NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality
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Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

April 29, 2010

Mr. Jim Sumner
Environmental Testing Solutions, Inc.
P.O. Box 7565
Asheville, NC 28802-7565

Dear Mr. Sumner,

Results of the 2010 Performance Evaluation toxicity test series have been reviewed by Aquatic Toxicology Unit staff. Our Unit was also a participant in the chronic and acute *Ceriodaphnia dubia* tests, acute *Pimephales promelas* test, pH, conductivity, and hardness analyses that were performed. Following the summary of overall results, test results generated by your laboratory will be discussed.

Ceriodaphnia dubia chronic

There were ten chronic *Ceriodaphnia* tests performed using Solution A following the February 1998 revision of the "North Carolina Phase II Chronic Whole Effluent Toxicity Test Procedure." The mean IC25 was 14.79% with a standard deviation of 3.48 (Figure 1). All ten laboratories met minimum quality control criteria and reported results that were within the allowable two standard deviations from the mean IC25.

Ceriodaphnia dubia acute

There were eight acute *Ceriodaphnia* tests conducted using Solution B following the methods described in *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms,* (Fourth Edition), EPA/600/4–90/027F, August 1993. The mean LC_{50} value was 29.18% with a standard deviation of 2.97 (Figure 2). All eight laboratories reported results that met minimum quality control criteria and were within two standard deviations of the mean LC_{50} value.

Pimephales promelas acute

Nine laboratories conducted acute *Pimephales promelas* tests using Solution C following the methods described in *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms* (Fourth Edition), EPA/600/4–90/027, August 1993. The mean LC_{50} value was 15.31% with a standard deviation of 1.23 (Figure 3). All nine laboratories reported results that met minimum quality control criteria and were within two standard deviations of the mean LC_{50} value.

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pH

There were ten pH results reported for Solutions D and E. Mean pH calculated for Solution D was 4.02 with a standard deviation of 0.06 (Figure 4). Nine of the ten laboratories reported results that were within two standard deviations of the mean pH. One laboratory reported a result that was outside the allowable two standard deviations from the mean pH value.

For Solution E, the mean was 6.89 with a standard deviation of 0.05 (Figure 5). All the laboratories reported results that were within two standard deviations of the mean pH.

Conductivity

There were ten conductivity results reported for each of Solutions F and G. The mean was 1608.1 µmhos/cm for Solution F, with a standard deviation of 35.31 (Figure 6). All the laboratories reported results that were within two standard deviations of the mean conductivity.

For Solution G the mean was 565.5 µmhos/cm with a standard deviation of 16.76 (Figure 7). All the laboratories reported results that were within two standard deviations of the mean conductivity.

Hardness

There were ten total hardness results reported for Solutions H and I. Mean total hardness for Solution H was 28.61 mg/L with a standard deviation of 2.42 (Figure 8). All the laboratories reported results that were within two standard deviations of the mean hardness.

For Solution I, the mean was 47.76 mg/L with a standard deviation of 4.31 (Figure 9). The results of all laboratories were within two standard deviations of the mean.

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Individual Lab Discussion

The results of the chronic and acute *Ceriodaphnia dubia*, acute *Pimephales promelas*, and pH, conductivity, and hardness analyses have been reviewed and are enclosed. The Environmental Testing Solutions, Inc. test results were all found to be within acceptable ranges.

Please refer to the following list to determine your respective Lab # for each enclosure.

Figure 1	*Ceriodaphnia* Chronic Solution A	Lab # 5
Figure 2	*Ceriodaphnia* Acute Solution B	Lab # 4
Figure 3	*Pimephales promelas* Acute Solution C	Lab # 2
Figures 4-9	pH, Conductivity, Hardness	Lab # 3

Thank you for your cooperation in this study. We appreciate your commitment to maintaining certification with the State of North Carolina. If you have any questions, please contact Lance Ferrell or me at (919) 743-8401.

