Toxicity Identification Evaluation for Chevron USA Inc and Cawelo Water District Produced Water Reclamation Project, Kern River Station 36

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CHEVRON
ENERGY TECHNOLOGY COMPANY

Chronic Toxicity Testing of Chevron/Cawelo Water District Nearby Water Samples

Samples collected January 11, 2010

Prepared For:

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May 2010

PACIFIC ECORISK
ENVIRONMENTAL CONSULTING & TESTING

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1. INTRODUCTION

Chevron USA Inc. and Cawelo Water District (Chevron/Cawelo) have contracted Pacific EcoRisk (PER) to evaluate the chronic toxicity of waters from five nearby locations (designated Valley Waste, Outlet to Canals, Pre-Poso Creek, Splitter Box, and Wetlands). The evaluation of these five water samples consisted of performing the following US EPA chronic toxicity tests:

- 96-hour algal growth test with the green alga *Selenastrum capricornutum;*
- 3-brood (6-8-day) survival and reproduction test with the crustacean *Ceriodaphnia dubia;* and
- 7-day survival and growth test with larval fathead minnows (*Pimephales promelas*).

This testing was performed using nearby water samples that were collected on January 11, 2010. In order to assess the sensitivity of the test organisms to chronic toxic stress, reference toxicant tests were also performed. This report describes the performance and results of these nearby water and reference toxicant tests.

2. TOXICITY TEST PROCEDURES

The methods used in conducting these tests followed EPA testing manual "Short-Term Methods for Estimating the Chronic Effects of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition" (EPA-821-R-02-013).

2.1 Sample Receipt and Handling

On January 11, Precision Analytical staff collected water samples from the five designated locations into appropriately cleaned sample containers. These samples were transported by courier that same day, on ice and under chain-of-custody, to the PER laboratory in Fairfield. Upon receipt at the testing laboratory, aliquots of the samples were collected for analysis of initial water quality characteristics (Table 1), with the remainder of the samples being stored at 0-6°C except when being used to prepare test solutions. The chain-of-custody records for the collection and delivery of these samples are provided in Appendix A.

Table 1. Initial water quality characteristics of the Chevron/Cawelo water samples.

Sample Receipt Date	Sample ID	Temp (°C)	pH	D.O. (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)	Conductivity (µS/cm)	Total Ammonia (mg/L N)
1/11/10	Valley Waste	0.5	7.58	5.7	344	43	903	1.5
1/11/10	Outlet to Canals	0.3	7.24	5.7	215	76	771	<1.0
1/11/10	Pre-Poso Creek	1.2	7.18	5.7	220	86	757	<1.0
1/11/10	Splitter Box	1.0	7.01	5.0	212	71	781	<1.0
1/11/10	Wetlands	0.3	7.69	10.1	225	80	803	<1.0

2.2 Algal Growth Toxicity Testing with *Selenastrum capricornutum*

The chronic algal toxicity test consists of a 96-hr bioassay in which the green alga *Selenastrum capricornutum* is exposed to water sample and the effects on cellular reproduction determined. The specific procedures used in these tests are described below.

The Lab Water Control for these tests consisted of Type 1 lab water (reverse osmosis, de-ionized water). Aliquots of the Lab Water Control and the water samples were spiked with nutrients and then filtered (using sterile 0.45 μm filters) before use in the algal test, as per EPA guidelines. The nutrient-amended, filtered Lab Water Control and water samples were used to prepare test solutions at the 12.5, 25, 50, 75, and 100% concentrations for each of the water samples. Routine water quality characteristics (pH, D.O., and conductivity) were measured on these test solutions prior to their use in these tests.

There were 4 replicates for each test treatment, each consisting of a 250-mL glass Erlenmeyer flask containing 100 mL of test solution. Each flask was inoculated to an initial cell density of 10,000 cells/mL of *Selenastrum* from an ongoing PER laboratory culture that is maintained in log growth phase. These flasks were loosely capped and randomly positioned within a temperature-controlled room at 25°C, under continuous cool-white fluorescent illumination. Each replicate flask was shaken a minimum of 3 times daily. The temperature and pH were determined daily for the designated "water quality" replicate at each treatment.

After 96 ($\pm$2) hrs exposure, the algal cell density in each replicate flask was determined by spectrophotometric analysis. The resulting cell density data were analyzed to evaluate any impairment of algal growth caused by the water samples; all statistical analyses were performed using the CETIS® statistical software.

2.2.1 Reference Toxicant Testing of the *Selenastrum capricornutum*

In order to assess the sensitivity of the *Selenastrum* to toxic stress, a concurrent reference toxicant test was performed. The reference toxicant test was performed similarly to the effluent test except that test solutions consisted of Lab Water Control media spiked with NaCl at concentrations of 0.5, 1, 2, 4, and 8 gm/L. The resulting test response data were statistically analyzed to determine key dose-response point estimates (e.g., IC_{50}); all statistical analyses were made using the CETIS® software. These response endpoints were then compared to the "typical response" range established by the mean ± 2 SD of the point estimates generated by the most recent previous reference toxicant tests performed by this lab.

2.3 Survival and Reproduction Toxicity Testing with *Ceriodaphnia dubia*

The short-term chronic *Ceriodaphnia* test consists of exposing individual females to the water sample for the length of time it takes for the Lab Control treatment females to produce 3 broods

(typically 6-8 days), after which effects on survival and reproduction are evaluated. The specific procedures used in these tests are described below.

The Lab Water Control for these tests consisted of a mixture of Type 1 lab water and a commercial spring water (Perrier®). The Lab Water Control and water samples were used to prepare test solutions at the 12.5, 25, 50, 75, and 100% concentrations for each of the water samples (Note – the Splitter Box and Wetlands water samples were tested at the 100% concentration only). For each treatment, 200 mL of test solution was amended with the alga *Selenastrum capricornutum* and Yeast-Cerophyll®-Trout Food (YCT) to provide food for the test organisms. "New" water quality characteristics (pH, D.O., and conductivity) were measured on these food-amended test solutions prior to use in this test. Each day of the tests, fresh test solutions and a "new" set of replicate cups were prepared and characterized, as before.

There were 10 replicates for each test treatment, each replicate consisting of 15 mL of test solution in a 30-mL plastic cup. The tests were initiated by allocating one neonate (<24 hrs old) *Ceriodaphnia*, obtained from ongoing laboratory cultures, into each replicate. The replicate cups were placed into a temperature-controlled room at 25°C, under cool-white fluorescent lighting on a 16L:8D photoperiod.

Each test replicate cup was examined daily, with surviving "original" individual organisms being transferred to the corresponding new cup containing fresh test solution. The contents of each remaining "old" replicate cup were carefully examined, and the number of neonate offspring produced by each original organism was determined, after which "old" water quality characteristics (pH, D.O., and conductivity) were measured for the "old" media from one randomly-selected replicate at each treatment.

After it was determined that ≥60% of the *Ceriodaphnia* in the Lab Water Control treatment had produced their third brood of offspring, the accompanying water sample test was terminated. The resulting survival and reproduction (number of offspring) data were analyzed to evaluate any impairment(s) caused by the water samples; all statistical analyses were performed using the CETIS® statistical software.

2.3.1 Reference Toxicant Testing of the *Ceriodaphnia dubia*

In order to assess the sensitivity of the *Ceriodaphnia* test organisms to toxic stress, a concurrent reference toxicant test was performed. The reference toxicant test was performed similarly to the effluent test except that test solutions consisted of Lab Water Control media spiked with NaCl at test concentrations of 500, 1000, 1500, 2000, and 2500 mg/L. The resulting test response data were statistically analyzed to determine key dose-response point estimates (e.g., EC_{50}); all statistical analyses were made using the CETIS® software. These response endpoints were then compared to the "typical response" ranges established by the mean ± 2 SD of the point estimates generated by the most recent previous reference toxicant tests performed by this lab.

2.4 Survival and Growth Toxicity Testing with Larval Fathead Minnows

The chronic fathead minnow test consists of exposing larval fish to the water sample for 7 days, after which effects on survival and growth are evaluated. The specific procedures used in these tests are described below.

The Lab Water Control for this test consisted of USEPA synthetic moderately-hard water (prepared by addition of ACS-reagent grade chemicals to Type 1 lab water). The Lab Water Control and water samples were used to prepare test solutions at the 12.5, 25, 50, 75, and 100% concentrations for each of the water samples (Note – the Splitter Box and Wetlands water samples were tested at the 100% concentration only). Fresh test solutions were prepared daily. "New" water quality characteristics (pH, D.O., and conductivity) were measured on these test solutions prior to use in the tests.

There were 4 replicates at each test treatment, each replicate consisting of 400 mL of test media in a 600-mL glass beaker. These tests were initiated by randomly allocating 10 larval fathead minnows (<48 hrs old) into each replicate. The replicate beakers were placed in a temperature-controlled room at 25°C, under cool-white fluorescent lighting on a 16L:8D photoperiod. The test fish were fed brine shrimp nauplii twice daily.

Each replicate was examined daily, with any dead animals, uneaten food, wastes, and other detritus being removed. The number of live fish in each replicate was determined and then approximately 80% of the test media in each beaker was carefully poured out and replaced with fresh test solution. "Old" water quality characteristics (pH, D.O., and conductivity) were measured on the old test water that had been discarded from one randomly-selected replicate at each treatment.

After 7 days exposure, the number of live fish in each replicate beaker was recorded. The fish from each replicate were then carefully euthanized in methanol, rinsed in de-ionized water, and transferred to a pre-dried and pre-tared weighing pan. These fish were then dried at 100°C for >24 hrs and re-weighed to determine the total weight of fish in each replicate; the total weight was then divided by the initial number of fish per replicate (n=10) to determine the "biomass value". The resulting survival and growth ("biomass value") data were analyzed to evaluate any impairment(s) caused by the water samples; all statistical analyses were performed using the CETIS® statistical software.

2.4.1 Reference Toxicant Testing of the Larval Fathead Minnows

In order to assess the sensitivity of the fish to toxic stress, a concurrent reference toxicant test was performed. The reference toxicant test was performed similarly to the effluent test, except that test solutions consisted of Lab Water Control media spiked with NaCl at test concentrations of 0.75, 1.5, 3, 6, and 9 gm/L. The resulting test response data were analyzed to determine key dose-response point estimates (e.g., EC_{50}); all statistical analyses were made using the CETIS®

software. These response endpoints were then compared to the "typical response" ranges established by the mean ± 2 SD of the point estimates generated by the most recent previous reference toxicant tests performed by this lab.

3. RESULTS

3.1 Chronic Toxicity of the Valley Waste Water

3.1.1 Effects of the Valley Waste Water on *Selenastrum capricornutum*

The results of this test are summarized below in Table 2. There was a mean final algal cell density of 2,010,000 cells/mL at the Lab Water Control treatment. There were significant reductions in algal cell density in the ≥50% water concentrations; the NOEC was 25% water, resulting in 4.0 TUc (where TUc =100/NOEC).

The test data and summary of statistical analyses for this test are presented in Appendix B.

Table 2. Effects of the Valley Waste water on *Selenastrum capricornutum* growth.

Water Treatment	Mean Cell Density (cells/mL x 10^6)
Lab Control	2.01
12.5%	2.74
25%	2.41
50%	**1.28***
75%	**0.28***
100%	**0.08***
Summary of Statistics	
NOEC =	25% Valley Waste water
TUc (where TUc = 100/NOEC) =	4
Growth IC_{25} =	36% Valley Waste water
Growth IC_{50} =	52% Valley Waste water

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

3.1.2 Effects of the Valley Waste Water on *Ceriodaphnia dubia*

The results of this test are summarized below in Table 3. There was 100% survival in the Lab Water Control treatment. There were ***no*** significant reductions in survival in the Valley Waste water; the survival NOEC was 100% water, resulting in 1 TUc (where TUc =100/NOEC).

There was a mean of 31.8 offspring per female in the Lab Water Control treatment. There were significant reductions in reproduction in the ≥50% water concentrations; the reproduction NOEC was 25% water, resulting in 4 TUc (where TUc =100/NOEC).

The test data and summary of statistical analyses for this test are presented in Appendix C.

Table 3. Effects of the Valley Waste water on *Ceriodaphnia dubia* survival and reproduction.

Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Control	100	31.8
12.5%	100	35.9
25%	100	30.9
50%	100	**16.5***
75%	100	**2.5***
100%	100	**0.4***
Summary of Statistics		
No Observable Effect Concentration (NOEC) =	100% water	25% water
TUc (where TUc = 100/NOEC) =	1	4
Survival EC_{25} or Reproduction IC_{25} =	>100% water[a]	33% water
Survival EC_{50} or Reproduction IC_{50} =	>100% water[a]	49% water

* - The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% water.

3.1.3 Effects of the Valley Waste Water on Fathead Minnows

The results of this test are summarized below in Table 4. There was 92.5% survival at the Lab Water Control treatment. There were significant reductions in survival in the ≥50% Valley Waste water concentrations; the survival NOEC was 25% water, resulting in 4 TUc (where TUc =100/NOEC).

There was a mean 'biomass value' of 0.29 mg at the Lab Water Control treatment. There were significant reductions in growth at the 25% water concentration; the growth NOEC was 12.5% water, resulting in 8 TUc (where TUc =100/NOEC).

The test data and the summary of statistical analyses for this test are presented in Appendix D.

Table 4. Effects of the Valley Waste water on fathead minnow survival and growth.

Water Treatment	% Survival	Mean Fish Biomass Value (mg)
Lab Water Control	92.5	0.29
12.5%	95	0.25
25%	92.5	**0.24***
50%	**44.4***	0.10
75%	**10***	0.01
100%	**0***	-
Summary of Statistics		
No Observable Effect Concentration (NOEC) =	25% water	12.5% water
TUc (where TUc = 100/NOEC) =	4	8
Survival EC_{25} or Growth IC_{25} =	41% water	28% water
Survival EC_{50} or Growth IC_{50} =	50% water	40% water

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

3.2 Chronic Toxicity of the Outlet to Canals Water

3.2.1 Effects of the Outlet to Canals Water on *Ceriodaphnia dubia*

The results of this test are summarized below in Table 5. There was 100% survival in the Lab Water Control treatment. There were no significant reductions in survival in the Outlet to Canals water; the survival NOEC was 100% water, resulting in 1 TUc (where TUc =100/NOEC).

There was a mean of 36.5 offspring per female in the Lab Water Control treatment. There were significant reductions in reproduction in the 100% Outlet to Canals water concentration; the reproduction NOEC was 75% water, resulting in 1.3 TUc (where TUc =100/NOEC).

The test data and summary of statistical analyses for this test are presented in Appendix E.

Table 5. Effects of the Outlet to Canals water on *Ceriodaphnia dubia* survival and reproduction.

Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Control	100	36.5
12.5%	100	39.5
25%	100	41.0
50%	90	35.5
75%	100	32.7
100%	100	**20.3***
Summary of Statistics		
No Observable Effect Concentration (NOEC) =	100% water	75% water
TUc (where TUc = 100/NOEC) =	1	1.3
Survival EC_{25} or Reproduction IC_{25} =	>100% water[a]	81% water
Survival EC_{50} or Reproduction IC_{50} =	>100% water[a]	>100% water

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% water.

3.2.2 Effects of the Outlet to Canals Water on Fathead Minnows

The results of this test are summarized below in Table 6. There was 100% survival at the Lab Water Control treatment. There were significant reductions in survival in the ≥50% Outlet to Canals water concentrations; the survival NOEC was 25% water, resulting in 4 TUc (where TUc =100/NOEC).

There was a mean 'biomass value' of 0.33 mg at the Lab Water Control treatment. There were significant reductions in growth at the 25% Outlet to Canals water concentration; the growth NOEC was 12.5% water, resulting in 8 TUc (where TUc =100/NOEC).

The test data and the summary of statistical analyses for this test are presented in Appendix F.

Table 6. Effects of the Outlet to Canals water on fathead minnow survival and growth.

Water Treatment	% Survival	Mean Fish Biomass Value (mg)
Lab Water Control	100	0.33
12.5%	100	0.31
25%	90	**0.25***
50%	**12.5***	0.03
75%	**0***	-
100%	**0***	-
Summary of Statistics		
No Observable Effect Concentration (NOEC) =	25% water	12.5% water
TUc (where TUc = 100/NOEC) =	4	8
Survival EC_{25} or Growth IC_{25} =	30% water	25% water
Survival EC_{50} or Growth IC_{50} =	36% water	33% water

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

3.3 Chronic Toxicity of the Pre-Poso Creek Water

3.3.1 Effects of the Pre-Poso Creek Water on *Selenastrum capricornutum*

The results of this test are summarized below in Table 7. There was a mean final algal cell density of 2,070,000 cells/mL at the Lab Water Control treatment. There were ***no*** significant reductions in algal cell density in the Pre-Poso Creek water; the NOEC was 100% water, resulting in 1 TUc (where TUc =100/NOEC).

