | mits    |         |       |                 |             |          |
| Analysis ID                           | Endpoint                       |                    | Attrib           | ute                      | Test Stat          | Lower  |    | Upper   | Overl   | lap   | Decision        |             |          |
| 04-2845-0057                          | Combined Proportion Norma PMSD |                    |                  |                          | 0.1001             | <<     |    | 0.25    | No      |       | Passes Criteria |             |          |
| Combined Pr                           | roportion Norma                | I Summary          | -                |                          |                    |        |    |         |         |       |                 |             |          |
| Conc-mg/L                             | Code                           | Count              | Mean             | 95% LCL                  | 95% UCL            | Min    |    | Max     | Std E   | rr    | Std Dev         | CV%         | %Effec   |
| 0                                     | D                              | 4                  | 0.9504           | 0.8882                   | 1.0130             | 0.9046 |    | 1.0000  | 0.019   | )5    | 0.0391          | 4.11%       | 0.00%    |
| 0.017                                 |                                | 4                  | 0.9208           | 0.8180                   | 1.0240             | 0.8626 |    | 1.0000  | 0.032   | 23    | 0.0646          | 7.01%       | 3.11%    |
| 0.054                                 |                                | 4                  | 0.9733           |                          | 1.0580             | 0.8931 |    | 1.0000  | 0.026   | 57    | 0.0534          | 5.49%       | -2.41%   |
| 0.104                                 |                                | 4                  | 0.7872           |                          | 0.8338             | 0.7443 |    | 0.8092  | 0.014   |       | 0.0293          | 3.72%       | 17.17%   |
| 0.219                                 |                                | 4                  | 0.0029           |                          | 0.0059             | 0.0000 |    | 0.0038  | 0.001   |       | 0.0019          | 66.67%      | 99.70%   |
| 0.286                                 |                                | 4                  | 0.0000           | 0.0000                   | 0.0000             | 0.0000 |    | 0.0000  | 0.000   | 00    | 0.0000          |             | 100.00   |
| Combined Pr                           | roportion Norma                | l Detail           |                  |                          |                    |        |    | MD      | 5: A393 | 398A6 | D58D7143        | 8FA5E5E49   | 94C02EE  |
| Conc-mg/L                             | Code                           | Rep 1              | Rep 2            | Rep 3                    | Rep 4              |        |    |         |         |       |                 |             |          |
| 0                                     | D                              | 0.9466             | 0.9046           | 1.0000                   | 0.9504             |        |    |         |         |       |                 |             |          |
| 0.017                                 |                                | 0.8740             | 0.9466           | 1.0000                   | 0.8626             |        |    |         |         |       |                 |             |          |
| 0.054                                 |                                | 1.0000             | 1.0000           | 1.0000                   | 0.8931             |        |    |         |         |       |                 |             |          |
| 0.104                                 |                                | 0.8092             | 0.7443           | 0.8015                   | 0.7939             |        |    |         |         |       |                 |             |          |
| 0.219                                 |                                | 0.0000             | 0.0038           |                          | 0.0038             |        |    |         |         |       |                 |             |          |
| 0.286                                 |                                | 0.0000             | 0.000            | 0.0000                   | 0.0000             |        |    |         |         |       |                 |             |          |
| Combined Pr                           | roportion Norma                | l Binomials        |                  |                          |                    |        |    |         |         |       |                 |             |          |
| Conc-mg/L                             | Code                           | Rep 1              | Rep 2            | Rep 3                    | Rep 4              |        |    |         |         |       |                 |             |          |
|                                       | 0                              | 248/262            | 237/20           | 32 269/269               | 249/262            |        |    |         |         |       |                 |             |          |
|                                       | D                              | 240/202            |                  |                          |                    |        |    |         |         |       |                 |             |          |
| 0                                     | U                              | 229/262            | 248/26           |                          | 226/262            |        |    |         |         |       |                 |             |          |
| 0<br>0.017                            | D                              |                    |                  | 62 263/263               |                    |        |    |         |         |       |                 |             |          |
| 0<br>0.017<br>0.054                   | U                              | 229/262            | 248/26           | 52 263/263<br>31 264/264 | 226/262            |        |    |         |         |       |                 |             |          |
| 0<br>0.017<br>0.054<br>0.104<br>0.219 | U                              | 229/262<br>263/263 | 248/26<br>281/28 | 52 263/263<br>31 264/264 | 226/262<br>234/262 |        |    |         |         |       |                 |             |          |

Start Date:

End Date:

Report Date:

22 Feb-24 11:11 (p 1 of 1) P220819.118 / 00-0328-6111

Test Code/ID: P220819.118 / 00-0328-6111

EcoAnalysts

**Bivalve Larval Survival and Development Test** 

01 Feb-24 15:22

30 Jan-24 16:45 Sp

Species: Mytilus galloprovincialis
Protocol: EPA/600/R-95/136 (1995)