Sincerely,

Cindy Moore

Cindy Moore, Supervisor
Aquatic Toxicology Unit

Enclosures
Cc: Lance Ferrell

Figure 1: 2010 Performance Evaluation
Chronic *Ceriodaphnia dubia* IC25 Results Solution A

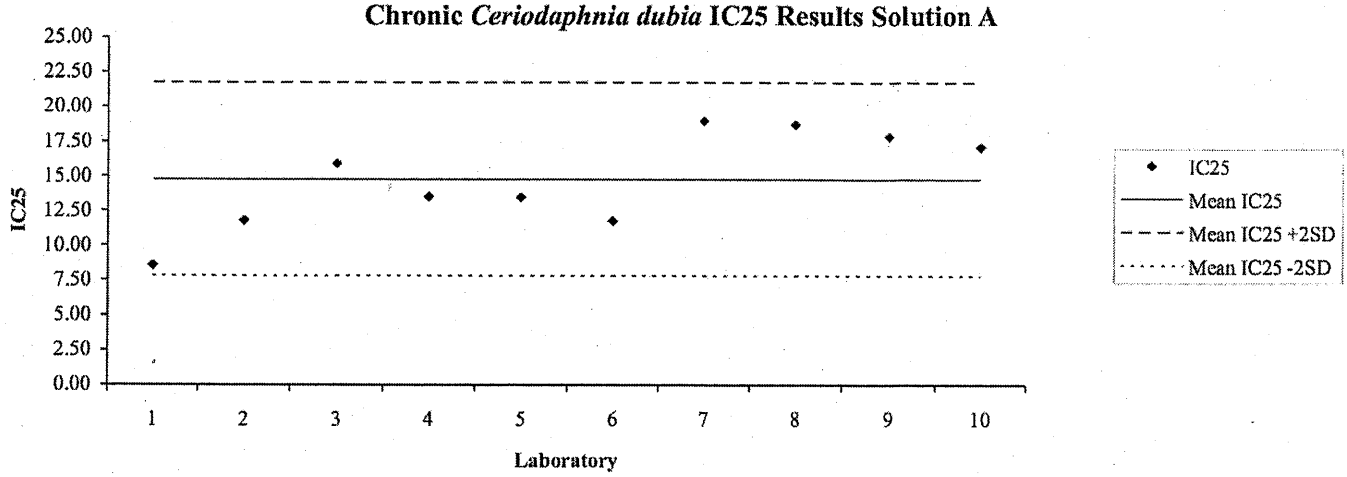

Figure 2: 2010 Performance Evaluation
Acute 48hr *Ceriodaphnia dubia* LC50 Results Solution B

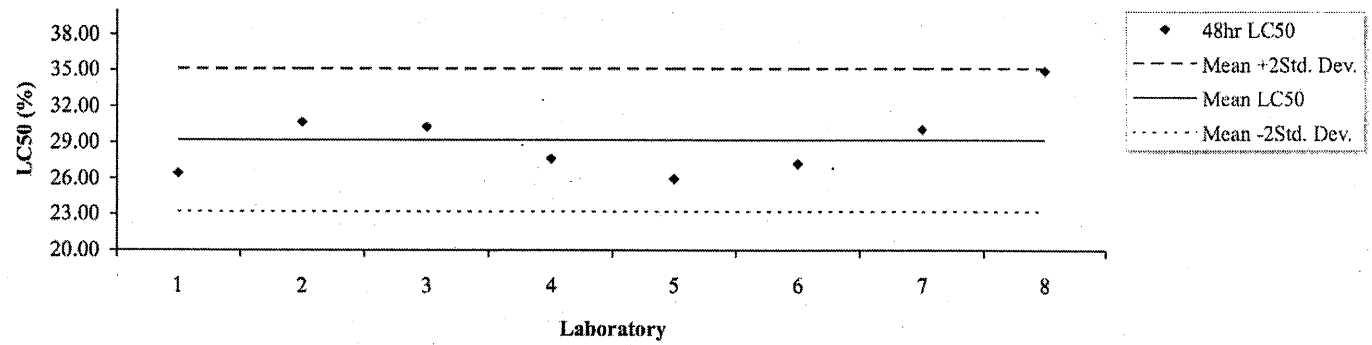

Figure 3: 2010 Performance Evaluation
48hr *Pimephales promelas* LC50 Results Solution C