The test data and summary of statistical analyses for this test are presented in Appendix G.

Table 7. Effects of the Pre-Poso Creek water on *Selenastrum capricornutum* growth.

Water Treatment	Mean Cell Density (cells/mL x 10^6)
Lab Control	2.07
12.5%	2.79
25%	2.96
50%	3.10
75%	3.11
100%	2.51
Summary of Statistics	
NOEC =	100% water
TUc (where TUc = 100/NOEC) =	1
Growth IC_{25} =	>100% water
Growth IC_{50} =	>100% water

3.3.2 Effects of the Pre-Poso Creek Water on *Ceriodaphnia dubia*

The results of this test are summarized below in Table 8. There was 100% survival in the Lab Water Control treatment. There were **no** significant reductions in survival in the Pre-Poso Creek water; the survival NOEC was 100% water, resulting in 1 TUc (where TUc =100/NOEC).

There was a mean of 36.2 offspring per female in the Lab Water Control treatment. There were significant reductions in reproduction in the 100% Pre-Poso Creek water concentration; the reproduction NOEC was 75% water, resulting in 1.3 TUc (where TUc =100/NOEC).

The test data and summary of statistical analyses for this test are presented in Appendix H.

Table 8. Effects of the Pre-Poso Creek water on *Ceriodaphnia dubia* survival and reproduction.

Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Control	100	36.2
12.5%	100	37.4
25%	90	42.0
50%	100	38.6
75%	100	34.6
100%	90	**20.4***
Summary of Statistics		
No Observable Effect Concentration (NOEC) =	100% water	75% water
TUc (where TUc = 100/NOEC) =	1	1.3
Survival EC_{25} or Reproduction IC_{25} =	>100% water[a]	84% water
Survival EC_{50} or Reproduction IC_{50} =	>100% water[a]	>100% water

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% water.

3.3.3 Effects of the Pre-Poso Creek Water on Fathead Minnows

The results of this test are summarized below in Table 9. There was 100% survival at the Lab Water Control treatment. There were significant reductions in survival in the ≥50% Pre-Poso Creek water concentrations; the survival NOEC was 25% water, resulting in 4 TUc (where TUc =100/NOEC).

There was a mean 'biomass value' of 0.32 mg at the Lab Water Control treatment. There were significant reductions in growth at 25% Pre-Poso Creek water concentration; the growth NOEC was 12.5% water, resulting in 8 TUc (where TUc =100/NOEC).

The test data and the summary of statistical analyses for this test are presented in Appendix I.

Table 9. Effects of the Pre-Poso Creek water on fathead minnow survival and growth.

Water Treatment	% Survival	Mean Fish Biomass Value (mg)
Lab Water Control	100	0.32
12.5%	97.5	0.32
25%	85	**0.25***
50%	**37.5***	0.06
75%	**0***	-
100%	**0***	-
Summary of Statistics		
No Observable Effect Concentration (NOEC) =	25% water	12.5% water
TUc (where TUc = 100/NOEC) =	4	8
Survival EC_{25} or Growth IC_{25} =	29% water	26% water
Survival EC_{50} or Growth IC_{50} =	38% water	35% water

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

3.4 Chronic Toxicity of the Splitter Box Water

3.4.1 Effects of the Splitter Box Water on *Ceriodaphnia dubia*

The results of this test are summarized below in Table 10. There was 100% survival in the Lab Water Control treatment. There were ***no*** significant reductions in survival in the Splitter Box water; the survival NOEC was 100% water, resulting in 1 TUc (where TUc =100/NOEC).

There was a mean of 33.5 offspring per female in the Lab Water Control treatment. There were significant reductions in reproduction in the Splitter Box water; the reproduction NOEC was <100% water, resulting in >1 TUc (where TUc =100/NOEC).

The test data and summary of statistical analyses for this test are presented in Appendix J.

Table 10. Effects of the Splitter Box water on *Ceriodaphnia dubia* survival and reproduction.

Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Water Control	100	33.5
100% Splitter Box	100	**21.7***
Summary of Statistics		
No Observable Effect Concentration (NOEC) =	100% water	<100% water
TUc (where TUc = 100/NOEC) =	1	>1

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

3.4.2 Effects of Splitter Box Water on Fathead Minnows

The results of this test are summarized below in Table 11. There was 90% survival at the Lab Water Control treatment. There were significant reductions in survival in the Splitter Box water; the survival NOEC was <100% water, resulting in >1 TUc (where TUc =100/NOEC).

The test data and the summary of statistical analyses for this test are presented in Appendix K.

Table 11. Effects of Splitter Box water on fathead minnow survival and growth.

Water Treatment	% Survival	Mean Fish Biomass Value (mg)
Lab Water Control	90	0.30
100% Splitter Box	**0***	-
Summary of Statistics		
No Observable Effect Concentration (NOEC) =	<100% water	not evaluated
TUc (where TUc = 100/NOEC) =	>1	not evaluated

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

3.5 Chronic Toxicity of the Wetlands Water

3.5.1 Effects of the Wetlands Water on *Ceriodaphnia dubia*

The results of this test are summarized below in Table 12. There was 100% survival and a mean of 33.5 offspring per female in the Lab Water Control treatment. There were ***no*** significant reductions in survival or reproduction in the Wetlands water; the NOEC was 100% water for both test endpoints, resulting in 1 TUc.

The test data and summary of statistical analyses for this test are presented in Appendix L.

Table 12. Effects of the Wetlands water on *Ceriodaphnia dubia* survival and reproduction.

Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Control	100	33.5
100% Wetlands	100	33.1
Summary of Statistics		
No Observable Effect Concentration (NOEC) =	100% water	100% water
TUc (where TUc = 100/NOEC) =	1	1

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

3.5.2 Effects of Wetlands Water on Fathead Minnows

The results of this test are summarized below in Table 13. There was 90% survival at the Lab Water Control treatment. There were no significant reductions in survival in the Wetlands water; the survival NOEC was 100% water, resulting in 1 TUc.

There was a mean 'biomass value' of 0.30 mg at the Lab Water Control treatment. There were significant reductions in growth in the Wetlands water; the growth NOEC was <100% water, resulting in >1 TUc (where TUc =100/NOEC).

The test data and the summary of statistical analyses for this test are presented in Appendix M.

Table 13. Effects of Wetlands water on fathead minnow survival and growth.

Water Treatment	% Survival	Mean Fish Biomass Value (mg)
Lab Water Control	90	0.30
100% Wetlands	80	**0.24***
Summary of Statistics		
No Observable Effect Concentration (NOEC) =	100% water	<100% water
TUc (where TUc = 100/NOEC) =	1	>1

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

3.6 Results of Reference Toxicant Testing

3.6.1 Reference Toxicant Toxicity to *Selenastrum capricornutum*

The results of this test are summarized below in Table 14. There was a mean of 2,210,000 cells/mL in the Lab Control treatment. The IC_{50} was 1.6 gm/L NaCl.

These reference toxicant test results are consistent with the "typical response" range established by previous *Selenastrum* reference toxicant tests performed in this laboratory, indicating that these organisms were responding to toxic stress in a typical fashion.

The test data and summary of statistical analyses for this test are presented in Appendix N.

Table 14. Reference toxicant testing: Effects of NaCl on *Selenastrum capricornutum*.

NaCl Treatment (gm/L)	Mean Algal Density (cells/mL x 10^6)
Lab Water Control	2.21
0.5	**1.84***
1	**1.42***
2	**0.90***
4	**0.13***
8	**0.06***
Summary of Statistics	
IC_{50} = 1.6 gm/L NaCl	

* Significantly less than the Lab Control treatment response at $p < 0.05$.

3.6.2 Reference Toxicant Toxicity to *Ceriodaphnia dubia*

The results for this test are summarized below in Table 15. There was 100% survival and a mean of 25.9 offspring in the Lab Water Control treatment. The survival EC_{50} was 1730 mg/L NaCl, and the reproduction IC_{50} was 1190 mg/L NaCl.

The results for the reference toxicant test were consistent with the "typical response" ranges established by the mean ± 2 SD of the point estimates generated by the most recent previous reference toxicant tests performed by this lab, indicating that these test organisms were responding to toxic stress in a typical fashion.

The test data and summary of statistical analyses for this test are presented in Appendix O.

Table 15. Reference toxicant testing: Effects of NaCl on *Ceriodaphnia dubia*.

NaCl Treatment (mg/L)	% Survival	Reproduction (# neonates/female)
Lab Water Control	100	25.9
500	100	22.5
1000	100	**16.2***
1500	100	**8.8***
2000	**0***	-
2500	**0***	-
Summary of Statistics		
Survival EC_{50} or Reproduction IC_{50} =	1730 mg/L NaCl	1190 mg/L NaCl

* Significantly less than the Lab Control treatment response ($p < 0.05$).

3.6.3 Reference Toxicant Toxicity to Fathead Minnows

The results of this test are summarized below in Table 16. There was 97.5% survival and a mean biomass value of 0.24 mg at the Lab Water Control treatment. The survival EC_{50} was 3.7 gm/L NaCl and the growth IC_{50} was 3.6 gm/L NaCl.

The results for this reference toxicant test were consistent with the "typical response" ranges established by the mean ± 2 SD of the point estimates generated by the most recent previous reference toxicant tests performed by this lab, indicating that these test organisms were responding to toxic stress in a typical fashion.

The test data and summary of statistical analyses for this test are presented in Appendix P.

Table 16. Reference toxicant testing: effects of NaCl on fathead minnows.

NaCl Treatment (gm/L)	% Survival	Mean Fish Biomass Value (mg)
Lab Water Control	97.5	0.24
0.75	92.5	0.23
1.5	77.5	0.20
3	**72.5***	**0.16**
6	**2.5***	-
9	**0***	-
Summary of Statistics		
Survival EC_{50} or Growth IC_{50} =	3.7 gm/L NaCl	3.6 gm/L NaCl

* Significantly less than the Lab Control treatment response ($p < 0.05$).

4. SUMMARY AND CONCLUSIONS

Valley Waste Water

Effects of Valley Waste Water on *Selenastrum capricornutum*
There were significant reductions in algal cell density in the ≥50% Valley Waste water concentrations; the NOEC was 25% water, resulting in 4 TUc.

Effects of Valley Waste Water on *Ceriodaphnia dubia*
There were ***no*** significant reductions in survival in the Valley Waste water; the survival NOEC was 100% water, resulting in 1.0 TUc. There was a significant reduction in reproduction in the ≥50% Valley Waste water concentrations; the reproduction NOEC was 25% water, resulting in 4 TUc.

Effects of Valley Waste Water on Fathead Minnows
There were significant reductions in survival in the ≥50% Valley Waste water concentrations; the survival NOEC was 25% water, resulting in 4 TUc. There were additional significant reductions in growth in the 25% Valley Waste water concentration; the reproduction NOEC was 12.5% water, resulting in 8 TUc.

Outlet to Canals Water

Effects of Outlet to Canals Water on *Ceriodaphnia dubia*
There were ***no*** significant reductions in survival in the Outlet to Canals water; the survival NOEC was 100% water, resulting in 1.0 TUc. There was a significant reduction in reproduction in the 100% Outlet to Canals water concentration; the reproduction NOEC was 75% water, resulting in 1.3 TUc.

Effects of Outlet to Canals Water on Fathead Minnows
There were significant reductions in survival in the ≥50% Outlet to Canals water; the survival NOEC was 25% water, resulting in 4 TUc. There were additional significant reductions in growth in the 12.5% and 25% Outlet to Canals water concentrations; the growth NOEC was 12.5% water, resulting in 8 TUc.

Pre-Poso Creek Water

Effects of Pre-Poso Creek Water on *Selenastrum capricornutum*
There were ***no*** significant reductions in algal cell density in the Pre-Poso Creek water; the NOEC was 100% water, resulting in 1 TUc.

Effects of Pre-Poso Creek Water on *Ceriodaphnia dubia*
There were ***no*** significant reductions in survival in the Pre-Poso Creek water; the survival NOEC was 100% water, resulting in 1 TUc. There was a significant reduction in reproduction in the 100% Pre-Poso Creek water concentration; the reproduction NOEC was 75% water, resulting in 4 TUc.

Effects of Pre-Poso Creek Water on Fathead Minnows
There were significant reductions in survival in the ≥50% Pre-Poso Creek water concentrations; the survival NOEC was 25% water, resulting in 4 TUc. There were additional significant reductions in growth in the 25% Pre-Poso Creek water concentration; the growth NOEC was 12.5% water, resulting in 8 TUc.

Splitter Box Water

Effects of Splitter Box Water on *Ceriodaphnia dubia*
There were ***no*** significant reductions in survival in the Splitter Box water; the survival NOEC was 100% water, resulting in 1 TUc. There was a significant reduction in reproduction in the 100% Splitter Box water; the reproduction NOEC was <100% water, resulting in >1 TUc.

Effects of Splitter Box Water on Fathead Minnows
There were significant reductions in survival in the Splitter Box water; the survival NOEC was <100% water, resulting in >1 TUc.

Wetlands Water

Effects of Wetlands Water on *Ceriodaphnia dubia*
There were ***no*** significant reductions in survival or growth in the Wetlands water. The NOEC was 100% for both test endpoints, resulting in 1 TUc.

Effects of Wetlands Water on Fathead Minnows
There were ***no*** significant reductions in survival in the Wetlands water; the survival NOEC was 100% water, resulting in 1 TUc. There were significant reductions in growth in the Wetlands water; the growth NOEC was <100% water, resulting in >1 TUc.

4.1 QA/QC Summary

Test Conditions – Test conditions (pH, D.O., temperature, etc.) were all within acceptable limits for these tests. All analyses were performed according to laboratory Standard Operating Procedures.

Negative Lab Control – The biological responses in the Lab Water Control treatments for these tests were within acceptable limits.

Positive Control – The results for the reference toxicant tests were consistent with the reference toxicant test database, indicating that these test organisms were responding to toxic stress in a typical fashion.

Concentration Response Relationships – There were valid concentration-response relationships for the reference toxicant tests, which were determined to be acceptable for this testing.