Sample Code: P220819.118

Sample Source: Reference Toxicant

Sample Date: 19 Aug-22 Material: Total Ammonia

Sample Station: P220819.118

| Conc-mg/L | Code | Rep | Pos | Initial<br>Density | Final<br>Density | # Counted | # Normal | Notes |
|-----------|------|-----|-----|--------------------|------------------|-----------|----------|-------|
| 0         | D    | 1   | 24  | 262                | 260              | 260       | 248      |       |
| 0         | D    | 2   | 2   | 262                | 254              | 254       | 237      |       |
| 0         | D    | 3   | 10  | 262                | 277              | 277       | 269      |       |
| 0         | D    | 4   | 21  | 262                | 262              | 262       | 249      |       |
| 1.12      |      | 1   | 8   | 262                | 248              | 248       | 229      |       |
| 1.12      |      | 2   | 14  | 262                | 263              | 263       | 248      |       |
| 1.12      |      | 3   | 5   | 262                | 279              | 279       | 263      |       |
| 1.12      |      | 4   | 18  | 262                | 239              | 239       | 226      |       |
| 3.7       |      | 1   | 11  | 262                | 278              | 278       | 263      |       |
| 3.7       |      | 2   | 22  | 262                | 301              | 301       | 281      |       |
| 3.7       |      | 3   | 6   | 262                | 276              | 276       | 264      |       |
| 3.7       |      | 4   | 16  | 262                | 250              | 250       | 234      |       |
| 7.2       |      | 1   | 19  | 262                | 255              | 255       | 212      |       |
| 7.2       |      | 2   | 15  | 262                | 243              | 243       | 195      |       |
| 7.2       |      | 3   | 12  | 262                | 257              | 257       | 210      |       |
| 7.2       |      | 4   | 9   | 262                | 242              | 242       | 208      |       |
| 15        |      | 1   | 17  | 262                | 279              | 279       | 0        |       |
| 15        |      | 2   | 20  | 262                | 265              | 265       | 1        |       |
| 15        | -    | 3   | 3   | 262                | 258              | 258       | 1        |       |
| 15        |      | 4   | 13  | 262                | 267              | 267       | 1        |       |
| 24.8      |      | 1   | 7   | 262                | 264              | 264       | 0        |       |
| 24.8      |      | 2   | 4   | 262                | 261              | 261       | 0        |       |
| 24.8      |      | 3   | 23  | 262                | 271              | 271       | 0        |       |
| 24.8      |      | 4   | 1   | 262                | 260              | 260       | 0        |       |

Report Date:

22 Feb-24 11:12 (p 1 of 1)

Test Code/ID:

P220819.118 UIA / 12-6773-1386

**Bivalve Larval Survival and Development Test** 

**EcoAnalysts** 

Start Date: End Date: 01 Feb-24 15:22 Sample Date: 19 Aug-22

30 Jan-24 16:45

Species: Mytilus galloprovincialis Protocol: EPA/600/R-95/136 (1995) Material: Unionized Ammonia

Sample Code: P220819.118 UIA Sample Source: Reference Toxicant Sample Station: P220819.118 UIA

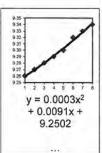
| Conc-mg/L | Code | Rep | Pos | Initial<br>Density | Final<br>Density | # Counted | # Normal | Notes |
|-----------|------|-----|-----|--------------------|------------------|-----------|----------|-------|
| 0         | D    | 1   | 3   | 262                | 260              | 260       | 248      |       |
| 0         | D    | 2   | 19  | 262                | 254              | 254       | 237      |       |
| 0         | D    | 3   | 14  | 262                | 277              | 277       | 269      |       |
| 0         | D    | 4   | 23  | 262                | 262              | 262       | 249      |       |
| 0.017     |      | 1   | 24  | 262                | 248              | 248       | 229      |       |
| 0.017     |      | 2   | 13  | 262                | 263              | 263       | 248      |       |
| 0.017     | 1. 1 | 3   | 12  | 262                | 279              | 279       | 263      |       |
| 0.017     |      | 4   | 17  | 262                | 239              | 239       | 226      |       |
| 0.054     |      | 1   | 18  | 262                | 278              | 278       | 263      |       |
| 0.054     |      | 2   | 1   | 262                | 301              | 301       | 281      |       |
| 0.054     |      | 3   | 7   | 262                | 276              | 276       | 264      |       |
| 0.054     |      | 4   | 22  | 262                | 250              | 250       | 234      |       |
| 0.104     |      | 1   | 15  | 262                | 255              | 255       | 212      |       |
| 0.104     |      | 2   | 21  | 262                | 243              | 243       | 195      |       |
| 0.104     |      | 3   | 10  | 262                | 257              | 257       | 210      |       |
| 0.104     |      | 4   | 5   | 262                | 242              | 242       | 208      |       |
| 0.219     |      | 1   | 16  | 262                | 279              | 279       | 0        |       |
| 0.219     |      | 2   | 4   | 262                | 265              | 265       | 1        |       |
| 0.219     |      | 3   | 11  | 262                | 258              | 258       | 1        |       |
| 0.219     |      | 4   | 2   | 262                | 267              | 267       | 1        |       |
| 0.286     |      | 1   | 8   | 262                | 264              | 264       | 0        |       |
| 0.286     |      | 2   | 9   | 262                | 261              | 261       | 0        |       |
| 0.286     |      | 3   | 20  | 262                | 271              | 271       | 0        |       |
| 0.286     |      | 4   | 6   | 262                | 260              | 260       | 0        |       |

#### **Un-ionized Ammonia Calculator**

| CLIENT:   | Jacobs Wyckoff                    | Date of Test: | January 30, 2024          |
|-----------|-----------------------------------|---------------|---------------------------|
| PROJECT:  | Wyckoff Eagle Harbor GWTP 2024/WA | Test Type:    | Mytilus galloprovincialis |
| COMMENTS: | P220819 118                       |               |                           |

To convert Total Ammonia (mg/L) to Free (un-ionized) Ammonia (mg/L) enter the corresponding total ammonia, salinity, temperature, and pH.