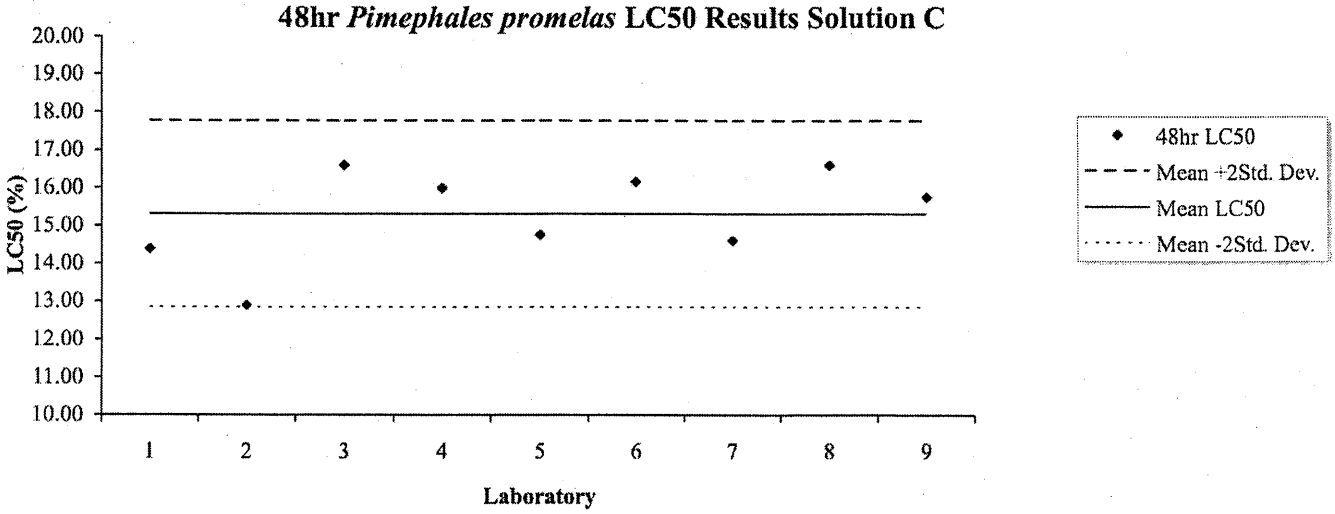

Figure 4: 2010
Performance Evaluation
pH Results Solution D

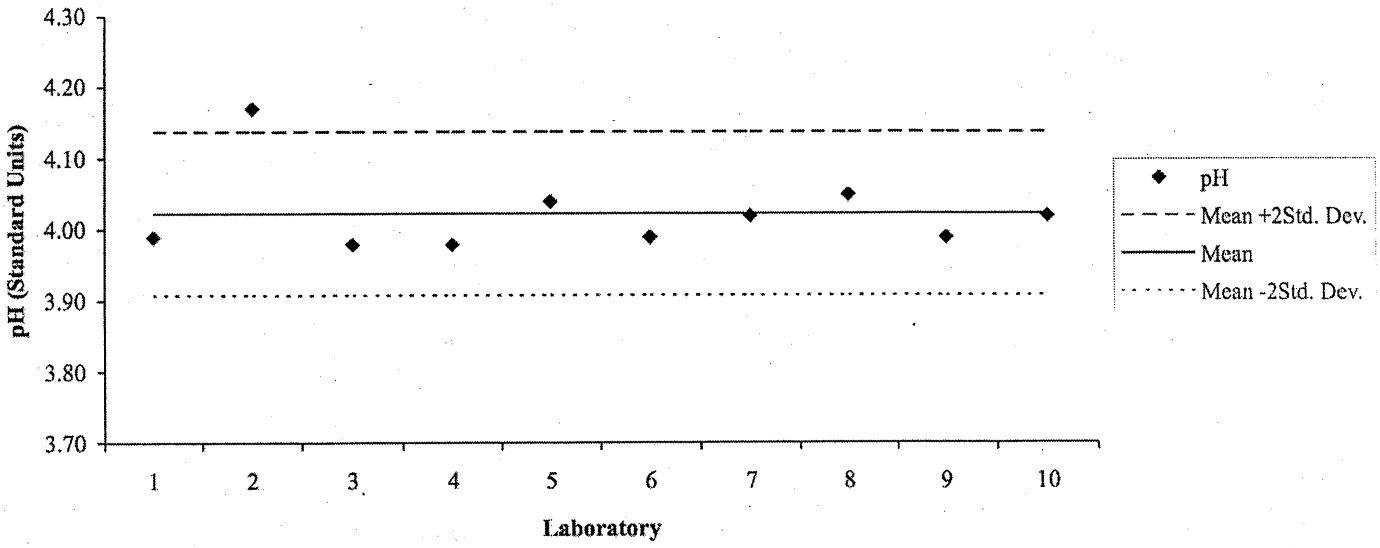

Figure 5: 2010 Performance Evaluation
pH Results Solution E