Appendix A

Chain-of-Custody Records for the Collection and Delivery of the Chevron/Cawelo Water District Nearby Water Samples

CHAIN OF CUSTODY RECORD

PACIFIC ECORISK
2250 Cordelia Rd
Fairfield, CA 94534
Ph: (707) 207-7760
Fax: (707) 207-7916
www.pacificecorisk.com

RESULTS TO: PACIFIC ECORISK
Attn:
Phone:
Email:

BILL TO: PRECISION ANALYTICAL
321 19TH ST.
BAKERSFIELD, CA 93301
Attn: ACCOUNTS PAYABLE
Phone: 661-323-1682
Email: Sharris@palab-inc.com

PROJECT:

ANALYSES REQUESTED

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE MATRIX	GRAB/ COMP.	# CONTAINERS/TYPE	REMARKS
INLET TO RES. B	01/11/09	~~8:00~~ 7:30	W	GRAB	20 / PLASTIC	#1
* VALLEY WASTE	↓	8:40	↓	↓	4 / PLASTIC	#2
OUTLET TO CANAL	↓	9:20	↓	↓	4 / PLASTIC	#3
* PRE-POSO CREEK	↓	9:55	↓	↓	4 / PLASTIC	#4
SPLITTER BOX	↓	11:00	↓	↓	2 / PLASTIC	#5
* WETLANDS	01/11/09	12:30	↓	↓	2 / PLASTIC	#6
					/	
					/	

METHOD OF SHIPMENT: FedEx:____ UPS:____ HAND:____ OTHER: CONTRACT CARRIER

COMMENTS:

CODES:

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	PAGE #
[signature]	1/11/09	13:55	[signature]	1-11-10	1355	OF
[signature]	1-11-09	1901	[signature]	1/11/10	1901	

WHITE - RETURN W/ SAMPLE YELLOW - KEEP FOR YOUR RECORDS

Appendix B

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Valley Waste Water to *Selenastrum capricornutum*

CETIS Summary Report

Report Date: 28 Jan-10 14:32 (p 1 of 1)
Test Code: 10-1401-2998/37368

Algal Growth Test — Pacific EcoRisk

Batch ID:	18-3285-9785	Test Type:	Cell Growth	Analyst:	Jason Walker
Start Date:	12 Jan-10 16:00	Protocol:	EPA-821-R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	16 Jan-10 15:30	Species:	Selenastrum capricornutum	Brine:	Not Applicable
Duration:	96h	Source:	In-House Culture	Age:	6

Sample ID:	15-4166-7341	Code:	Eff	Client:	Precision Analytical
Sample Date:	11 Jan-10 08:40	Material:	Effluent	Project:	15508
Receive Date:	11 Jan-10 19:01	Source:	Precision Analytical		
Sample Age:	31h (0.5 °C)	Station:	Valley Waste		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
08-1393-5718	96h Cell Density-with EDTA	25	50	35.4	9.45%	4	Steel Many-One Rank Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
13-9019-8413	96h Cell Density-with EDTA	IC5	27	24.9	27.1	3.71	Linear Interpolation (ICPIN)
		IC10	29.1	27	29.4	3.44	
		IC15	31.3	29.1	31.8	3.19	
		IC20	33.7	31.4	34.5	2.96	
		IC25	36.4	33.9	37.4	2.75	
		IC40	45.4	42.2	47.5	2.2	
		IC50	51.8	49.3	53.2	1.93	

96h Cell Density-with EDTA Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	2.01E+6	1.93E+6	2.09E+6	1.72E+6	2.22E+6	3.96E+4	2.17E+5	10.8%	0.0%
12.5		4	2.74E+6	2.68E+6	2.80E+6	2.52E+6	2.86E+6	2.76E+4	1.51E+5	5.52%	-36.3%
25		4	2.41E+6	2.40E+6	2.42E+6	2.38E+6	2.44E+6	4.56E+3	2.50E+4	1.04%	-19.8%
50		4	1.28E+6	1.25E+6	1.30E+6	1.19E+6	1.32E+6	1.12E+4	6.13E+4	4.8%	36.4%
75		4	2.78E+5	2.73E+5	2.82E+5	2.62E+5	2.88E+5	2.09E+3	1.14E+4	4.12%	86.2%
100		4	7.80E+4	7.21E+4	8.39E+4	6.60E+4	1.01E+5	2.88E+3	1.58E+4	20.2%	96.1%

96h Cell Density-with EDTA Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	2.22E+6	2.12E+6	1.98E+6	1.72E+6
12.5		2.52E+6	2.77E+6	2.81E+6	2.86E+6
25		2.38E+6	2.40E+6	2.44E+6	2.41E+6
50		1.32E+6	1.19E+6	1.32E+6	1.28E+6
75		2.77E+5	2.62E+5	2.84E+5	2.88E+5
100		1.01E+5	6.60E+4	7.00E+4	7.50E+4

CETIS Analytical Report

Report Date: 28 Jan-10 14:32 (p 1 of 1)
Test Code: 10-1401-2998/37368

Algal Growth Test — Pacific EcoRisk

Analysis ID:	08-1393-5718	**Endpoint:**	96h Cell Density-with EDTA	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 14:32	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run	25	50	35.4	4	9.45%

Steel Many-One Rank Test

Control vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Lab Water Control	12.5	26	10	0	0.9999	Non-Significant Effect
	25	26	10	0	0.9999	Non-Significant Effect
	50*	10	10	0	0.0417	Significant Effect
	75*	10	10	0	0.0417	Significant Effect
	100*	10	10	0	0.0417	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	2.471778E+13	4.943555E+12	5	397	<0.0001	Significant Effect
Error	2.240888E+11	12449380000	18			
Total	2.494186E+13	4.956004E+12	23			

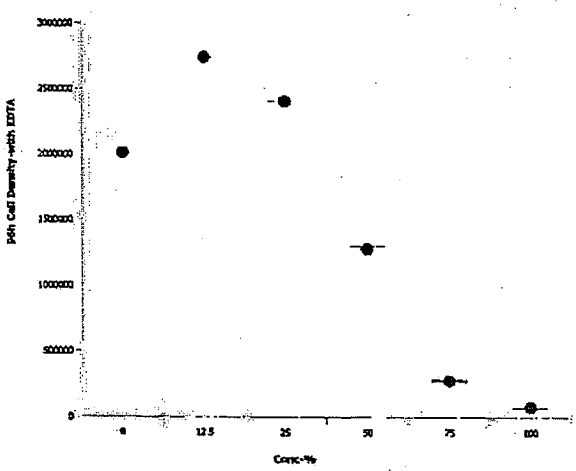
ANOVA Assumptions

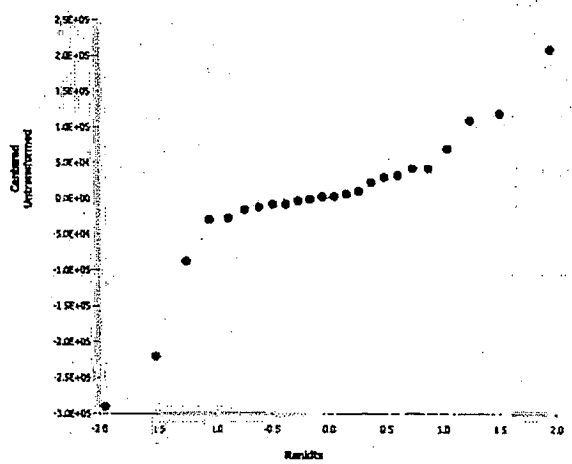
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Bartlett Equality of Variance	28.5	15.1	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.848		0.0020	Non-normal Distribution

96h Cell Density-with EDTA Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	2.01E+6	1.93E+6	2.09E+6	1.72E+6	2.22E+6	4.03E+4	2.17E+5	10.8%	0.0%
12.5		4	2.74E+6	2.68E+6	2.80E+6	2.52E+6	2.86E+6	2.81E+4	1.51E+5	5.52%	-36.3%
25		4	2.41E+6	2.40E+6	2.42E+6	2.38E+6	2.44E+6	4.64E+3	2.50E+4	1.04%	-19.8%
50		4	1.28E+6	1.25E+6	1.30E+6	1.19E+6	1.32E+6	1.14E+4	6.13E+4	4.8%	36.4%
75		4	2.78E+5	2.73E+5	2.82E+5	2.62E+5	2.88E+5	2.12E+3	1.14E+4	4.12%	86.2%
100		4	7.80E+4	7.20E+4	8.40E+4	6.60E+4	1.01E+5	2.93E+3	1.58E+4	20.2%	96.1%

Graphics





CETIS Analytical Report

Report Date: 28 Jan-10 14:32 (p 1 of 1)
Test Code: 10-1401-2998/37368

Algal Growth Test — Pacific EcoRisk

Analysis ID:	13-9019-8413	Endpoint:	96h Cell Density-with EDTA	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 14:32	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	57951	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	27	24.9	27.1	3.71	3.69	4.01
IC10	29.1	27	29.4	3.44	3.4	3.71
IC15	31.3	29.1	31.8	3.19	3.14	3.44
IC20	33.7	31.4	34.5	2.96	2.9	3.19
IC25	36.4	33.9	37.4	2.75	2.68	2.95
IC40	45.4	42.2	47.5	2.2	2.11	2.37
IC50	51.8	49.3	53.2	1.93	1.88	2.03

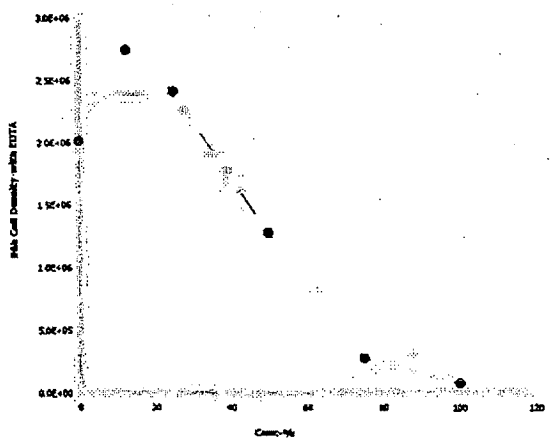
96h Cell Density-with EDTA Summary

			Calculated Variate						
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	2.01E+6	1.72E+6	2.22E+6	3.96E+4	2.17E+5	10.8%	0.0%
12.5		4	2.74E+6	2.52E+6	2.86E+6	2.76E+4	1.51E+5	5.52%	-36.3%
25		4	2.41E+6	2.38E+6	2.44E+6	4.56E+3	2.50E+4	1.04%	-19.8%
50		4	1.28E+6	1.19E+6	1.32E+6	1.12E+4	6.13E+4	4.8%	36.4%
75		4	2.78E+5	2.62E+5	2.88E+5	2.09E+3	1.14E+4	4.12%	86.2%
100		4	7.80E+4	6.60E+4	1.01E+5	2.88E+3	1.58E+4	20.2%	96.1%

96h Cell Density-with EDTA Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Control	2.22E+6	2.12E+6	1.98E+6	1.72E+6
12.5		2.52E+6	2.77E+6	2.81E+6	2.86E+6
25		2.38E+6	2.40E+6	2.44E+6	2.41E+6
50		1.32E+6	1.19E+6	1.32E+6	1.28E+6
75		2.77E+5	2.62E+5	2.84E+5	2.88E+5
100		1.01E+5	6.60E+4	7.00E+4	7.50E+4

Graphics



Selenastrum capricornutum Cell Density Enumeration Data

Client: **P. Analytical - Chevron Cawelo** Initial Count: 10,000 cells/mL

Test Material: Valley Waste Enumerating Scientist: SA

Test Start Date: 1/12/10 Start Time: 1600 Project #: 15508

Test End Date: 1/16/10 End Time: 1530 Test ID #: 37368

Treatment	Rep A	Rep B	Rep C	Rep D	Mean
Lab Water Control	2.22	2.12	1.98	1.72	2.01
12.5%	2.52	2.77	2.81	2.86	2.74
25%	2.38	2.40	2.44	2.41	2.44
50%	1.32	1.19	1.32	1.28	1.28
75%	0.277	0.262	0.284	0.288	0.278
100%	0.101	0.066	0.070	0.075	0.078
This datasheet has been reviewed for completeness and consistency with Test Acceptability Criteria and/or other issues of concern.	**Control Mean Density (cells/mL x 10^6)**	**% CV**	**Date:**	**Time:**	**Signoff:**
	2.01	10.8	1-16-10	1810	JZ

Selenastrum capricornutum Algal Toxicity Test Water Quality Data

Client: P. Analytical - Chevron Cawelo Test ID #: 37368 Test Date: 1/12/10
Test Material: Valley Waste Project #: 15508 Control/Diluent: Lab Water
shelf # R551

Test Treatment	Temp (°C)	pH	D.O. (mg/L)	Conductivity (µS/cm)	Sign-Off
Lab Water Control	25.8	7.49	10.0	119	Date: 1/12/10
12.5% Effluent	25.8	7.80	9.7	224	Sample ID: 22375
25% Effluent	25.8	7.85	9.6	338	Test Solution Prep: SH
50% Effluent	25.8	7.87	9.5	557	New WQ:
75% Effluent	25.8	7.91	9.5	790	Inoculation Time: 1600
100% Effluent	25.8	7.90	8.8	1006	Inoculation Signoff: SH
Meter ID:	31	PH09	RD03	EC04	
Lab Water Control	25.7	~~8.4~~ 7.90			Date: 1/13/10
12.5% Effluent	25.7	7.92			WQ Time: 1145
25% Effluent	25.7	8.06			WQ Signoff: OOB
50% Effluent	25.7	8.28			
75% Effluent	25.7	8.44			
100% Effluent	25.7	8.57			
Meter ID:	47	PH09			
Lab Water Control	25.3	8.18			Date: 01/14/10
12.5% Effluent	25.3	8.46			WQ Time: 10:55
25% Effluent	25.3	8.42			WQ Signoff: SE
50% Effluent	25.3	8.52			
75% Effluent	25.3	8.62			
100% Effluent	25.3	8.72			
Meter ID:	31	PH14			
Lab Water Control	25.5	9.69			Date: 1/15/10
12.5% Effluent	25.5	9.69			WQ Time: 0925
25% Effluent	25.5	9.33			WQ Signoff: HV
50% Effluent	25.5	8.96			
75% Effluent	25.5	8.84			
100% Effluent	25.5	8.93			
Meter ID:	31	PH09			
Lab Water Control	25.4	10.05	12.6	127	Date: 1/16/10
12.5% Effluent	25.4	10.31	17.8	253	Termination Time: 1530
25% Effluent	25.4	9.98	19.9	348	Termination Signoff: SH
50% Effluent	25.4	9.27	14.6	553	WQ Time: 1218
75% Effluent	25.4	8.82	10.0	779	WQ Signoff: NNS
100% Effluent	25.4	8.81	8.9	996	
Meter ID:	31	PH14	RD03	EC03	

Initial Test Conditions	Alkalinity	Hardness	Light Intensity (ftc)
	342 ✓	60 ✓	409

Appendix C

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Valley Waste Water to *Ceriodaphnia dubia*

CETIS Summary Report

Report Date: 28 Jan-10 13:30 (p 1 of 2)
Test Code: 01-7929-4861/37369

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Batch ID:	17-3421-5625	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Jason Walker
Start Date:	12 Jan-10 14:25	**Protocol:**	EPA-821-R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	18 Jan-10 18:00	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 4h	**Source:**	In-House Culture	**Age:**	1

Sample ID:	15-4166-7341	**Code:**	Eff	**Client:**	Precision Analytical
Sample Date:	11 Jan-10 08:40	**Material:**	Effluent	**Project:**	15508
Receive Date:	11 Jan-10 19:01	**Source:**	Precision Analytical		
Sample Age:	30h (0.5 °C)	**Station:**	Valley Waste		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
17-9495-5496	Reproduction	25	50	35.4	17.0%	4	Wilcoxon/Bonferroni Adj Test
14-1348-6080	Survival	100	>100	N/A	N/A	1	Fisher Exact/Bonferroni-Holm Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
04-9315-0171	Reproduction	IC5	18.7	14.8	27	5.36	Linear Interpolation (ICPIN)
		IC10	25.5	17.5	29.2	3.92	
		IC15	27.7	20.6	31.6	3.61	
		IC20	30.1	24.3	34.8	3.32	
		IC25	32.6	27.1	37.8	3.06	
		IC40	41.7	35.9	50	2.4	
		IC50	49	42.1	53.9	2.04	

Reproduction Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	10	31.8	30.3	33.3	25	37	0.749	4.1	12.9%	0.0%
12.5		10	35.9	34.1	37.7	29	45	0.871	4.77	13.3%	-12.9%
25		10	30.9	28.3	33.5	18	40	1.27	6.98	22.6%	2.83%
50		10	16.5	14	19	8	29	1.21	6.6	40.0%	48.1%
75		10	2.5	1.43	3.57	0	7	0.525	2.88	115.0%	92.1%
100		9	0.444	-0.0534	0.942	0	4	0.243	1.33	300.0%	98.6%

Survival Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	10	1	1	1	1	1	0	0	0.0%	0.0%
12.5		10	1	1	1	1	1	0	0	0.0%	0.0%
25		10	1	1	1	1	1	0	0	0.0%	0.0%
50		10	1	1	1	1	1	0	0	0.0%	0.0%
75		10	1	1	1	1	1	0	0	0.0%	0.0%
100		9	1	1	1	1	1	0	0	0.0%	0.0%

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water Contr	28	30	36	34	34	35	32	25	27	37
12.5		32	37	40	39	32	38	45	29	33	34
25		23	35	33	36	33	37	40	29	18	25
50		8	19	23	14	15	21	29	16	9	11
75		1	0	0	0	0	7	7	3	5	2
100		0	0	0	0	0	0	0	4	0	

Survival Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water Contr	1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
75		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	

CETIS Analytical Report

Report Date: 28 Jan-10 13:30 (p 1 of 1)
Test Code: 01-7929-4861/37369

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Analysis ID:	14-1348-6080	**Endpoint:**	Survival	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 13:29	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run	100	>100	N/A	1	N/A