| lonic str | ength:pKa |
|-----------|-----------|
| 1         | 9.26      |
| 2         | 9.27      |
| 3         | 9.28      |
| 4         | 9.29      |
| 5         | 9.30      |
| 6         | 9.32      |
| 7         | 9.33      |
| 8         | 9.34      |



| Sample Target / Sample Name | I   | NH3T (mg/L) | I - I  | pH<br>^etus | temp (C) | temp (K)   | pKa s      | NH <sub>3</sub> U (mg/l |
|-----------------------------|-----|-------------|--------|-------------|----------|------------|------------|-------------------------|
|                             |     | Actual      | Actual | Actual      | Actual   | Calculated | Calculated |                         |
| Example 3.5                 |     | 2.000       | 10.0   | 7.5         | 5.0      | 278.15     | 9.2520     | 0.008                   |
| 1.5                         |     | 1.12        | 28     | 7.7         | 16.6     | 289.75     | 9.2555     | 0.017                   |
| 3                           |     | 3.7         | 28     | 7.7         | 16.4     | 289.55     | 9.2555     | 0.054                   |
| 6                           |     | 7.2         | 28     | 7.7         | 16.2     | 289.35     | 9.2555     | 0.104                   |
| 12                          |     | 15          | 28     | 7.7         | 16.4     | 289.55     | 9.2555     | 0.104                   |
| 18                          |     | 24.8        | 28     | 7.6         | 16.3     | 289.45     |            | 0.219                   |
| 10                          |     | 24,0        | 20     | 7.0         | 10.3     | 289.45     | 9.2555     | 0.286                   |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            | 1/4                     |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            |                         |
| 1                           |     |             |        |             |          |            |            | 110                     |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            | 10-2                    |
|                             |     |             |        |             |          |            |            | 142                     |
|                             | -   |             |        |             |          |            |            |                         |
|                             | -   |             |        |             |          |            |            |                         |
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|                             | -   |             |        |             |          |            |            |                         |
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|                             | -   |             |        |             |          |            |            |                         |
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|                             |     |             |        |             |          |            |            | +                       |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            | 1111                    |
|                             |     |             |        | - 1         |          |            | 1          | 1.11                    |
|                             |     |             |        |             |          |            |            |                         |
|                             | - 1 |             |        |             |          |            |            | T I                     |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            |                         |
|                             |     |             |        |             |          | . 11       | 1          | (1)                     |
|                             |     |             |        |             | 11       |            |            |                         |
|                             | -   | (===        |        |             |          |            |            |                         |
|                             |     |             |        |             |          |            |            |                         |

OH/ Manu

#### Ammonia Reference Toxicant Spiking Worksheet

Reference Toxicant ID:

P220819.118

Date Prepared:

113012024

**Technician Initials:** 

cs /Ria

# Biv / Echino NH<sub>3</sub> RT

Assumptions in Model

Stock ammonia concentration is 9,000 mg/L = 9 mg/mL

Date:

12/27/2023

Measurement:

9600

| Te                     | st Solutions          |              |  |  |  |  |  |
|------------------------|-----------------------|--------------|--|--|--|--|--|
| Measured Concentration | Desired Concentration | Volume<br>mL | Volume of stock to reach desired concentrati |  |  |  |  |
| mg/L                   | mg/L                  |              | mL stock to increase                         |  |  |  |  |
| 0.00/0-3176            | Ø                     |              | SALT WATER                                   |  |  |  |  |
| 1.59-11.12             | 1.5                   | 200          | 0.047  |  |  |  |  |
| 3.4/3.70               | 3                     | 200          | 0.094  |  |  |  |  |
| 6.33 17.2              | 6                     | 200          | 0.188  |  |  |  |  |
| -11.3 /15.             | 12                    | 200          | 0.375  |  |  |  |  |
| 17.8 124.8             | 18                    | 200          | 0.563  |  |  |  |  |
|                        |                       |              |  |  |  |  |  |
|                        |                       |              |  |  |  |  |  |
|                        |                       |              |  |  |  |  |  |