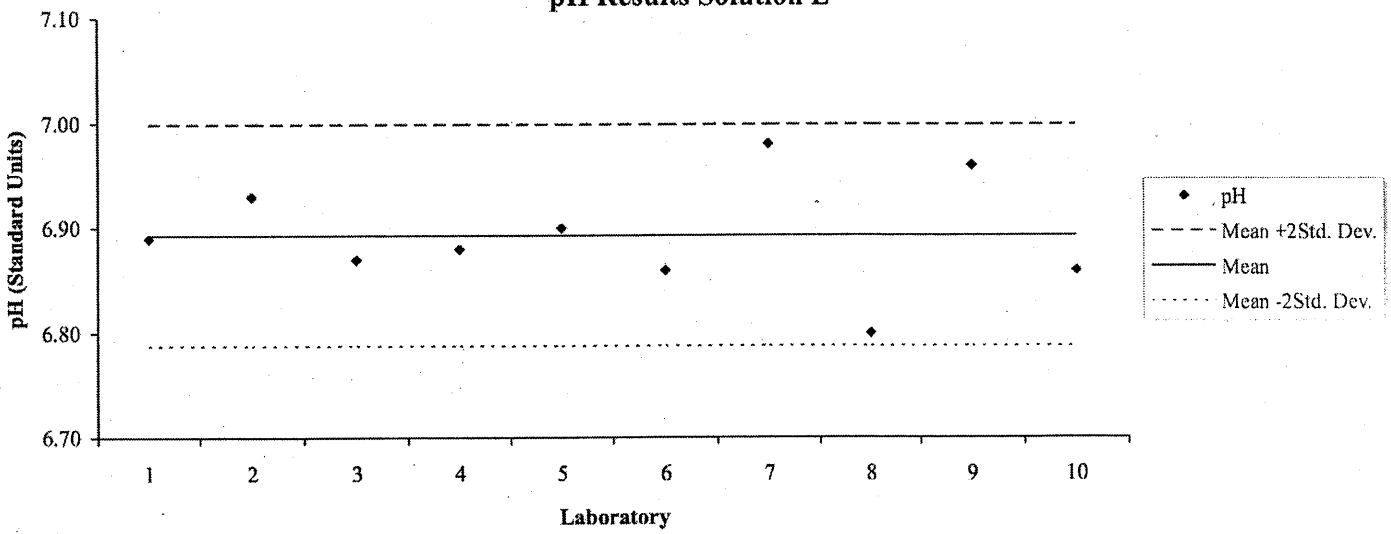

Figure 6: 2010 Performance Evaluation
Conductivity Results Solution F

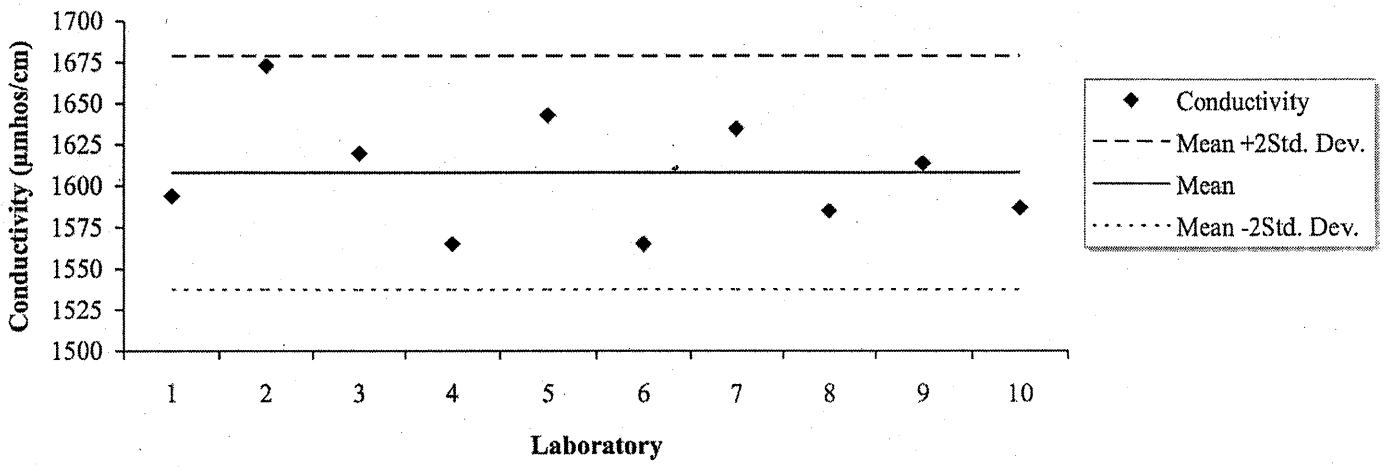

Figure 7: 2010 Performance Evaluation
Conductivity Results Solution G