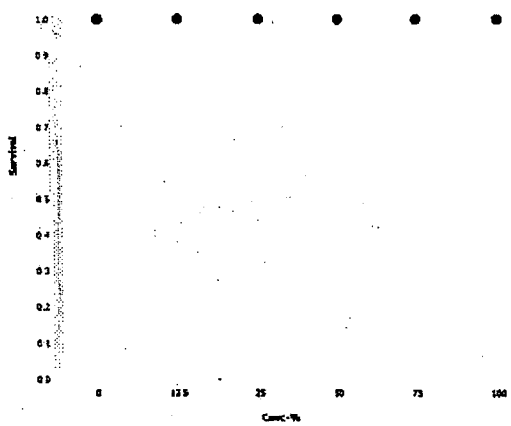
Fisher Exact/Bonferroni-Holm Test

Control	vs	Conc-%	Test Stat	P-Value	Decision(0.05)
Lab Water Control		12 5	1	1.0000	Non-Significant Effect
		25	1	1.0000	Non-Significant Effect
		50	1	1.0000	Non-Significant Effect
		75	1	1.0000	Non-Significant Effect
		100	1	1.0000	Non-Significant Effect

Data Summary

Conc-%	Control Type	No-Resp	Resp	Total
0	Lab Water Cont	10	0	10
12.5		10	0	10
25		10	0	10
50		10	0	10
75		10	0	10
100		9	0	9

Graphics



CETIS Analytical Report

Report Date: 28 Jan-10 13:29 (p 1 of 1)
Test Code: 01-7929-4861/37369

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Analysis ID:	17-9495-5496	Endpoint:	Reproduction	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 13:29	Analysis:	Nonparametric-Multiple Comparison	Official Results:	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run	25	50	35.4	4	17.0%

Wilcoxon/Bonferroni Adj Test

Control vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Lab Water Control	12.5	128		3	1.0000	Non-Significant Effect
	25	104		4	1.0000	Non-Significant Effect
	50*	58		0	0.0002	Significant Effect
	75*	55		0	<0.0001	Significant Effect
	100*	45		0	<0.0001	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	11735.38	2347.075	5	97.4	<0.0001	Significant Effect
Error	1276.622	24.08721	53			
Total	13012	2371.163	58			

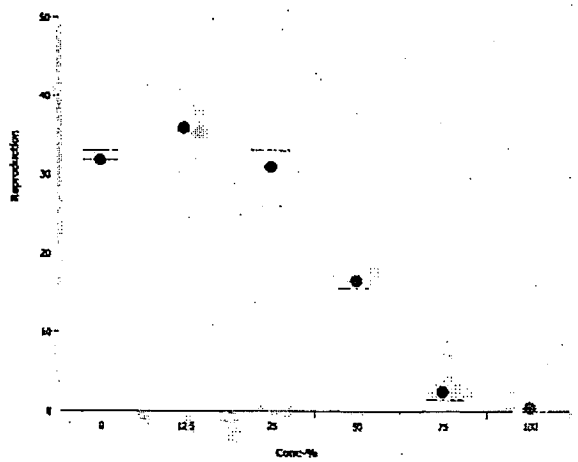
ANOVA Assumptions

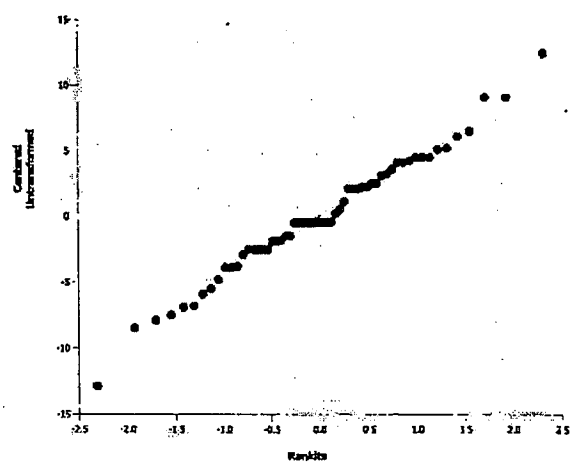
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Bartlett Equality of Variance	21.5	15.1	0.0006	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.988		0.8409	Normal Distribution

Reproduction Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	10	31.8	30.2	33.4	25	37	0.762	4.1	12.9%	0.0%
12.5		10	35.9	34.1	37.7	29	45	0.886	4.77	13.3%	-12.9%
25		10	30.9	28.2	33.6	18	40	1.3	6.98	22.6%	2.83%
50		10	16.5	14	19	8	29	1.23	6.6	40.0%	48.1%
75		10	2.5	1.41	3.59	0	7	0.534	2.88	115.0%	92.1%
100		9	0.444	-0.0627	0.952	0	4	0.248	1.33	300.0%	98.6%

Graphics





CETIS Analytical Report

Report Date: 28 Jan-10 13:30 (p 1 of 1)
Test Code: 01-7929-4861/37369

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Analysis ID:	04-9315-0171	Endpoint:	Reproduction	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 13:29	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	57951	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	18.7	14.8	27	5.36	3.7	6.76
IC10	25.5	17.5	29.2	3.92	3.42	5.72
IC15	27.7	20.6	31.6	3.61	3.17	4.85
IC20	30.1	24.3	34.8	3.32	2.87	4.11
IC25	32.6	27.1	37.8	3.06	2.65	3.69
IC40	41.7	35.9	50	2.4	2	2.79
IC50	49	42.1	53.9	2.04	1.85	2.37

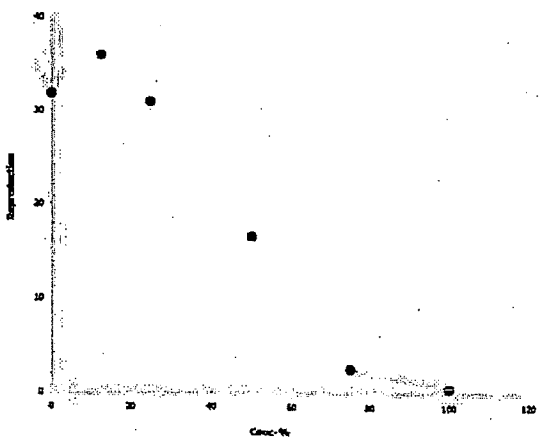
Reproduction Summary

			Calculated Variate						
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	10	31.8	25	37	0.749	4.1	12.9%	0.0%
12.5		10	35.9	29	45	0.871	4.77	13.3%	-12.9%
25		10	30.9	18	40	1.27	6.98	22.6%	2.83%
50		10	16.5	8	29	1.21	6.6	40.0%	48.1%
75		10	2.5	0	7	0.525	2.88	115.0%	92.1%
100		9	0.444	0	4	0.243	1.33	300.0%	98.6%

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water Control	28	30	36	34	34	35	32	25	27	37
12.5		32	37	40	39	32	38	45	29	33	34
25		23	35	33	36	33	37	40	29	18	25
50		8	19	23	14	15	21	29	16	9	11
75		1	0	0	0	0	7	7	3	5	2
100		0	0	0	0	0	0	0	4	0	

Graphics



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Material: Valley Waste Test Date: 1/12/10

Project #: 15508 Test ID: 37369 Randomization: Board 7 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E	F	G	H	I	J	SIGN-OFF
Lab Water Control	0	7.54		9.2		221	25.1	0	0	0	0	0	0	0	0	0	0	Date: 1/12/10 New WQ: 008 Test Init.: Sol'n Prep: Time: 1425
	1	8.04	8.04	8.8	8.0	220	25.3	0	0	0	0	0	0	0	0	0	0	Date: 1/13/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1310
	2	8.11	8.36	8.7	8.1	230	25.8	0	0	0	0	0	0	0	0	0	0	Date: 1/14/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1440
	3	8.20	8.15	9.3	8.2	218	25.5	3	0	6	6	0	0	5	0	0	0	Date: 1/15/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1620
	4	8.22	~~8.64~~ 8.10	9.4	~~7.4~~ 8.3	218	25.0	0	7	0	0	6	7	0	6	5	7	Date: 1/16/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1415
	5	7.83	8.20	9.4	8.2	213	25.2	10	11	14	10	13	14	9	10	11	10	Date: 1/17/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1630
	6	7.94	8.31	9.4	8.4	211	25.4	15	12	16	18	15	14	18	9	11	20	Date: 1/18/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1400
	7																	Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
	8																	Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
							Total=	28	30	36	34	34	35	32	25	27	37	Mean Neonates/Female = 31.8

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	A	B	C	D	E	F	G	H	I	J	SAMPLE ID
12.5%	0	7.68		9.0		308	0	0	0	0	0	0	0	0	0	0	23375
	1	8.10	7.99	8.8	7.8	307	0	0	0	0	0	0	0	0	0	0	23375
	2	8.10	8.1	8.6	8.0	328	0	0	0	0	0	0	0	0	0	0	23375
	3	8.16	8.30	9.1	7.8	302	5	0	0	0	4	6	7	0	0	0	23378
	4	8.11	8.19	9.2	8.3	310	0	8	8	7	0	0	0	6	6	7	23375
	5	7.93	8.32	9.0	8.1	312	9	10	12	13	10	11	12	11	10	12	23375
	6	7.99	8.33	9.2	8.0	327	18	19	20	19	18	21	26	12	17	15	23375
	7																
	8																
							Total=	32	37	40	39	32	38	45	29	33	34	Mean Neonates/Female = 35.9

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Material: Valley Waste Test Date: 1/12/10

Project #: 15508 Test ID: 37369 Randomization: Board 7 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	A	B	C	D	E	F	G	H	I	J	SIGN-OFF
25%	0	7.76		8.6		403	0	0	0	0	0	0	0	0	0	0	
	1	8.11	8.25	8.8	7.8	401	0	0	0	0	0	0	0	0	0	0	
	2	8.12	8.46	8.4	8.3	399	0	0	0	0	0	0	0	0	0	0	
	3	8.13	8.37	8.9	8.0	395	4	3	4	5	0	5	9	0	4	0	
	4	8.08	8.24	9.2	8.1	412	0	0	0	0	6	0	0	6	0	7	
	5	7.91	8.21	9.0	7.8	401	11	13	12	13	10	14	14	9	7	7	
	6	8.01	8.40	9.2	7.9	383	8	19	17	18	17	18	17	14	7	11	
	7																
	8																
							Total=	23	35	33	36	33	37	40	29	18	25	Mean Neonates/Female = 30.0

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	A	B	C	D	E	F	G	H	I	J	SIGN-OFF
50%	0	7.76		8.79		567	0	0	0	0	0	0	0	0	0	0	
	1	8.12	8.41	8.9	7.6	574	0	0	0	0	0	0	0	0	0	0	
	2	8.13	8.61	8.4	8.4	569	0	0	0	0	0	0	0	0	0	0	
	3	8.13	8.54	8.8	7.8	576	2	0	0	0	0	0	6	0	0	0	
	4	7.94	8.42	9.1	8.0	579	0	0	6	2	0	3	0	0	0	0	
	5	7.87	8.45	9.1	8.4	567	6	5	5	5	7	7	10	4	4	4	
	6	8.00	8.54	9.2	7.8	579	0	14	12	7	8	11	13	12	5	7	
	7																
	8																
							Total=	8	19	23	14	15	21	29	16	9	11	Mean Neonates/Female = 16.5

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Material: Valley Waste Test Date: 1/12/10

Project #: 15508 Test ID: 37369 Randomization: Board 7 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	SIGN-OFF
75%	0	7.73		7.7		736	0	0	0	0	0	0	0	0	0	0	
	1	8.16	8.61	8.8	7.4	741	0	0	0	0	0	0	0	0	0	0	
	2	8.14	8.69	8.5	8.3	751	0	0	0	0	0	0	0	0	0	0	
	3	8.14	8.67	8.7	7.9	749	0	0	0	0	0	0	0	0	0	0	
	4	7.87	8.55	8.7	7.9	754	0	0	0	0	0	0	0	0	0	0	
	5	7.88	8.56	9.1	8.0	732	0	0	0	0	0	0	0	3	5	0	
	6	8.01	8.63	9.3	7.6	739	1	0	0	0	0	7	7	0	0	2	
	7																
	8																
							Total= 1	0	0	0	0	7	7	3	5	2	Mean Neonates/Female = 2.5

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	
100%	0	7.70		6.4		905	0	0	0	0	0	0	0	0	0	0	
	1	8.12	8.63	8.9	7.5	910	0	0	0	0	0	0	0	-	0	0	
	2	8.13	8.76	8.4	8.1	913	0	0	0	0	0	0	0	-	0	0	
	3	8.09	8.71	8.5	7.4	919	0	0	0	0	0	0	0	-	0	0	
	4	7.85	8.64	8.4	7.6	922	0	0	0	0	0	0	0	-	0	0	
	5	7.82	8.76	9.2	8.1	910	0	0	0	0	0	0	0	-	4	0	
	6	7.99	8.70	9.5	7.3	900	0	0	0	0	0	0	0	-	0	0	
	7													-			
	8													-			
							Total= 0	0	0	0	0	0		-	4	0	Mean Neonates/Female = 0.4

Appendix D

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Valley Waste Water to Fathead Minnows

CETIS Summary Report

Report Date: 01 Feb-10 11:32 (p 1 of 2)
Test Code: 15-6481-0860/37370

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Batch ID:	15-0835-8149	Test Type:	Growth-Survival (7d)	Analyst:	Jason Walker
Start Date:	12 Jan-10 13:00	Protocol:	EPA-821-R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	19 Jan-10 09:15	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 20h	Source:	Chesapeake Cultures, Inc.	Age:	1

Sample ID:	15-4166-7341	Code:	Eff	Client:	Precision Analytical
Sample Date:	11 Jan-10 08:40	Material:	Effluent	Project:	15508
Receive Date:	11 Jan-10 19:01	Source:	Precision Analytical		
Sample Age:	28h (0.5 °C)	Station:	Valley Waste		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
07-0342-3185	7d Survival Rate	25	50	35.4	16.3%	4	Dunnett's Multiple Comparison Test
08-5846-1218	Mean Dry Biomass-mg	12.5	25	17.7	16.4%	8	Dunnett's Multiple Comparison Test
17-6938-4078	Mean Dry Weight-mg	<12.5	12.5	N/A	19.7%	>8	Steel Many-One Rank Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
05-0932-6662	7d Survival Rate	EC5	30.3	18.8	37.5	3.3	Linear Regression (MLE)
		EC10	33.8	22.5	40.7	2.96	
		EC15	36.3	25.4	43	2.75	
		EC20	38.5	27.9	44.9	2.6	
		EC25	40.5	30.2	46.7	2.47	
		EC40	46	36.9	51.7	2.17	
		EC50	49.6	41.5	55.2	2.02	
00-8832-5875	Mean Dry Biomass-mg	IC5	1.64	0.226	24.8	61.2	Linear Interpolation (ICPIN)
		IC10	5.94	N/A	37	16.8	
		IC15	16.1	N/A	33.8	6.21	
		IC20	25.8	N/A	30.8	3.88	
		IC25	27.7	23.4	32.8	3.61	
		IC40	34.3	29.3	43.7	2.91	
		IC50	39.6	32.8	52.5	2.53	
08-1901-0291	Mean Dry Weight-mg	IC5	1.26	0.618	3.11	79.4	Linear Interpolation (ICPIN)
		IC10	4.1	1.46	14.6	24.4	
		IC15	10.5	2.35	39.3	9.5	
		IC20	28	0.678	45.8	3.57	
		IC25	35.8	19.3	60.2	2.79	
		IC40	54.3	39.8	61.2	1.84	
		IC50	60	51.7	74	1.67	

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.925	0.889	0.961	0.8	1	0.0175	0.0957	10.4%	0.0%
12.5		4	0.95	0.913	0.987	0.8	1	0.0183	0.1	10.5%	-2.7%
25		4	0.925	0.906	0.944	0.9	1	0.00913	0.05	5.41%	0.0%
50		4	0.444	0.378	0.509	0.3	0.7	0.0321	0.176	39.7%	52.0%
75		4	0.1	0.0695	0.13	0	0.2	0.0149	0.0816	81.6%	89.2%
100		4	0	0	0	0	0	0	0		100.0%

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.292	0.281	0.303	0.25	0.312	0.00528	0.0289	9.9%	0.0%
12.5		4	0.253	0.241	0.265	0.207	0.286	0.00605	0.0331	13.1%	13.4%
25		4	0.24	0.234	0.246	0.225	0.264	0.00305	0.0167	6.94%	17.8%
50		4	0.0978	0.0794	0.116	0.0612	0.167	0.00899	0.0492	50.3%	66.5%
75		4	0.0117	0.00772	0.0158	0	0.024	0.00197	0.0108	91.8%	96.0%
100		4	0	0	0	0	0	0	0		100.0%