( NEW PILLMONS, SPW & SAL WAS TOO LON RG 1/30/24

@MC0.280 Kg 1/30/29

## 48 Hour Bivalve Development Reference Toxicant Test

| Test ID:<br>P220819        | 118               | Replica           | ates: 4         | S        | tudy Director                  | : M. S  | eibert         | Location   | on: Incu      | ıbator 1   |  |
|----------------------------|-------------------|-------------------|-----------------|----------|--------------------------------|---------|----------------|------------|---------------|------------|--|
| Dilution Water             | Batch:            |                   | sm Batch:       |          | ssociated Tes                  | t(s): J | acobs          | Organi     | ism: M.       | sp.        |  |
| Chamber Size/<br>30 ml she | Type:             | 10/4              | re Volume:      |          | Уускоп                         |         |                |            |               |            |  |
| Toxicant: Amn              | nonium C          | hloride           |                 | D        | ate Prepared                   | : 1/30  | /24            | Initials   | : R6          | 1          |  |
| Target Conc                |                   | ns:<br>ing works  | heet            |          | Quantity of Sarget: See spikin |         |                | Quan       | tity of       | Diluent:   |  |
|                            | See spik          | ing works         | heet            | А        | ctual: See spil                |         |                | Actual     |               | Oml        |  |
|                            |                   |                   |                 | SPAWI    | NING DAT                       | Α       |                |            |               |            |  |
| Initial Spawning           |                   | Final Sp<br>Time: | oawning<br>1325 |          | ization Time: No. of Females:  |         |                |            | No. of Males: |            |  |
| Embryo<br>Density (count   | /mL):             | 1. 40             | -               | 2. 38    |                                | 3.      | - 415          | Mean:      | 392           |            |  |
| Stocking Volun             | ne Calcula        | ation: 2400       |                 |          | L = 2.76r                      | nL egi  | g slock in     | 37.24      | ML F          | SM         |  |
| 0 Hours                    | Date:             | 1/30/24           | WQ Time:        |          |                                | Star    | t Time: 10     | 45         | Initia        | als: MS/RG |  |
|                            |                   |                   |                 |          | ТОСК                           |         |                |            |               |            |  |
| D O (0/)                   |                   |                   | Control         | 1.5      | 3                              |         | 6              | 1          | 2             | 18         |  |
| D.O. (%)<br>(>4.0 mg/L)    |                   |                   | 7-8             | 7.9      | 7.9                            |         | 6.0            | 8.         | D             | 8.1        |  |
| Temperature (              | L6 ± 1°C)         |                   | 8-W             | 16.4     | 16.0                           | 1       | 10.2           | 16         | .4            | 16.3       |  |
| Salinity<br>(30 ± 2 ppt)   |                   |                   | 28              | 28       | 28                             |         | 28             | 25         | 8             | 28         |  |
| pH<br>(6-9)                |                   | -                 | 1.4             | 7-7      | 7.7                            |         | 7-7            | 7          | 7             | 7.4        |  |
| Meter #                    |                   |                   | 8               | 8        | 8                              |         | 8              | 8          |               | 8          |  |
| Day 1                      | Tempe<br>(16 ± 1° | erature<br>C)     | 15.9            |          | Meter #                        | Ta      | 16             |            | Initia        | ls: SR     |  |
| Day 2                      | Date:             | 2/1/24            | WQ Time:        | 1440     |                                | End     | Time: 15       | 22         | Initia        | Is: Ug     |  |
|                            |                   |                   | Formalin I      | ot#: 236 | 724-07                         |         | e Bengal Lot # | <b>#</b> : |               |            |  |
|                            |                   |                   |                 | S        | ГОСК                           |         | ,,,,           |            |               |            |  |
|                            |                   |                   | Control         | 1.5      | 3                              |         | 6              | 13         | 2             | 18         |  |
| D.O. (%)<br>(>4.0 mg/L)    |                   | 2                 | 6.9             | 8.1      | 8.1                            |         | 8.1            | 8.         | 2             | 8.1        |  |
| Temperature (1             | 16 ± 1°C)         |                   | 6.4             | 14.9     | 15.3                           |         | 15.2           | 14.        | 8             | 14.8       |  |
| Salinity<br>(30 ± 2 ppt)   |                   |                   | 29              | 29       | 28                             |         | 29             | 20         |               | 29         |  |
| pH<br>(6-9)                |                   |                   | 7.8             | 7.9      | 7.9                            |         | 7.9            | 7.         | 9             | 7.8        |  |
| Meter #                    |                   |                   | 8               | 8        | 8                              | 8       |                | 8          |               | 8          |  |

Os'd 101. Mg/30

@MR- 4 2/1

## 48 Hour Bivalve Development Reference Toxicant Test

Test 10: P220819, 118

| Conc.   | Rep   | Number<br>Normal | Number<br>Abnormal | Date    | Initials |
|---------|-------|------------------|--------------------|---------|----------|
|         | 1     | 248              | 12                 | 217/24  | DM       |
| Company | 2     | 237              | 17                 | 24/24   | DM       |
| Control | 3     | 249              | 8                  | 2/3/14  | DM       |
|         | 4     | 249              | 13                 | 7/21/24 | MARH     |
|         | 1     | 229              | 19                 | 212164  | MARH     |
| 1.5     | 2     | 248              | 15                 | 2/21/24 | MARH     |
| 1.5     | 3     | 263              |                    | 2/21/24 | MARH     |
|         | 4     | 226              | 16                 | 2121/24 | MARIL    |
|         | 1     | 263              | 15                 | 2/21/24 | MARK     |
| 3       | 2     | 281              | 20                 | 2/21/24 | MARY     |
| 5       | 3     | 264              | 12                 | 2/21/24 | MARIH    |
|         | 4     | 234              |                    | 2/21/24 | MARY     |
|         | 1     | 212              | 1(o<br>43          | 2/21/24 | MARY     |
| 6       | 2     | 195              | 48                 | 2/21/24 | MARH     |
| 6       | 3     | 210              | 47                 | 2/21/24 | MANU     |
|         | 4     | 20%              | 34                 | 2/21/24 | Manut    |
|         | 1     | 0                | 279                | 2121/24 | Marie    |
| 12      | 2     | 1                | 264                | 2/21/24 | WARUS    |
| 12      | 3     | 1                | 257                | 2/21/24 | Mary     |
|         | 4     | 1                | 266                | 2/21/24 | MARIS    |
|         | 1     | 0                | 264                | 2/21/24 | MARIA    |
| 18      | 2     | 0                | 261                | 2/21/24 | MANU     |
| 10      | 3     | O                | 271                | 2/21/24 | MARLE    |
|         | 4     | 0                | 260                | 2/21/4  | manu     |
|         |       | Stocking         | Density            |         |          |
| Rep     |       | Cou              |                    | Ini     | t.       |
| 1       |       | 265              |                    | MA      | M        |
| 2       |       | 264              |                    | Mar     |          |
| 3<br>4  |       | 266              |                    |         | Ms       |
| 5       |       | 246              |                    | VeW.    |          |
| 6       |       | 255              |                    |         | N        |
|         | Mean: | 262              | e                  | MA      | us       |