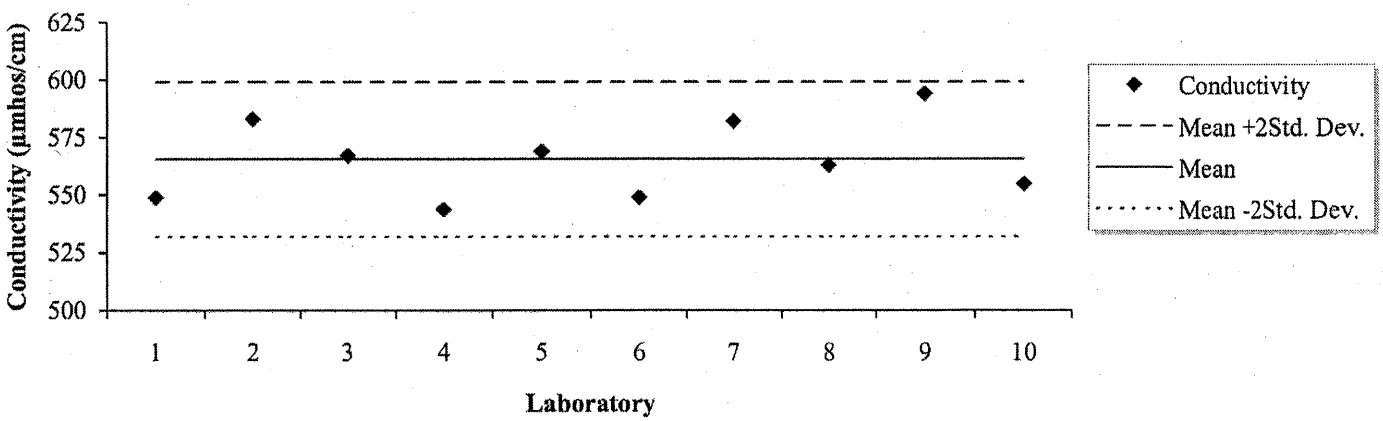

Figure 8: 2010 Performance Evaluation
Hardness Results Solution H

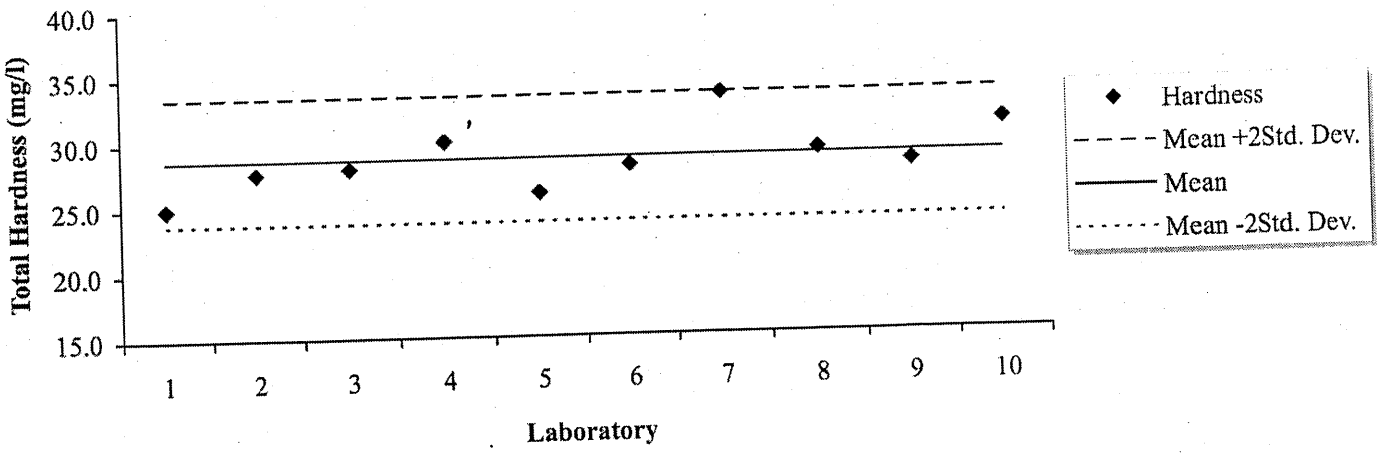

Figure 9: 2010 Performance Evaluation
Hardness Results Solution I