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Mean Dry Weight-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.316	0.309	0.324	0.297	0.344	0.00365	0.02	6.31%	0.0%
12.5		4	0.266	0.261	0.271	0.259	0.286	0.00244	0.0134	5.03%	16.0%
25		4	0.26	0.251	0.27	0.235	0.293	0.00453	0.0248	9.53%	17.7%
50		4	0.216	0.202	0.23	0.163	0.248	0.0069	0.0378	17.5%	31.9%
75		4	0.0875	0.06	0.115	0	0.17	0.0134	0.0737	84.2%	72.4%
100		4	0	0	0	0	0	0	0		100.0%

7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	0.9	1	1	0.8
12.5		1	1	0.8	1
25		0.9	1	0.9	0.9
50		0.7	0.375	0.4	0.3
75		0	0.2	0.1	0.1
100		0	0	0	0

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	0.31	0.297	0.312	0.25
12.5		0.286	0.259	0.207	0.26
25		0.225	0.235	0.237	0.264
50		0.167	0.0612	0.099	0.064
75		0	0.024	0.006	0.017
100		0	0	0	0

Mean Dry Weight-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	0.344	0.297	0.312	0.313
12.5		0.286	0.259	0.259	0.26
25		0.25	0.235	0.263	0.293
50		0.239	0.163	0.248	0.213
75		0	0.12	0.06	0.17
100		0	0	0	0

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	07-0342-3185	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.7.0
Analyzed:	01 Feb-10 11:31	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	25	50	35.4	4	16.3%

Dunnett's Multiple Comparison Test

Control vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water Control	12.5	-0.447	2.41	0.219	0.9320	Non-Significant Effect
	25	0.0578	2.41	0.219	0.8157	Non-Significant Effect
	50*	6.22	2.41	0.219	<0.0001	Significant Effect
	75*	10.7	2.41	0.219	<0.0001	Significant Effect
	100*	12.5	2.41	0.219	<0.0001	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	5.618173	1.123634	5	67.7	<0.0001	Significant Effect
Error	0.2988828	0.0166046	18			
Total	5.917056	1.140239	23			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	0.722	4.25	0.6157	Equal Variances
Distribution	Shapiro-Wilk Normality	0.968		0.6152	Normal Distribution

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.925	0.889	0.961	0.8	1	0.0178	0.0957	10.4%	0.0%
12.5		4	0.95	0.912	0.988	0.8	1	0.0186	0.1	10.5%	-2.7%
25		4	0.925	0.906	0.944	0.9	1	0.00928	0.05	5.41%	0.0%
50		4	0.444	0.377	0.511	0.3	0.7	0.0327	0.176	39.7%	52.0%
75		4	0.1	0.0689	0.131	0	0.2	0.0152	0.0816	81.6%	89.2%
100		4	0	0	0	0	0	0	0		100.0%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Cont	4	1.3	1.24	1.35	1.11	1.41	0.0273	0.147	11.3%	0.0%
12.5		4	1.34	1.28	1.39	1.11	1.41	0.0283	0.152	11.4%	-3.15%
25		4	1.29	1.26	1.32	1.25	1.41	0.0151	0.0815	6.32%	0.41%
50		4	0.729	0.66	0.797	0.58	0.991	0.0335	0.181	24.8%	43.7%
75		4	0.316	0.269	0.364	0.159	0.464	0.0231	0.125	39.4%	75.6%
100		4	0.159	0.159	0.159	0.159	0.159	0	0	0.0%	87.7%

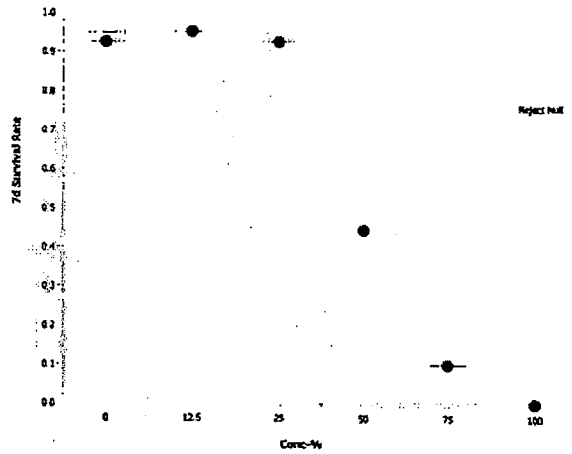
CETIS Analytical Report

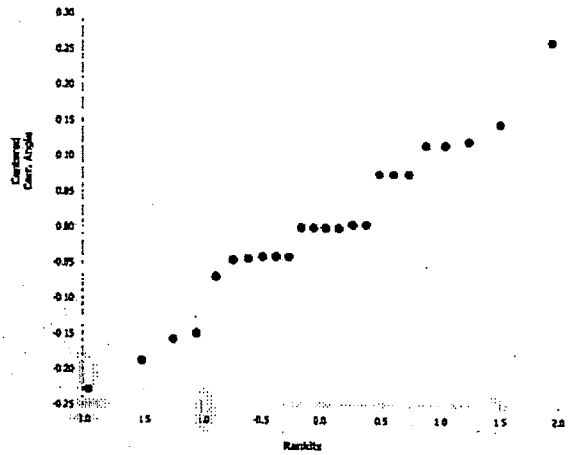
Report Date:	01 Feb-10 11:32 (p 4 of 4)
Test Code:	15-6481-0860/37370

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	07-0342-3185	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	01 Feb-10 11:31	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Graphics





CETIS Analytical Report

Report Date: 01 Feb-10 11:32 (p 1 of 2)
Test Code: 15-6481-0860/37370

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	05-0932-6662	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.7.0
Analyzed:	01 Feb-10 11:31	Analysis:	Linear Regression (MLE)	Official Results:	Yes

Linear Regression Options

Model Function	Threshold Option	Threshold	Optimized	Pooled	Het Corr	Weighted
Log-Normal [NED=A+B*log(X)]	Control Threshold	0.075	Yes	No	No	Yes

Regression Summary

Iters	LL	AICc	Mu	Sigma	G Stat	Chi-Sq	Critical	P-Value	Decision(5%)
9	-36.6	77.9	-1.04	0.13	0.16	10.6	28.9	0.9120	Non-Significant Heterogeneity

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	30.3	18.8	37.5	3.3	2.67	5.31
EC10	33.8	22.5	40.7	2.96	2.46	4.44
EC15	36.3	25.4	43	2.75	2.33	3.94
EC20	38.5	27.9	44.9	2.6	2.23	3.58
EC25	40.5	30.2	46.7	2.47	2.14	3.31
EC40	46	36.9	51.7	2.17	1.93	2.71
EC50	49.6	41.5	55.2	2.02	1.81	2.41

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(5%)
Threshold	0.0632	0.0238	0.0167	0.11	2.66	0.0159	Significant Parameter
Slope	7.67	1.56	4.6	10.7	4.91	0.0001	Significant Parameter
Intercept	-8	2.78	-13.4	-2.55	-2.88	0.0100	Significant Parameter

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(5%)
Variances	Mod Levene Equality of Variance	0.491	3.06	0.7422	Equal Variances
Distribution	Shapiro-Wilk Normality	0.934		0.1804	Normal Distribution

7d Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Lab Water Contr	4	0.925	0.8	1	0.0175	0.0957	10.4%	0.0%	37	40
12.5		4	0.95	0.8	1	0.0183	0.1	10.5%	-2.7%	38	40
25		4	0.925	0.9	1	0.00913	0.05	5.41%	0.0%	37	40
50		4	0.444	0.3	0.7	0.0321	0.176	39.7%	52.0%	17	38
75		4	0.1	0	0.2	0.0149	0.0816	81.6%	89.2%	4	40
100		4	0	0	0	0	0		100.0%	0	40

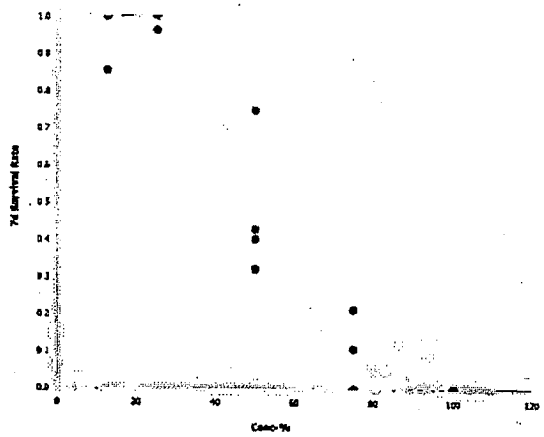
7d Survival Rate Detail

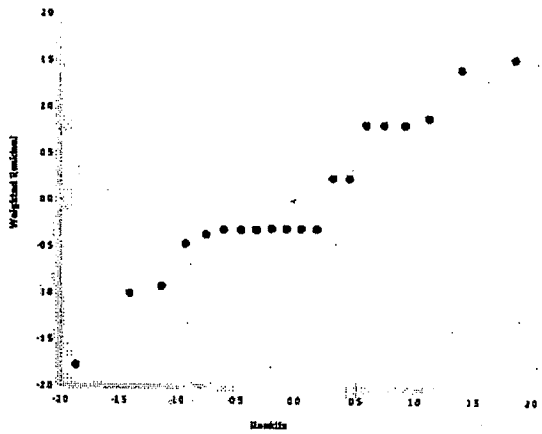
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Control	0.9	1	1	0.8
12.5		1	1	0.8	1
25		0.9	1	0.9	0.9
50		0.7	0.375	0.4	0.3
75		0	0.2	0.1	0.1
100		0	0	0	0

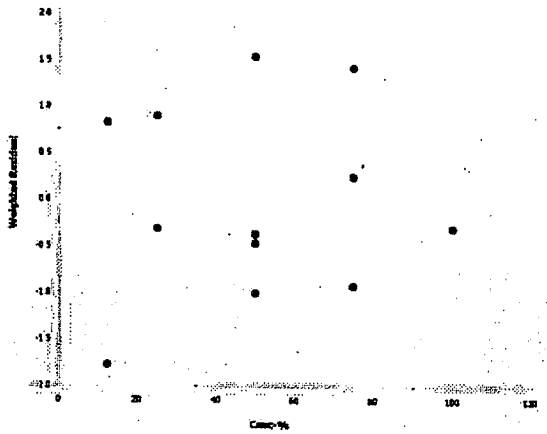
Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

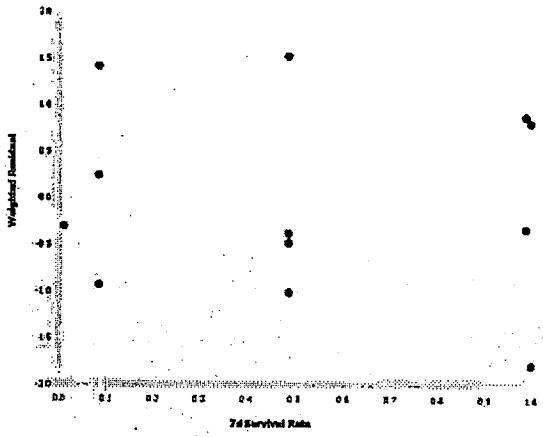
Analysis ID:	05-0932-6662	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	01 Feb-10 11:31	**Analysis:**	Linear Regression (MLE)	**Official Results:**	Yes

Graphics









Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	08-5846-1218	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.7.0
Analyzed:	01 Feb-10 11:31	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run	12.5	25	17.7	8	16.4%

Dunnett's Multiple Comparison Test

Control vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water Control	12.5	1.97	2.41	0.0479	0.1093	Non-Significant Effect
	25*	2.61	2.41	0.0479	0.0336	Significant Effect
	50*	9.77	2.41	0.0479	<0.0001	Significant Effect
	75*	14.1	2.41	0.0479	<0.0001	Significant Effect
	100*	14.7	2.41	0.0479	<0.0001	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.3332871	0.06665742	5	84.2	<0.0001	Significant Effect
Error	0.01425483	0.0007919351	18			
Total	0.347542	0.06744936	23			

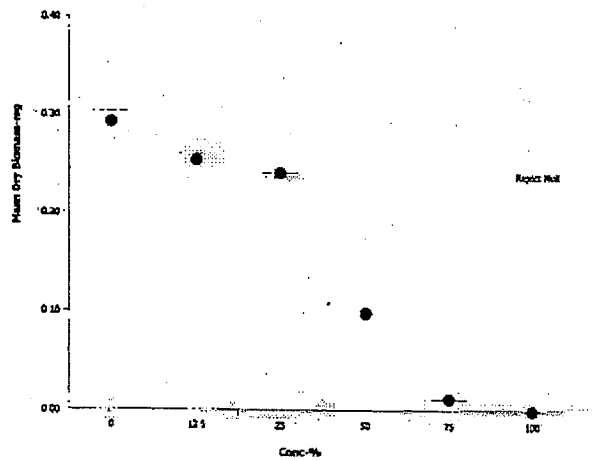
ANOVA Assumptions

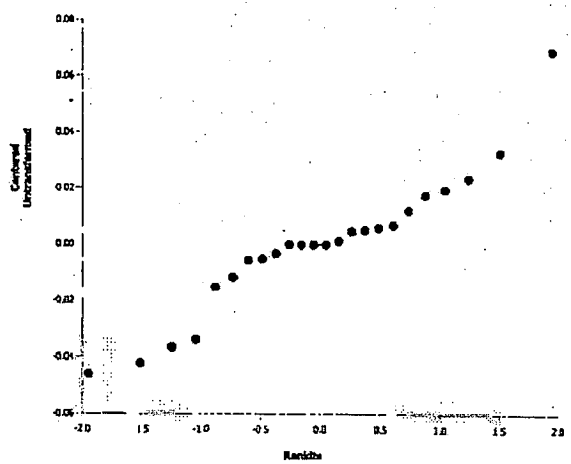
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	1.43	4.25	0.2619	Equal Variances
Distribution	Shapiro-Wilk Normality	0.931		0.1029	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.292	0.281	0.303	0.25	0.312	0.00537	0.0289	9.9%	0.0%
12.5		4	0.253	0.24	0.266	0.207	0.286	0.00615	0.0331	13.1%	13.4%
25		4	0.24	0.234	0.247	0.225	0.264	0.0031	0.0167	6.94%	17.8%
50		4	0.0978	0.0791	0.117	0.0612	0.167	0.00914	0.0492	50.3%	66.5%
75		4	0.0117	0.00765	0.0159	0	0.024	0.002	0.0108	91.8%	96.0%
100		4	0	0	0	0	0	0	0		100.0%

Graphics





Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	00-8832-5875	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.7.0
Analyzed:	01 Feb-10 11:31	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	57951	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	1.64	0.226	24.8	61.2	4.03	442
IC10	5.94	N/A	37	16.8	2.7	N/A
IC15	16.1	N/A	33.8	6.21	2.96	N/A
IC20	25.8	N/A	30.8	3.88	3.24	N/A
IC25	27.7	23.4	32.8	3.61	3.05	4.28
IC40	34.3	29.3	43.7	2.91	2.29	3.41
IC50	39.6	32.8	52.5	2.53	1.91	3.04

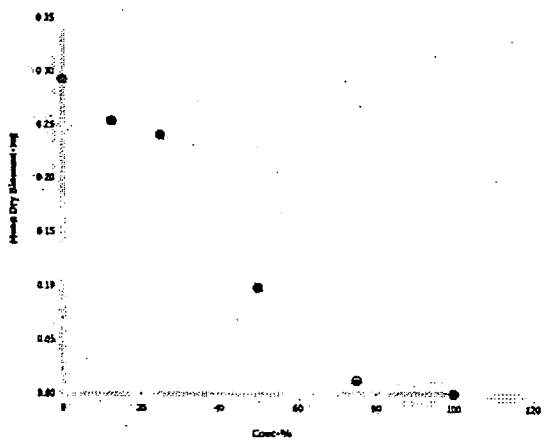
Mean Dry Biomass-mg Summary

			Calculated Variate						
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.292	0.25	0.312	0.00528	0.0289	9.9%	0.0%
12.5		4	0.253	0.207	0.286	0.00605	0.0331	13.1%	13.4%
25		4	0.24	0.225	0.264	0.00305	0.0167	6.94%	17.8%
50		4	0.0978	0.0612	0.167	0.00899	0.0492	50.3%	66.5%
75		4	0.0117	0	0.024	0.00197	0.0108	91.8%	96.0%
100		4	0	0	0	0	0		100.0%