## ORGANISM RECEIPT LOG

| Date: \2     | 16/23          | Tin           | ne:<br>15                          | 29                                  | 13.61         |                 |         |                     |  |  |  |
|--------------|----------------|---------------|------------------------------------|-------------------------------------|---------------|-----------------|---------|---------------------|--|--|--|
|              |                | ·Sp           |                                    |                                     |               |                 | 4       |                     |  |  |  |
| Source / S   |                |               |                                    |                                     |               |                 |         |                     |  |  |  |
|              |                | aylor         | Shi                                | Vzityls                             |               |                 |         |                     |  |  |  |
| No. Ordere   |                | No.           | Receive                            |                                     | Soi           | urce Batch:     |         |                     |  |  |  |
|              | 165            |               | 121                                | Collection date, hatch date, etc.): |               |                 |         |                     |  |  |  |
| Condition    | of Organis     |               |                                    | Approxir                            | nate Si       | ze or Age:      |         |                     |  |  |  |
|              | Good           |               |                                    |                                     |               | ife stage, size |         |                     |  |  |  |
| Shipper:     |                |               |                                    | D 651 /=                            | Nixe          | ed Ac           | Ztluk   |                     |  |  |  |
| (            | Counc          |               |                                    | B of L (T                           | racking<br>JA | No.)            |         |                     |  |  |  |
| condition of | of Contain     | er:           |                                    | Received                            | Ву:           |                 |         |                     |  |  |  |
|              | (2001)         | J/\           | 3+1                                | NC                                  |               |                 |         | •                   |  |  |  |
| container    | D.O.<br>(mg/L) | Temp.<br>(°C) | Cond.<br>Sal.<br>(Include<br>Units | ie (U                               | pH<br>nits)   | # Dead          | % Dead* | Tech.<br>(Initials) |  |  |  |
|              | vec            | eived         | dn                                 | 1 =                                 |               |                 |         | NI                  |  |  |  |
|              |                | 10.4          | (                                  |                                     |               |                 |         |                     |  |  |  |
|              |                |               |                                    |                                     |               |                 |         |                     |  |  |  |
|              |                |               |                                    |                                     |               |                 |         |                     |  |  |  |
| >10% contact | lah manana     |               |                                    |                                     |               |                 |         |                     |  |  |  |
|              | ···anager      |               | 1                                  |                                     |               |                 |         |                     |  |  |  |
| otes:        |                |               |                                    |                                     |               |                 |         |                     |  |  |  |
|              |                |               |                                    |                                     |               |                 |         | agi.                |  |  |  |

7/27/15

Organism Receipt Log v1.1

Page \_\_ of \_\_



Toxicity Testing Results Wyckoff/Eagle Harbor Superfund Site Groundwater Treatment Plant

#### **APPENDIX B**

**CHAIN-OF-CUSTODY AND SAMPLE RECEIPT FORMS** 

Report ID PG1958Q1.01 EcoAnalysts, Inc.

Page 1 of 1

E lalyst, Inc. (Region Copy)

DateShipped: 1/30/2024

CarrierName: EcoAaylists (hand delivery)

AirbillNo:

## Jacobs, Wyckoff Eagle Harbor COC

Wyckoff Eagle Harbor GWTP 2024/WA

Project Code: Cooler #: 1

No: 10-013024-110419-0771

Account Code: 2015T10P303DD210W2LA00

Contact Name: Mario Lopez Ramos

| Lab# | Sample #   | Location | CLP      | 1-  |                  |        |            |       | Conta     | me: Mario Lope:<br>ect Phone: 206-7 | 80-1711 |
|------|------------|----------|----------|-----|------------------|--------|------------|-------|-----------|-------------------------------------|---------|
| 2)   | 24052146_1 |          | Sample # | Tag | Analyses         | Matrix | Collection |       |           |                                     |         |
| 0    | 27002140_1 | SP-11    | 180      | N   | Church T         | - Land | Collected  | Numb  | Container | Preservativ                         | Lab Q   |
|      |            |          |          | 1.  | Chronic Toxicity | Ground | 1/30/2024  | Cont  |           | е                                   |         |
|      |            |          |          |     |                  | Water  |            | 2     | 1L Cube   | <6C                                 |         |
|      |            |          |          |     |                  |        |            | - 1   |           |                                     |         |
| -    |            |          |          |     |                  | +      |            | 7- 1  |           |                                     |         |
|      |            |          |          |     |                  | -      | 1          | 7 - 1 |           |                                     |         |
| -    |            |          |          |     |                  |        |            |       |           |                                     |         |
|      |            |          |          | 1   |                  |        | 1          |       |           |                                     |         |
| -    |            | 1        |          |     |                  |        | 1          |       |           |                                     |         |
|      |            |          | 1 6      |     |                  |        |            | -     |           | 1                                   |         |
|      |            |          |          |     |                  |        |            |       |           |                                     |         |
|      |            |          |          |     |                  |        |            | -     |           |                                     |         |
| 1    |            |          |          |     |                  |        |            |       |           |                                     |         |
| 1    |            |          | 1        |     |                  |        |            |       |           |                                     |         |
| 117  |            |          |          | 1   |                  |        | 4          | 1     |           |                                     |         |
|      |            |          |          |     |                  |        | 1          |       |           |                                     |         |
|      |            |          |          |     |                  |        |            | 11/11 |           |                                     |         |

Special Instructions: 2024 Week 05 - 1st Quarter Bioassay -Chronic Toxicity Bivalve Test

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY#

| 18 | Relinguished by (Signatu | Date/Time<br>1/30/2024 | Received by (Signa | ture and Organization) | Date/Time | Ta and a second          |
|----|--------------------------|------------------------|--------------------|------------------------|-----------|--------------------------|
| 00 | VIIII E                  | 1154                   | MILP               | (-                     | 111-1     | Sample Condition Upon Re |
|    |                          | 1101                   | 0.00               | CloAnaly sty           | 130127    | P240130.039 -5.6°C       |
|    |                          |                        |                    |                        | 1.5       | 65 40130 03P-956         |
|    |                          |                        |                    |                        |           |                          |
|    |                          |                        |                    |                        |           |                          |
|    |                          |                        |                    |                        |           |                          |

① Sample Collected @ 0935 on 1/30/24-MS 1/30
② 1ab #. P240130.03a - temp: 5.6°C
P240130.03b - temp: 6.2°C\* temp. Win. range since rood win 4 hrs of collection-ms 1/30