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Control	0.31	0.297	0.312	0.25
12.5		0.286	0.259	0.207	0.26
25		0.225	0.235	0.237	0.264
50		0.167	0.0612	0.099	0.064
75		0	0.024	0.006	0.017
100		0	0	0	0

Graphics



CETIS Analytical Report

Report Date: 01 Feb-10 11:32 (p 1 of 4)
Test Code: 15-6481-0860/37370

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	17-6938-4078	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.7.0
Analyzed:	01 Feb-10 11:31	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run	<12.5	12.5	N/A	>8	19.7%

Steel Many-One Rank Test

Control	vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Lab Water Control		12.5*	10	10	0	0.0417	Significant Effect
		25*	10	10	0	0.0417	Significant Effect
		50*	10	10	0	0.0417	Significant Effect
		75*	10	10	0	0.0417	Significant Effect
		100*	10	10	0	0.0417	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.2959363	0.05918727	5	44.1	<0.0001	Significant Effect
Error	0.02413868	0.001341038	18			
Total	0.320075	0.0605283	23			

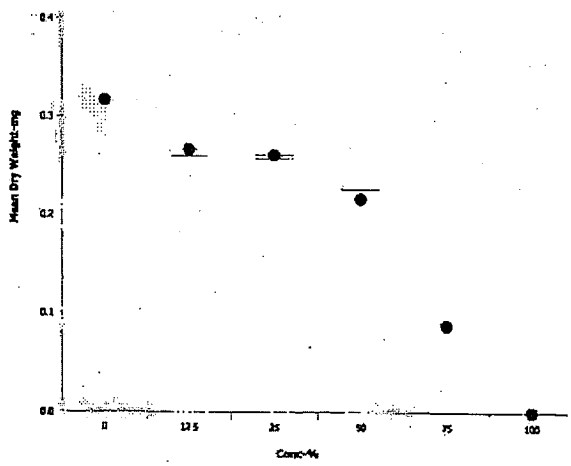
ANOVA Assumptions

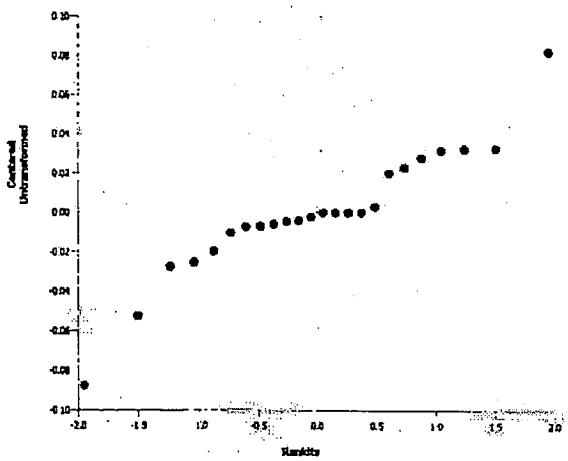
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	4.57	4.25	0.0073	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.922		0.0637	Normal Distribution

Mean Dry Weight-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.316	0.309	0.324	0.297	0.344	0.00371	0.02	6.31%	0.0%
12.5		4	0.266	0.261	0.271	0.259	0.266	0.00249	0.0134	5.03%	16.0%
25		4	0.26	0.251	0.27	0.235	0.293	0.00461	0.0248	9.53%	17.7%
50		4	0.216	0.201	0.23	0.163	0.248	0.00702	0.0378	17.5%	31.9%
75		4	0.0875	0.0595	0.116	0	0.17	0.0137	0.0737	84.2%	72.4%
100		4	0	0	0	0	0	0	0		100.0%

Graphics





CETIS Analytical Report

Report Date: 01 Feb-10 11:32 (p 1 of 2)
Test Code: 15-6481-0860/37370

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	08-1901-0291	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.7.0
Analyzed:	01 Feb-10 11:31	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	57951	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	1.26	0.618	3.11	79.4	32.1	162
IC10	4.1	1.46	14.6	24.4	6.84	68.4
IC15	10.5	2.35	39.3	9.5	2.54	42.5
IC20	28	0.678	45.8	3.57	2.18	148
IC25	35.8	19.3	60.2	2.79	1.66	5.17
IC40	54.3	39.8	61.2	1.84	1.63	2.51
IC50	60	51.7	74	1.67	1.35	1.93

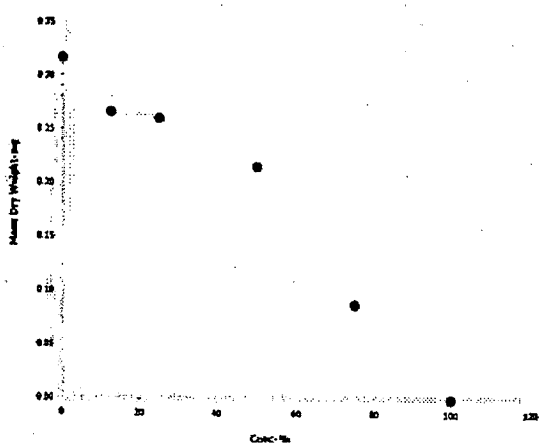
Mean Dry Weight-mg Summary

			Calculated Variate						
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.316	0.297	0.344	0.00365	0.02	6.31%	0.0%
12.5		4	0.266	0.259	0.286	0.00244	0.0134	5.03%	16.0%
25		4	0.26	0.235	0.293	0.00453	0.0248	9.53%	17.7%
50		4	0.216	0.163	0.248	0.0069	0.0378	17.5%	31.9%
75		4	0.0875	0	0.17	0.0134	0.0737	84.2%	72.4%
100		4	0	0	0	0	0		100.0%

Mean Dry Weight-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Control	0.344	0.297	0.312	0.313
12.5		0.286	0.259	0.259	0.26
25		0.25	0.235	0.263	0.293
50		0.239	0.163	0.248	0.213
75		0	0.12	0.06	0.17
100		0	0	0	0

Graphics



7 Day Chronic Fathead Minnow Toxicity Test Data

Client: P. Analytical - Chevron Cawelo
Organism Log#: 4993 Age: 48hrs
Test Material: Valley Waste
Organism Supplier: Chesapeake Cultures
Test ID#: 37370 Project #: 15508
Control/Diluent: EPAMH
Test Date: 1/12/10 Randomization: 4-6-4
Control Water Batch: 1275

Treatment (% Effluent)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Water Control	25.0	7.98		8.8		300	10	10	10	10	Date: 1/12/10
12.5%	25.0	7.92		8.6		382	10	10	10	10	Sample ID 23375
25%	25.0	7.86		8.5		473	10	10	10	10	Test Solution Prep
50%	25.0	7.80		8.1		620	10	10	10	10	New WQ 009
75%	25.0	7.79		7.6		775	10	10	10	10	Initiation Time 1300
100%	25.0	7.73		6.82		932	10	10	10	10	Initiation Signoff
Meter ID	33A	PH14		RD02		EC03					
Lab Water Control	25.3	8.13	7.99	9.3	6.7	307	10	10	10	10	Date: 1/13/10
12.5%	25.3	8.05	8.00	9.3	6.8	376	10	10	10	10	Sample ID 23375
25%	25.3	8.03	8.13	9.4	6.9	457	10	10	10	10	Test Solution Prep
50%	25.3	8.01	8.27	9.4	7.0	613	9	10	10	10	New WQ Sm
75%	25.3	7.96	8.39	9.4	7.1	~~7.6~~ 769	10	10	10	10	Renewal Time 1245
100%	25.3	7.90	8.45	8.5	7.0	918	10	9	10	9	Renewal Signoff JPW
Meter ID	33A	PH14	PH14	RD01	RD01	EC05					Old WQ HU
Lab Water Control	25.5	8.11	7.46	9.1	7.3	307	10	10	10	10	Date: 1/14/10
12.5%	25.5	7.99	7.85	9.0	7.4	350	10	10	9	10	Sample ID 23375
25%	25.5	7.90	7.99	8.9	7.3	460	10	10	10	10	Test Solution Prep
50%	25.5	7.83	8.25	8.7	7.3	621	9	10	10	10	New WQ
75%	25.5	7.82	8.39	8.6	7.5	767	10	10	10	10	Renewal Time 1530
100%	25.5	7.79	8.51	7.9	7.5	908	10	9	10	9	Renewal Signoff
Meter ID	33A	PH07	PH12	RD05	RD01	EC03					Old WQ HV
Lab Water Control	25.6	8.20	8.12	9.1	7.6	307	10	10	10	10	Date: 1/15/10
12.5%	25.6	8.10	8.26	9.0	7.7	385	10	10	9	10	Sample ID 23375
25%	25.6	8.01	8.36	8.9	7.8	462	10	10	10	10	Test Solution Prep
50%	25.6	7.96	8.53	8.9	7.9	611	~~10~~ 9	10	10	10	New WQ HU
75%	25.6	7.93	8.61	9.0	7.9	762	10	10	9	6	Renewal Time 1350
100%	25.6	7.91	8.70	9.2	7.9	906	8	5	9	6	Renewal Signoff Sm
Meter ID	33A	PH14	PH09	RD01	RD02	EC05					Old WQ Sm

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: P. Analytical - Chevron Cawelo
Test Material: Valley Waste
Test ID#: 37370 Project #: 15508
Test Date: 1-12-10 Randomization: 4-6-4

Organism Log#: 4793 Age: 24 hrs
Organism Supplier: Chesapeake Cultures
Control/Diluent: EPAMH
Control Water Batch: 1275

Treatment (% Effluent)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Water Control	24.9	8.21	7.83	9.4	7.8	330	9	10	10	9	Date: 1/16/10
12.5%	24.9	7.86	7.97	9.0	7.9	408	10	10	9	10	Sample ID: 23375
25%	24.9	7.87	8.10	8.9	8.1	479	10	10	10	10	Test Solution Prep: Sm
50%	24.9	7.86	8.30	8.9	8.0	635	9	5	7	6	New WQ: SH
75%	24.9	7.88	8.41	8.8	7.8	779	7	6	8	3	Renewal Time: 1130
100%	24.9	7.86	8.47	8.5	8.0	926	2	2	0	2	Renewal Signoff: SH
Meter ID	33A	pH12	PH12	RD01	RD01	EC04					Old WQ: JT
Lab Water Control	24.3	8.06	7.90	8.9	7.4	306	9	10	10	9	Date: 1/17/10
12.5%	24.3	7.97	7.96	8.8	7.3	378	10	10	9	10	Sample ID: 23375
25%	24.3	7.93	8.16	8.9	7.6	461	9	10	10	9	Test Solution Prep: SH
50%	24.3	7.90	8.37	8.9	7.7	616	8	3	5	5	New WQ: SG
75%	24.3	7.90	8.46	9.5	7.4	757	2	3	4	1	Renewal Time: 1045
100%	24.3	7.89	8.52	9.5	7.3	909	0	0	—	0	Renewal Signoff: JPC
Meter ID	33A	pH14	pH14	RD02	RD02	EC05					Old WQ: SG
Lab Water Control	25.3	8.25	7.78	8.7	7.3	319	9	10	10	8	Date: 1/18/10
12.5%	25.3	8.22	7.97	8.8	7.0	388	10	10	8	10	Sample ID: 23375
25%	25.3	8.13	8.18	8.9	7.2	459	9	10	9	9	Test Solution Prep: [illegible]
50%	25.3	8.01	8.43	9.0	7.4	611	8	3	4	5	New WQ: JC
75%	25.3	7.91	8.46	8.9	6.9	747	1	2	1	1	Renewal Time: 1230
100%	—	—	—	—	—	—	—	—	—	—	Renewal Signoff: [illegible]
Meter ID	33A	PH12	PH09	RD01	RD03	EC03					Old WQ: HV
Lab Water Control	25.4		8.04		6.9	316	9	10	10	8	Date: 1/19/10
12.5%	25.4		8.02		6.0	400	10	10	8	10	Termination Time: 09:15
25%	25.4		8.19		6.1	469	9	10	9	9	Termination Signoff: SH
50%	25.4		8.40		6.1	627	7	3	4	3	Old WQ: NVS
75%	25.4		8.37		5.6	782	0	2	1	1	
100%	—		—		—	—	—	—	—	—	
Meter ID	33A		pH14		RD03	EC03					

Fathead Minnow Dry Weight Data Sheet

Client: P. Analytical - Chevron Cawelo Test ID #: 37370 Project # 15508
Sample: Valley Waste Tare Weight Date: 1/16/10 Sign-off: KP
Test Date: 1-12-10 Final Weight Date: 1/23/10 Sign-off: DS

Pan ID	Concentration	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Lab Water	A	170.68	173.78	10	0.310
2		B	171.81	174.78	10	0.297
3		C	176.91	180.03	10	0.312
4		D	181.37	183.87	10	0.250
5	12.5	A	167.20	170.06	10	0.286
6		B	170.29	172.88	10	0.259
7		C	136.80	138.87	10	0.207
8		D	174.72	177.32	10	0.260
9	25	A	172.76	175.01	10	0.225
10		B	170.85	173.20	~~10~~ 10	~~0.294~~ 0.235 ~~0.294~~ 0.238
11		C	171.33	173.70	10	0.237
12		D	171.52	174.16	10	0.264
13	50	A	184.59	186.26	10	0.167
14		B	183.21	183.70	~~10~~ 8	~~0.049~~ 0.061
15		C	141.76	142.72	10	0.099
16		D	165.38	166.02	10	0.064
17	75	A	173.20	—	10	—
18		B	158.52	158.76	10	0.024
19		C	167.05	167.11	10	0.006
20		D	167.80	167.97	10	0.017
21	100	A	166.09	—	10	—
22		B	166.88	—	10	—
23		C	165.92	—	10	—
24		D	161.58	—	10	—
QA 1			173.74	173.74		
QA 2			195.17	195.17		
Balance ID			1	1		

Appendix E

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Outlet to Canals Water to *Ceriodaphnia dubia*

CETIS Summary Report

Report Date: 01 Feb-10 11:22 (p 1 of 2)
Test Code: 19-5396-4764/37314

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Batch ID:	00-2990-0281	Test Type:	Reproduction-Survival (7d)	Analyst:	Jason Walker
Start Date:	12 Jan-10 10:45	Protocol:	EPA-821-R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	18 Jan-10 17:30	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	6d 7h	Source:	In-House Culture	Age:	1

Sample ID:	19-7884-0892	Code:	Eff	Client:	Precision Analytical
Sample Date:	11 Jan-10 09:20	Material:	Effluent	Project:	15508
Receive Date:	11 Jan-10 19:01	Source:	Precision Analytical		
Sample Age:	25h (0.3 °C)	Station:	Outlet to Canals		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
14-7147-7761	Reproduction	75	100	86.6	16.2%	1.33	Bonferroni Adj t Test
00-0803-4956	Survival	100	>100	N/A	N/A	1	Fisher Exact/Bonferroni-Holm Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
20-6516-7772	Reproduction	IC5	36.8	31	53.9	2.71	Linear Interpolation (ICPIN)
		IC10	53	39.8	76.4	1.89	
		IC15	70.3	52.1	79.4	1.42	
		IC20	77.7	63.9	82.7	1.29	
		IC25	81.3	71.4	86.3	1.23	
		IC40	93.1	87.2	N/A	1.07	
		IC50	>100	N/A	N/A	<1	

Reproduction Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	10	36.5	34.5	38.5	28	44	0.978	5.36	14.7%	0.0%
12.5		10	39.5	37.3	41.7	31	49	1.06	5.82	14.7%	-8.22%
25		10	41	39.2	42.8	33	47	0.89	4.88	11.9%	-12.3%
50		10	35.5	34.4	36.6	31	40	0.518	2.84	8.0%	2.74%
75		10	32.7	30.4	35	23	40	1.11	6.07	18.6%	10.4%
100		9	20.3	17.9	22.8	9	26	1.21	6.61	32.5%	44.3%

Survival Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	10	1	1	1	1	1	0	0	0.0%	0.0%
12.5		10	1	1	1	1	1	0	0	0.0%	0.0%
25		10	1	1	1	1	1	0	0	0.0%	0.0%
50		10	0.9	0.782	1	0	1	0.0577	0.316	35.1%	10.0%
75		10	1	1	1	1	1	0	0	0.0%	0.0%
100		9	1	1	1	1	1	0	0	0.0%	0.0%

CETIS Summary Report

Report Date: 01 Feb-10 11:22 (p 2 of 2)
Test Code: 19-5396-4764/37314

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water Contr	31	28	43	40	39	39	33	32	36	44
12.5		37	42	44	37	39	49	40	31	31	45
25		34	39	46	45	38	42	33	44	42	47
50		34	40	37	37	35	32	31	35	39	35
75		26	37	38	39	31	35	26	23	32	40
100		15	26	9	22	12	25	26	26	22	

Survival Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water Contr	1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	0	1	1	1	1	1
75		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	

Analyst: JM QA: PM

CETIS Analytical Report

Report Date: 01 Feb-10 11:22 (p 1 of 1)
Test Code: 19-5396-4764/37314

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Analysis ID:	00-0803-4956	Endpoint:	Survival	CETIS Version:	CETISv1.7.0
Analyzed:	01 Feb-10 11:21	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run	100	>100	N/A	1	N/A

Fisher Exact/Bonferroni-Holm Test

Control	vs	Conc-%	Test Stat	P-Value	Decision(0.05)
Lab Water Control		12.5	1	1.0000	Non-Significant Effect
		25	1	1.0000	Non-Significant Effect
		50	0.5	1.0000	Non-Significant Effect
		75	1	1.0000	Non-Significant Effect
		100	1	1.0000	Non-Significant Effect

Data Summary

Conc-%	Control Type	No-Resp	Resp	Total
0	Lab Water Cont	10	0	10
12.5		10	0	10
25		10	0	10
50		9	1	10
75		10	0	10
100		9	0	9

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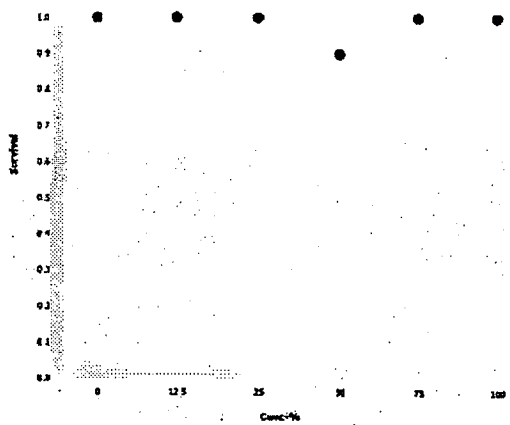


CETIS Analytical Report

Report Date: 01 Feb-10 11:22 (p 1 of 1)
Test Code: 19-5396-4764/37314

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Analysis ID:	14-7147-7761	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.7.0
Analyzed:	01 Feb-10 11:21	**Analysis:**	Parametric-Multiple Comparison	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run	75	100	86.6	1.33	16.2%

Bonferroni Adj t Test

Control vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water Control	12.5	-1.25	2.4	5.77	1.0000	Non-Significant Effect
	25	-1.87	2.4	5.77	1.0000	Non-Significant Effect
	50	0.416	2.4	5.77	1.0000	Non-Significant Effect
	75	1.58	2.4	5.77	0.2998	Non-Significant Effect
	100*	6.55	2.4	5.92	<0.0001	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	2561.146	512.2291	5	17.7	<0.0001	Significant Effect
Error	1531.6	28.89811	53			
Total	4092.746	541.1273	58			

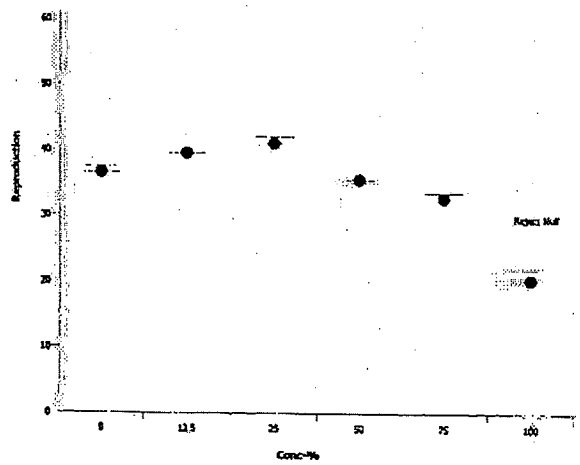
ANOVA Assumptions

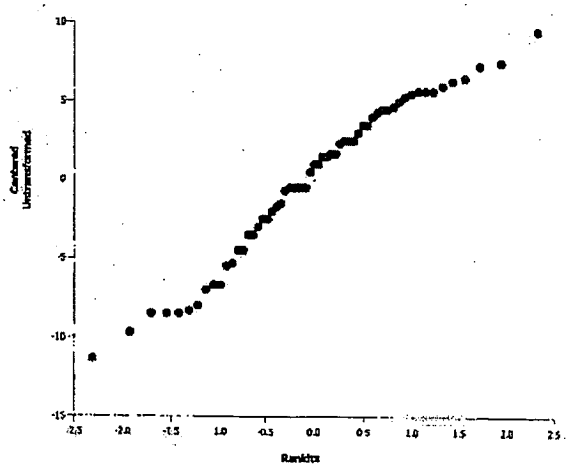
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Bartlett Equality of Variance	6.1	15.1	0.2965	Equal Variances
Distribution	Shapiro-Wilk Normality	0.962		0.0600	Normal Distribution

Reproduction Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	10	36.5	34.5	38.5	28	44	0.995	5.36	14.7%	0.0%
12.5		10	39.5	37.3	41.7	31	49	1.08	5.82	14.7%	-8.22%
25		10	41	39.1	42.9	33	47	0.905	4.88	11.9%	-12.3%
50		10	35.5	34.4	36.6	31	40	0.527	2.84	8.0%	2.74%
75		10	32.7	30.4	35	23	40	1.13	6.07	18.6%	10.4%
100		9	20.3	17.8	22.8	9	26	1.23	6.61	32.5%	44.3%

Graphics





CETIS Analytical Report

Report Date: 01 Feb-10 11:22 (p 1 of 1)
Test Code: 19-5396-4764/37314

Ceriodaphnia Survival and Reproduction Test — **Pacific EcoRisk**

Analysis ID:	20-6516-7772	Endpoint:	Reproduction	CETIS Version:	CETISv1.7.0
Analyzed:	01 Feb-10 11:21	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	57951	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	36.8	31	53.9	2.71	1.86	3.23
IC10	53	39.8	76.4	1.89	1.31	2.51
IC15	70.3	52.1	79.4	1.42	1.26	1.92
IC20	77.7	63.9	82.7	1.29	1.21	1.57
IC25	81.3	71.4	86.3	1.23	1.16	1.4
IC40	93.1	87.2	N/A	1.07	N/A	1.15
IC50	>100	N/A	N/A	<1	N/A	N/A

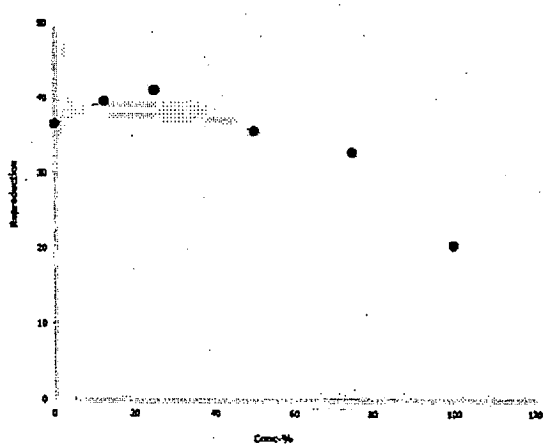
Reproduction Summary

			Calculated Variate						
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	10	36.5	28	44	0.978	5.36	14.7%	0.0%
12.5		10	39.5	31	49	1.06	5.82	14.7%	-8.22%
25		10	41	33	47	0.89	4.88	11.9%	-12.3%
50		10	35.5	31	40	0.518	2.84	8.0%	2.74%
75		10	32.7	23	40	1.11	6.07	18.6%	10.4%
100		9	20.3	9	26	1.21	6.61	32.5%	44.3%

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water Control	31	28	43	40	39	39	33	32	36	44
12.5		37	42	44	37	39	49	40	31	31	45
25		34	39	46	45	38	42	33	44	42	47
50		34	40	37	37	35	32	31	35	39	35
75		26	37	38	39	31	35	26	23	32	40
100		15	26	9	22	12	25	26	26	22	

Graphics



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: P. Analytical - Chevron Cawelo Material: Outlet to Canals Test Date: 1/12/10

Project #: 15508 Test ID: 37314 Randomization: C.6.4 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E	F	G	H	I	J	SIGN-OFF
Lab Water Control	0	8.09		9.0		243	25.4	0	0	0	0	0	0	0	0	0	0	Date: 1/12/10 New WQ: Test Init.: JT Sol'n Prep: SM Old WQ: Time: 1045
	1	7.95	8.21	9.5	6.9	221	26.4	0	0	0	0	0	0	0	0	0	0	Date: 1-13-10 New WQ: SM Counts: JC Sol'n Prep: JC Old WQ: YL Time: 1320
	2	8.18	8.05	9.0	8.3	236	25.9	0	0	0	0	0	0	0	0	0	0	Date: 1/14/10 New WQ: JC Counts: JPC Sol'n Prep: [illegible] Old WQ: SG Time: 1500
	3	8.35	8.48	9.0	8.4	234	24.9	5	4	6	4	0	6	6	0	7	8	Date: 1/15/10 New WQ: SG Counts: [illegible] Sol'n Prep: [illegible] Old WQ: SM Time: 1700
	4	7.95	8.24	9.5	8.5	224	25.0	0	0	0	0	5	0	0	3	0	0	Date: 1/16/10 New WQ: SH Counts: [illegible] Sol'n Prep: SM Old WQ: SG Time: 1400
	5	8.08	8.37	9.0	8.5	215	25.9	10	15	14	16	14	15	11	11	13	17	Date: 1/17/10 New WQ: SG Counts: [illegible] Sol'n Prep: [illegible] Old WQ: BH Time: 1515
	6	7.90	8.50	8.9	8.3	217	25.6	16	9	23	20	20	18	16	18	16	19	Date: 1/18/10 New WQ: JC Counts: SH Sol'n Prep: [illegible] Old WQ: JC Time: 1730
	7																	Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
	8																	Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
							Total=	31	28	43	46	39	39	33	32	36	44	Mean Neonates/Female = 36.5

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	A	B	C	D	E	F	G	H	I	J	SAMPLE ID
12.5%	0	7.78		8.8		303	0	0	0	0	0	0	0	0	0	0	23378
	1	7.90	8.19	9.3	6.7	297	0	0	0	0	0	0	0	0	0	0	23378
	2	8.06	8.11	8.9	8.2	299	0	0	0	0	0	0	0	0	0	0	23378
	3	8.16	8.56	9.3	8.4	294	6	8	6	5	6	6	5	4	2	8	23378
	4	7.83	8.30	9.3	8.4	292	0	0	0	0	0	0	0	0	0	0	23378
	5	7.84	8.34	8.9	8.3	291	11	11	12	13	14	19	16	12	12	16	23378
	6	7.85	8.50	8.9	8.7	294	20	23	26	19	19	24	19	15	17	21	23378
	7																
	8																
							Total=	37	42	44	37	39	49	40	31	31	45	Mean Neonates/Female = 39.5

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: P. Analytical - Chevron Cawelo Material: Outlet to Canals Test Date: 1/12/10

Project #: 15508 Test ID: 37314 Randomization: C.B.4 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	SIGN-OFF
25%	0	7.55		8.4		364	0	0	0	0	0	0	0	0	0	0	
	1	7.77	8.24	9.1	6.7	365	0	0	0	0	0	0	0	0	0	0	
	2	8.01	8.23	8.8	8.1	361	0	0	0	0	0	0	0	0	0	0	
	3	8.04	8.61	9.3	8.6	365	5	7	7	8	6	8	5	6	6	8	
	4	7.66	8.38	9.3	8.1	373	0	0	0	0	0	0	0	0	0	0	
	5	7.66	8.52	8.9	8.5	359	13	12	15	13	12	15	12	11	12	14	
	6	7.80	8.04	9.1	8.9	353	16	20	24	24	20	19	16	27	24	25	
	7																
	8																
							Total= 34	39	46	45	38	42	33	44	42	47	Mean Neonates/Female = 41.0

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	
50%	0	7.34		7.7		499	0	0	0	0	0	0	0	0	0	0	
	1	7.56	8.36	8.8	6.8	499	0	0	0	0	0	0	0	0	0	0	
	2	7.93	8.27	8.7	7.8	507	0	0	0	0	0	0	0	0	0	0	
	3	7.88	8.67	9.3	8.6	502	6	7	6	5	7	6	6	5	5	6	
	4	7.51	8.48	9.3	8.1	509	0	0	0	0	0	0	0	0	0	0	
	5	7.50	8.54	8.9	8.7	496	11	13	12	13	14	9	10	10	13	11	
	6	7.72	8.74	9.2	9.1	490	17	20	19	19	~~14~~	17	15	20	21	18	
	7										–						
	8										–						
							Total= 34	40	37	37	~~35~~	32	31	35	39	35	Mean Neonates/Female = 35.5

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: P. Analytical - Chevron Cawelo Material: Outlet to Canals Test Date: 1/12/10

Project #: 15508 Test ID: 37314 Randomization: C-6-4 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	SIGN-OFF
75%	0	~~7.23~~ 7.86		7.6		632	0	0	0	0	0	0	0	0	0	0	
	1	7.47	8.46	8.6	6.8	634	0	0	0	0	0	0	0	0	0	0	
	2	7.85	8.37	8.6	7.7	644	0	0	0	0	0	0	0	0	0	0	
	3	7.81	8.70	9.4	8.5	636	~~5~~ 5	8	7	7	5	6	5	5	0	6	
	4	7.41	8.55	9.4	8.1	653	0	0	0	1	0	0	0	0	7	0	
	5	7.40	8.61	9.0	8.8	638	9	11	16	13	11	12	11	7	9	13	
	6	7.64	8.72	9.4	9.1	623	12	18	15	18	15	17	10	11	16	21	
	7																
	8																
						Total=	26	37	38	39	31	35	26	23	32	40	Mean Neonates/Female = 32.7

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	
100%	0	7.17		7.1		767	0	0	0	0	0	0	0	0	0	0	
	1	7.42	8.54	8.5	6.8	775	0	0	0	0	0	0	0	0	0	0	
	2	7.77	8.47	8.7	7.8	777	0	0	0	0	0	0	0	0	0	0	
	3	7.73	8.76	9.5	8.3	775	4	0	0	0	0	0	0	4	X/0	0	
	4	7.32	8.59	9.5	8.2	779	0	7	0	0	5	0	6	0	–	0	
	5	7.28	8.64	9.0	8.9	769	0	7	9	9	0	11	9	8	–	8	
	6	7.58	8.77	9.6	9.0	773	11	12	0	13	7	14	11	14	–	14	
	7														—		
	8														—		
						Total=	15	26	9	22	12	25	26	26	X/0	22	Mean Neonates/Female = ~~18.7~~ 20.3

Appendix F

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Outlet to Canals Water to Fathead Minnows

CETIS Summary Report

Report Date: 28 Jan-10 12:01 (p 1 of 2)
Test Code: 18-9261-4769/37319

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Batch ID:	10-9253-5097	**Test Type:**	Growth-Survival (7d)	**Analyst:**	Jason Walker
Start Date:	12 Jan-10 11:00	**Protocol:**	EPA-821-R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	19 Jan-10 10:30	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	Chesapeake Cultures, Inc.	**Age:**	1

Sample ID:	19-7884-0892	**Code:**	Eff	**Client:**	Precision Analytical
Sample Date:	11 Jan-10 09:20	**Material:**	Effluent	**Project:**	15508
Receive Date:	11 Jan-10 19:01	**Source:**	Precision Analytical		
Sample Age:	26h (0.3 °C)	**Station:**	Outlet to Canals		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
19-5268-8313	7d Survival Rate	25	50	35.4	9.73%	4	Steel Many-One Rank Test
10-5529-9897	Mean Dry Biomass-mg	12.5	25	17.7	8.72%	8	Dunnett's Multiple Comparison Test
16-2821-8885	Mean Dry Weight-mg	25	50	35.4	28.0%	4	Steel Many-One Rank Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
07-7611-0183	7d Survival Rate	EC5	22.8	18.4	26.1	4.4	Linear Regression (MLE)
		EC10	25.2	21	28.4	3.98	
		EC15	26.9	22.9	30.2	3.71	
		EC20	28.4	24.5	31.7	3.52	
		EC25	29.8	25.9	33	3.36	
		EC40	33.4	29.8	36.9	2.99	
		EC50	35.9	32.2	39.7	2.79	
19-2085-8926	Mean Dry Biomass-mg	IC5	13.1	N/A	16.9	7.65	Linear Interpolation (ICPIN)
		IC10	15.6	10.7	21.6	6.39	
		IC15	18.7	14.4	28.4	5.36	
		IC20	22.3	16.9	28.4	4.49	
		IC25	25.4	19.9	28.4	3.93	
		IC40	29.7	27.2	32.8	3.37	
		IC50	32.9	30.5	35.8	3.04	