#### SAMPLE RECEIPT

| Client:   |           |                          |           | Client ID:                    |         |     |                     |             | Lab I            | D:      |                 | Re                                       | newals:                                    |       |                    |                     |      |
|---|-----------|--------------------------|-----------|-------------------------------|---------|-----|---------------------|-------------|------------------|---------|-----------------|--|--|-------|--------------------|---------------------|------|
| lacobs Myckol   | FF        | 240                      | 52        | 146-                          | ١       |     | PV                  | 41          | 0130             | ).(     | 043             |  |  |       |                    |                     |      |
| Project:  |           |                          |           |                               |         |     | P                   |             |                  |         |                 |  |  | 3     |                    |                     |      |
| NYCKOFF Eaglo   |           | ba                       |           |                               |         | =   | -                   | _           |                  |         |                 |  |  |       |                    |                     |      |
| GWTP 2024/WA  |           |                          |           |                               |         |     |                     |             |                  |         |                 |  |  |       | 1                  |                     |      |
| Date/Time Red   | ceiv      | red:                     |           |                               |         |     | 430/24 1154         |             |                  |         |                 |  |  |       |                    |                     |      |
| Airbill #:  |           |                          |           |                               |         |     | N                   |             | +                |         |                 |  |  |       |                    |                     |      |
| Shipper Tracki<br>Records: (Y/N                               | ng<br>/N/ | Informa<br>A)            | tio       | n Kept for                    |         |     | ٨                   | j,          | A                |         |                 | * *                                      |  |       |                    |                     |      |
| Collection Date   | e/T       | ime:                     |           |                               |         |     | 1/30                | 12          | 40               | 13      | 5               | -  |  |       |                    |                     |      |
| Sample Holding Time<br>(must be ≤36 hours at test initiation) |           |                          |           |                               |         |     |                     | Y           |                  |         |                 |  |  |       |                    |                     |      |
| Condition of Shipping Container:                              |           |                          |           |                               |         |     |                     | Good        |                  |         |                 |  |  | /4    |                    |                     |      |
| Type and Capacity of Sample Container:                        |           |                          |           |                               |         |     |                     | IL cubi x 2 |                  |         |                 |  |  |       |                    |                     |      |
| Total Sample Volume (L): Condition of Sampling Container:     |           |                          |           |                               |         |     | ZL<br>Good          |             |                  |         |                 |  |  | -     | +=                 |                     | -    |
|   |           |                          |           |                               |         |     |                     |             |                  |         |                 |  |  | i     | -                  |                     |      |
| Sample Contai   |           |                          |           |                               | -       |     | 9000                |             |                  |         |                 |  |  | - 1   |                    |                     |      |
| Custody Seals<br>(Intact/Broke                                | Int       | act:                     |           |                               |         |     | intact              |             |                  |         |                 |  |  | - X   |                    |                     |      |
| Frozen Wet or<br>Shipment/Tran                                | Blu       | e Ice Pr<br>ort: (Y/     | ese<br>N) | ent During                    |         |     | 4                   |             |                  |         |                 |  | ,  |       |                    |                     |      |
| Sampler's Nam<br>(Print Name/N                                | ne F      | resent o                 | on (      | COC Form                      | :       |     | Mano Lopez<br>Clear |             |                  |         |                 |  |  | ÷     |                    |                     |      |
| Color:  |           |                          |           |                               |         |     |                     |             |                  |         |                 |  |  |       | -                  |                     |      |
|   | TA        | KE TI                    | 1E        | FOLLO                         | W)      | ING |                     |             |                  | RE      | MENT            | SUP                                      | ON AF                                      | RRIV  | /AL                |                     |      |
|   | T         | *                        |           |                               | П       |     |                     | T           |                  | П       | and the same of |  | 1  | T     |                    | m                   |      |
| LAB ID  | Meter #   | Temp.<br>(°C)<br>(0-6°C) | Meter #   | Dissolved<br>Oxygen<br>(mg/L) | Meter # | Hd  |                     | Merer #     | Cond.<br>(µS/cm) | Meter # | sal. (ppt)      | Hardness<br>(mg<br>CaCO <sub>3</sub> /L) | Alkalinity<br>(mg<br>CaCO <sub>3</sub> /L) | Potal | Chlorine<br>(mg/L) | Total NH3<br>(mg/L) | Tecl |
|   |           |                          | Σ         | 200                           | Σ       |     |                     | Σ           | ੱਤ               | Σ       | Sa              | 포 8                                      | ₹ 8  |       | 55                 | to T                |      |
| 240130.04a  | 124       | 5.6                      | -         | _                             |         |     | X                   |             | /                |         | 1               | /  | /  |       | 1                  | 1                   | MS   |
| 240138.0346   |           | 6.2                      |           |                               |         | /   |                     |             | /                | Ī       | /               | /  | 1/   | 1     | /                  | /                   | 13   |
| 240136.04   | -         | -                        | 8         | 9.2                           | 8       | 7.  | 56                  | 3-          | 198              | 8       | 0.4             |  | -  | 0.    | 01                 | 0.0                 | 12   |
|   |           |                          |           |                               |         |     |                     |             |                  |         |                 |  |  | 0.    | - 1                |                     |      |
| Notify project  |           |                          |           |                               |         |     |                     | 1           | L 11             |         |                 |  |  |       |                    |                     |      |

| 1   |  |
|-----|--|
|     |  |
| 16. |  |
|     |  |
|     |  |

Ocorrected Lab 16-Ms 1/30

### MAINTENANCE LOG FOR FLOW-THROUGH CULTURE TUBS

LOCATION: Bath 10

| Organism (A): M. Sp. | Batch Number: 7511068.01      | Date Received: 11.6.23 | Initial # of<br>Organisms:    | 10%<br>Mort = |
|----------------------|-------------------------------|------------------------|-------------------------------|---------------|
| Organism (B): M. Sp. | Batch Number: 75 (10623.6)    | Date Received: 11.6.23 | Initial # of<br>Organisms:    | 10%<br>Mort = |
| Organism (C): M, Sp  | Batch Number 75   215 23.0) A | Date Received: 12 115  | Initial # of Organisms: \2\05 | 10%<br>Mort = |
| Organism (D): "M.SD  | Batch Number 15121573,018     |                        | Initial # of<br>Organisms:    | 10%<br>Mort = |
| Organism (E):        | Batch Number:                 | Date Received:         | Initial # of<br>Organisms:    | 10%<br>Mort = |

| Date     | Feed<br>AM/PM |              | Organism<br>(A, B, C,<br>D, or E) | D.O.  | Temp<br>(°C) | Cond/<br>Sal | рН   | H₂O<br>Change | Organisms<br>appear<br>healthy<br>(Y/N) | # Mort | Cumulative<br># Mort* | Init. | Comments |
|----------|---------------|--------------|-----------------------------------|-------|--------------|--------------|------|---------------|---|--------|-----------------------|-------|----------|
| 11.23.2  | 3             | X            | A                                 | 7.3   | 16.4         | 30           | 7.6  | FT            | Y                                       | -      | _                     | MARH  |          |
| V        |               | X            | B                                 | 7.6   | 16.6         | 30           | 7.7  | FT            | Y                                       | -      | _                     | MARKI |          |
| 11/26    | X             | ~            | A                                 | 7.3   | 15.7         | 32           | 7.7  | 77            | Y                                       |        | ~                     | TW    |          |
| 11/26    | X             | -            | B                                 | 7.7   | 15.6         | 32           | 17.7 | FT            | 4                                       |        | J                     | TW    | 1        |
| 12/3     | _             | <b>V</b>     | A                                 | _     |              |              | 7    | PT            | V                                       | _      | N-0                   | NYIG  | fed.     |
| 12/3     | _             | $\checkmark$ | B                                 | _     | -            | -            | -    | FT            | 4                                       | -      | ~                     | NYLG  | fed      |
| 2623     | -             | >            | A                                 | 6.7   | 15.3         | 30           | 75   | R             | 4                                       | 040    | 6                     | DM    | , ,      |
| 21423    | -             |              | 8                                 | 75    | 154          | 30           | 7,6  | \$            | 4                                       | -1     | 1                     | M     |          |
| 2/10     | 1             | ~            | A                                 | 7.9   | 15,4         | 30           | 7.8  | FT            | y'                                      | 0      | -                     | Ug    |          |
| 2110     | 1             | 1            | B                                 | 7.9   | 15.4         | 30           | 7.9  | FT            | Х                                       | 0      | 1                     | 4     |          |
| 12/12    |               | 1            | A                                 | 7.6   | 16.0         | 32           | 7.6  | PT            | Y                                       | 9      | -                     | 517   |          |
| 12/22    | -             | J            | B .                               | 7.9   | 26.0         | 31           | 7.8  | FT            | Y                                       | 0      | 1                     | SR    |          |
| 12/29/23 | 1             | 1            | A                                 | 7.8   | 15.9         | 32           | 7.7  | PT            | Y                                       | 0      | -                     | SR    |          |
| 12/24/23 | •             | 1            | B                                 | 7.8 . | 15.7         | 31           | 7.7  | FÎ            | ٢                                       | 0      | 1                     | SR    |          |
| 12/17    | 1             | -            | 0.                                | 7.7   | 11,9         | 31           | 7.8  | FT            | Y                                       | 0      | _                     | NT    | 13°C     |

9/8/2022

Culture Maintenance Log V 1.5

OWC-DM-12/0/23

FT = Flow-through
\*For all days of a given batch; if >10% notify lab manager

### MAINTENANCE LOG FOR FLOW-THROUGH CULTURE TUBS

LOCATION: BOTHIO

| Organism (A): M.SO  | Batch Number: TSII 0623.0   | Date Received: \\  φ                                | Initial # of<br>Organisms: | 10%<br>Mort = |
|---------------------|-----------------------------|---|----------------------------|---------------|
| Organism (B): M.SD  | Batch Number: 75(106/23.0)  | Date Received: \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | Initial # of<br>Organisms: | 10%<br>Mort = |
| Organism (C): W.50  | Batch Number: 18 12/523,014 |   | Initial # of<br>Organisms: | 10%<br>Mort = |
| Organism (D): W.S.P | Batch Number: TS121523 A16  |   | Initial # of<br>Organisms: | 10%<br>Mort = |
| Organism (E):       | Batch Number:               | Date Received:                                      | Initial # of<br>Organisms: | 10%<br>Mort = |

| Date   | Feed AM/PM |     | Organism<br>(A, B, C,<br>D, or E) | D.O. | Temp<br>(°C) | Cond/ | рН  | H₂O<br>Change | Organisms<br>appear<br>healthy<br>(Y/N) | # Mort | Cumulative<br># Mort* | Init. | Comments |
|--------|------------|-----|-----------------------------------|------|--------------|-------|-----|---------------|---|--------|-----------------------|-------|----------|
| 120    | 1          | -   | D                                 | 7.7  | 11.9         | 31    | 7.7 | FT            | V                                       | 9      | -                     | NS    |          |
| 1217   | V          | -   | A                                 | רֹלִ | 12.1         | 31    | 7.8 | PT            | y'                                      | 0      | -                     | M     |          |
| 12/12  | V          | -   | В                                 | 8.7  | 2.1          | 31    | 7.8 | FT            | Y                                       | 0      | -                     | NU    |          |
| 12/19  |            | V   | A                                 | 7.1  | 15.4         | 31    | 7.5 | FT            | Ý                                       | 0      |                       | CS    |          |
| 12/19  |            | V   | В                                 | 6.9  | 15.7         | 31    | 7.7 | FT            | Y                                       | 0      | -                     | CS    |          |
| 12/19  | 11         | V   | C                                 | 6.9  | 15.1         | 31    | 7.5 | FT            | y                                       | 0      | -                     | CS    |          |
| 12/19  |            | . 1 | D                                 | 6.8  | 15.1         | 31    | 7.5 | FT            | Y                                       | 0      | Stell                 | CS    |          |
| 12/20  | -          | _   | c                                 | 1.5  | 15.7         | 31    | 7.4 | FT            | Y                                       | 0      | -                     | NL    |          |
| 12/20  | ~          | -   | 0                                 | 7.1  | 15.5         | 31    | 7.4 | PT            | N                                       | 0      | 1                     | NL    |          |
| 12/21  | •          | V   | A                                 | 7.7  | 11.3         | 31    | 7.6 | FT            | 4                                       | 0      | -                     | CS    |          |
| 12/21  | i.e.       | 1   | C                                 | 7.4  | 12.4         | 31    | 7.4 | FT            | Y                                       | 0      | -                     | CS    |          |
| 12/21  | -          | /   | D.                                | 7.2  | 11.6         | 31    | 7.5 | FT            | 7                                       | 6      | 1+9                   | CS    |          |
| 12/230 |            |     | A                                 | 7.7° | 41.3         | 31    | 7   |               |   |        |                       |       |          |
| 12/23  |            |     | A                                 | 7.7  | 10.4         | 30    | 7.7 | FT            | 1                                       | 0      | -                     | T     |          |
| 12/23  | = 10       |     | B                                 | 7.7  | 10.5         | 30    | 7.6 | FT            | 7                                       | 0      | -                     | IT    |          |

9/8/2022

16-05 12/21, T WWS

FT = Flow-through
\*For all days of a given batch; if >10% notify lab manager

## MAINTENANCE LOG FOR CULTURES

ORGANISM: M.Sp. LOCATION:

Batch Number: T5121523.01 Date Received: 12/15/23 Initial # of Organisms: 10% mortality =

| Date      | AM/PI |    | Tub<br>No. | D.O. | Temp<br>(°C) |     | рН     | H₂O<br>Change | Organisms<br>appear<br>healthy<br>(Y/N) | # Mort<br>(per tub) | <sup>1</sup> Cumulative<br># Mort* | Init. | Comments       |
|-----------|-------|----|------------|------|--------------|-----|--------|---------------|---|---------------------|------------------------------------|-------|----------------|
| 12/24     | X     | V  | B          | 7.2  | 1.11         | 131 | 7.5    | FT            | 4                                       | 0                   | -                                  | TW    |                |
| 12/25     | -     | -  | В          | 7.4  | 11.4         | 30  | 7.6    | PT            | Y                                       | 0                   | Q                                  |       |                |
| 2/20      |       | V  | 13         | 7.3  | 111.3        | 30  | 76     | R             | 4                                       | 0                   | ۵                                  | SR    |                |
| 2128      | _     | ~  | В          | 7.9  | 12.3         | 30  | 7.7    | FT            | V                                       |                     | _                                  |       |                |
| 2/31      | -     | 0  | D          | _    |              | 30  | 127 34 | The state of  |   | 0                   |                                    | CS    |                |
| 11040     | -     | ~  |            | 8.1  | 9.5          | _   | -      | -             |   |                     | _                                  | 40    |                |
| 1/040     | -     | ~  |            | 18.1 | 1.00         |     |        |               |   | /                   |                                    |       | Too cold for s |
| 1/04      | -     | ~  | В          | 8.1  | 10.3         | 29  | 72     |               |   |                     |                                    |       |                |
| 17        | -     | 1  | R          | 8.8  | 10.3         | 79  | 7.7    | FT            | Y                                       | 0                   | 6                                  | CS    |                |
| /10       | -     | 1  | -N         | 8.3  | 10.6         | -   | 1.0    | +1            | Y                                       | 0                   | 0                                  | TW    |                |
| 1         | -     |    | В          | 8,9  |              | 30  | 7.6    | FT            | 4                                       | 0                   | ٥                                  | cs    |                |
| 16        | 1     | _  | В          |      | 9.5          | 31  | 7.8    | FT            | 4                                       | 0                   | 0                                  | La    |                |
|           | -     | _  | В          | 8.6  | 9.7          | 30  | 7.8    | FT            | Y                                       | 0                   | 0                                  | CS    |                |
| 10        |       | -  |            | 7.6  | 10.2         |     | 7.8    | FT            | γ                                       | 0                   | 0                                  | GS    |                |
| -         |       | 1  | B          | 9.8  | 9.5          | 30  | 7.8    | FT            | Y                                       | 0                   | 0                                  | 4     |                |
|           | 1     |    | B          | 8.5  | 10.3         | 30  | 7.8    | FT            | Y                                       | 0                   |                                    | TUL   |                |
| 27        | 1     | -  | B          | 8-4  | 10.2         | 30. | 7-8    | FT            | 4                                       | 0                   | 0                                  | Ra    |                |
| -         | -  -  | -/ | B          | 8.6  | 11.0         | 29  | 7.8    | II            | 1                                       | 0                   | λ                                  |       |                |
| = Flow-ti | -     | /  | B          | 8.6  | 10.7         | 29  | 77     | ET            | 4                                       | 6                   | 0                                  | TW    |                |

<sup>\*</sup>For all containers and all days for a given batch; if >10% notify lab manager

1 Cumulative # Mort is the running total of the current day's total mortality + previous cumulative culture mortality since acquired in lab