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	1	1	1	1	1	0	0	0.0%	0.0%
12.5		4	1	1	1	1	1	0	0	0.0%	0.0%
25		4	0.9	0.857	0.943	0.8	1	0.0211	0.115	12.8%	10.0%
50		4	0.125	0.0892	0.161	0	0.2	0.0175	0.0957	76.6%	87.5%
75		4	0	0	0	0	0	0	0		100.0%
100		4	0	0	0	0	0	0	0		100.0%

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.326	0.321	0.33	0.308	0.336	0.00224	0.0123	3.77%	0.0%
12.5		4	0.313	0.306	0.321	0.287	0.331	0.00373	0.0204	6.51%	3.76%
25		4	0.25	0.241	0.259	0.226	0.282	0.0045	0.0246	9.86%	23.3%
50		4	0.0303	0.0219	0.0386	0	0.049	0.00408	0.0223	73.8%	90.7%
75		4	0	0	0	0	0	0	0		100.0%
100		4	0	0	0	0	0	0	0		100.0%

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Mean Dry Weight-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.326	0.321	0.33	0.308	0.336	0.00224	0.0123	3.77%	0.0%
12.5		4	0.313	0.306	0.321	0.287	0.331	0.00373	0.0204	6.51%	3.76%
25		4	0.28	0.267	0.292	0.236	0.319	0.00619	0.0339	12.1%	14.1%
50		4	0.185	0.138	0.232	0	0.27	0.0228	0.125	67.4%	43.2%
75		4	0	0	0	0	0	0	0		100.0%
100		4	0	0	0	0	0	0	0		100.0%

7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	1	1	1	1
12.5		1	1	1	1
25		0.8	1	0.8	1
50		0.2	0.1	0.2	0
75		0	0	0	0
100		0	0	0	0

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	0.331	0.328	0.308	0.336
12.5		0.331	0.328	0.287	0.308
25		0.255	0.282	0.226	0.236
50		0.045	0.027	0.049	0
75		0	0	0	0
100		0	0	0	0

Mean Dry Weight-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	0.331	0.328	0.308	0.336
12.5		0.331	0.328	0.287	0.308
25		0.319	0.282	0.283	0.236
50		0.225	0.27	0.245	0
75		0	0	0	0
100		0	0	0	0

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	19-5268-8313	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 12:00	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	25	50	35.4	4	9.73%

Steel Many-One Rank Test

Control vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Lab Water Control	12.5	18	10	1	0.8333	Non-Significant Effect
	25	14	10	1	0.3451	Non-Significant Effect
	50*	10	10	0	0.0417	Significant Effect
	75*	10	10	0	0.0417	Significant Effect
	100*	10	10	0	0.0417	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	7.932184	1.586437	5	183	<0.0001	Significant Effect
Error	0.1561234	0.008673523	18			
Total	8.088307	1.59511	23			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	17.4	4.25	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.775		0.0001	Non-normal Distribution

7d Survival Rate Summary

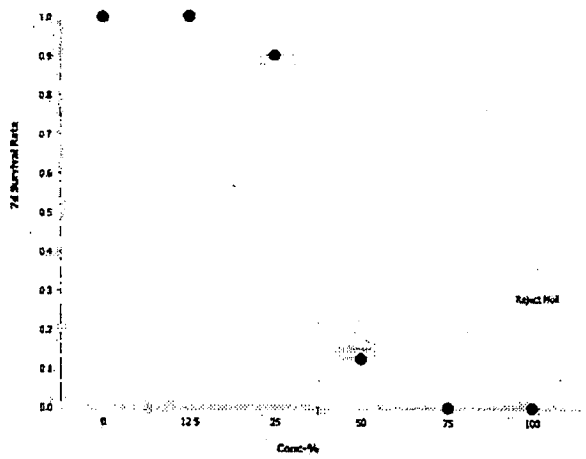
Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	1	1	1	1	1	0	0	0.0%	0.0%
12.5		4	1	1	1	1	1	0	0	0.0%	0.0%
25		4	0.9	0.856	0.944	0.8	1	0.0214	0.115	12.8%	10.0%
50		4	0.125	0.0886	0.161	0	0.2	0.0178	0.0957	76.6%	87.5%
75		4	0	0	0	0	0	0	0		100.0%
100		4	0	0	0	0	0	0	0		100.0%

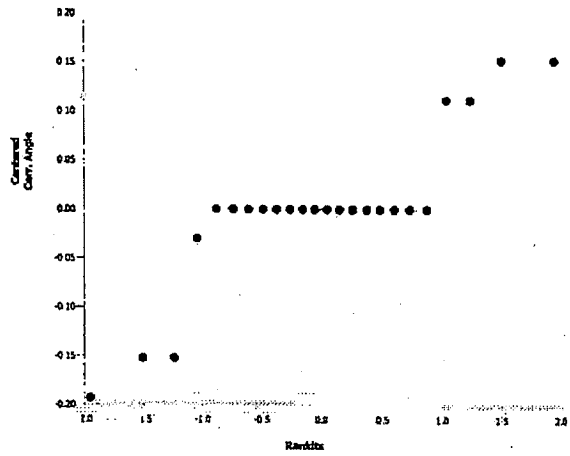
Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Cont	4	1.41	1.41	1.41	1.41	1.41	0	0	0.0%	0.0%
12.5		4	1.41	1.41	1.41	1.41	1.41	0	0	0.0%	0.0%
25		4	1.26	1.19	1.33	1.11	1.41	0.0327	0.176	14.0%	10.8%
50		4	0.352	0.297	0.407	0.159	0.464	0.0269	0.145	41.2%	75.1%
75		4	0.159	0.159	0.159	0.159	0.159	0	0	0.0%	88.8%
100		4	0.159	0.159	0.159	0.159	0.159	0	0	0.0%	88.8%

Chronic Larval Fish Survival and Growth Test					Pacific EcoRisk
Analysis ID:	19-5268-8313	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 12:00	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes

Graphics





CETIS Analytical Report

Report Date: 28 Jan-10 12:01 (p 1 of 2)
Test Code: 18-9261-4769/37319

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	07-7611-0183	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 12:00	Analysis:	Linear Regression (MLE)	Official Results:	Yes

Linear Regression Options

Model Function	Threshold Option	Threshold	Optimized	Pooled	Het Corr	Weighted
Log-Normal [NED=A+B*log(X)]	Control Threshold	0	Yes	No	No	Yes

Regression Summary

Iters	LL	AICc	Mu	Sigma	G Stat	Chi-Sq	Critical	P-Value	Decision(5%)
5	-28.3	61.2	-0.954	0.12	0.0701	7.52	28.9	0.9850	Non-Significant Heterogeneity

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	22.8	18.4	26.1	4.4	3.83	5.43
EC10	25.2	21	28.4	3.98	3.52	4.77
EC15	26.9	22.9	30.2	3.71	3.31	4.37
EC20	28.4	24.5	31.7	3.52	3.16	4.09
EC25	29.8	25.9	33	3.36	3.03	3.86
EC40	33.4	29.8	36.9	2.99	2.71	3.36
EC50	35.9	32.2	39.7	2.79	2.52	3.1

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(5%)
Slope	8.32	1.12	6.12	10.5	7.4	<0.0001	Significant Parameter
Intercept	-7.94	1.78	-11.4	-4.46	-4.47	0.0003	Significant Parameter

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(5%)
Variances	Mod Levene Equality of Variance	21.2	3.06	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.858		0.0074	Non-normal Distribution

7d Survival Rate Summary

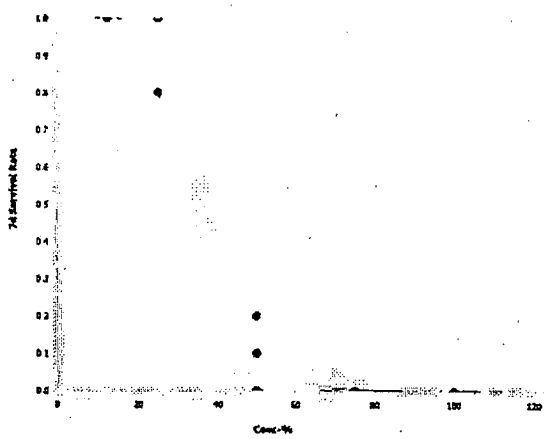
			Calculated Variate(A/B)								
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Lab Water Contr	4	1	1	1	0	0	0.0%	0.0%	40	40
12.5		4	1	1	1	0	0	0.0%	0.0%	40	40
25		4	0.9	0.8	1	0.0211	0.115	12.8%	10.0%	36	40
50		4	0.125	0	0.2	0.0175	0.0957	76.6%	87.5%	5	40
75		4	0	0	0	0	0		100.0%	0	40
100		4	0	0	0	0	0		100.0%	0	40

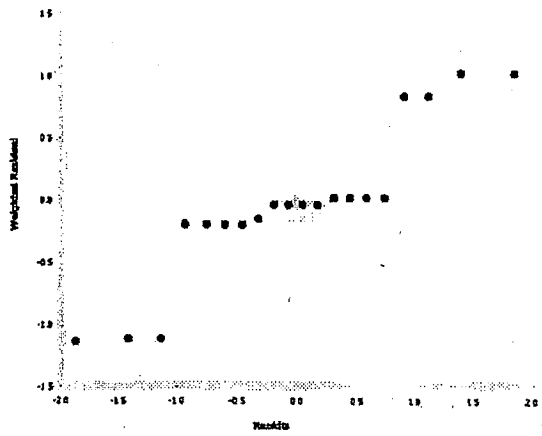
7d Survival Rate Detail

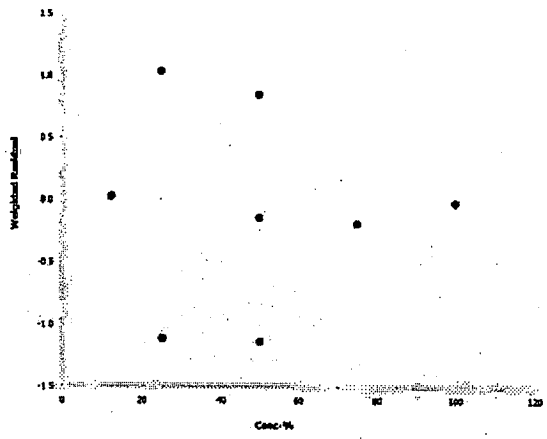
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Control	1	1	1	1
12.5		1	1	1	1
25		0.8	1	0.8	1
50		0.2	0.1	0.2	0
75		0	0	0	0
100		0	0	0	0

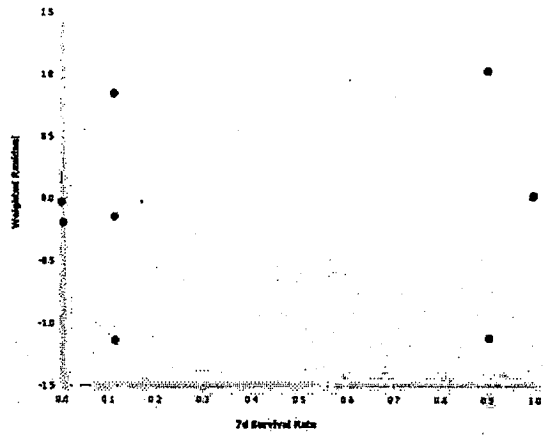
Chronic Larval Fish Survival and Growth Test					Pacific EcoRisk
Analysis ID:	07-7611-0183	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 12:00	Analysis:	Linear Regression (MLE)	Official Results:	Yes

Graphics









CETIS Analytical Report

Report Date: 28 Jan-10 12:00 (p 2 of 4)
Test Code: 18-9261-4769/37319

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	10-5529-9897	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 12:00	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run	12.5	25	17.7	8	8.72%

Dunnett's Multiple Comparison Test

Control vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water Control	12.5	1.04	2.41	0.0284	0.4054	Non-Significant Effect
	25*	6.44	2.41	0.0284	<0.0001	Significant Effect
	50*	25	2.41	0.0284	<0.0001	Significant Effect
	75*	27.6	2.41	0.0284	<0.0001	Significant Effect
	100*	27.6	2.41	0.0284	<0.0001	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.5073944	0.1014789	5	364	<0.0001	Significant Effect
Error	0.005017166	0.0002787314	18			
Total	0.5124115	0.1017576	23			

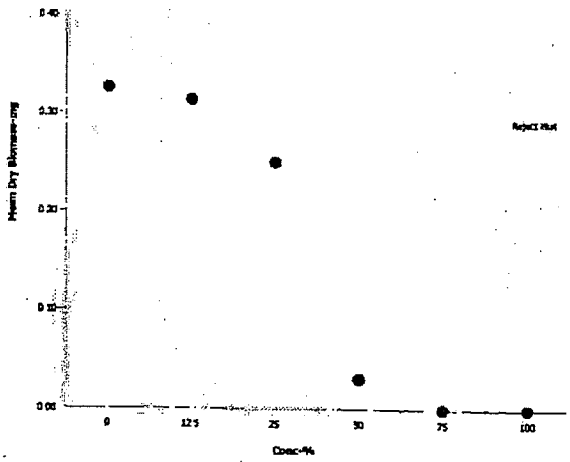
ANOVA Assumptions

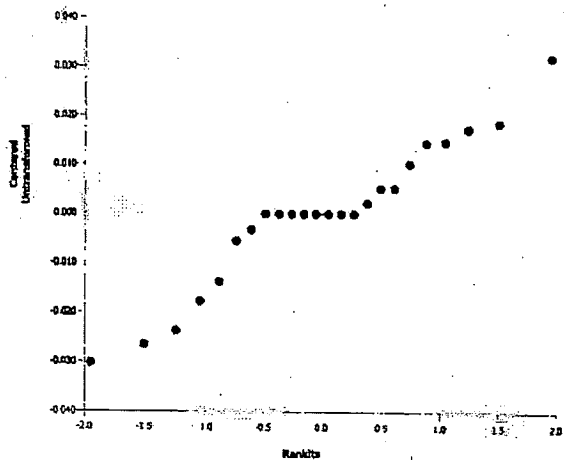
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	3.34	4.25	0.0262	Equal Variances
Distribution	Shapiro-Wilk Normality	0.945		0.2099	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.326	0.321	0.33	0.308	0.336	0.00228	0.0123	3.77%	0.0%
12.5		4	0.313	0.306	0.321	0.287	0.331	0.00379	0.0204	6.51%	3.76%
25		4	0.25	0.24	0.259	0.226	0.282	0.00457	0.0246	9.86%	23.3%
50		4	0.0303	0.0218	0.0387	0	0.049	0.00415	0.0223	73.8%	90.7%
75		4	0	0	0	0	0	0	0		100.0%
100		4	0	0	0	0	0	0	0		100.0%

Graphics





CETIS Analytical Report

Report Date: 28 Jan-10 12:01 (p 1 of 1)
Test Code: 18-9261-4769/37319

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	19-2085-8926	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 12:00	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	57951	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	13.1	N/A	16.9	7.65	5.93	N/A
IC10	15.6	10.7	21.6	6.39	4.64	9.37
IC15	18.7	14.4	28.4	5.36	3.53	6.95
IC20	22.3	16.9	28.4	4.49	3.52	5.91
IC25	25.4	19.9	28.4	3.93	3.52	5.02
IC40	29.7	27.2	32.8	3.37	3.05	3.68
IC50	32.9	30.5	35.8	3.04	2.79	3.27

Mean Dry Biomass-mg Summary

			Calculated Variate						
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.326	0.308	0.336	0.00224	0.0123	3.77%	0.0%
12.5		4	0.313	0.287	0.331	0.00373	0.0204	6.51%	3.76%
25		4	0.25	0.226	0.282	0.0045	0.0246	9.86%	23.3%
50		4	0.0303	0	0.049	0.00408	0.0223	73.8%	90.7%
75		4	0	0	0	0	0		100.0%
100		4	0	0	0	0	0		100.0%

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Control	0.331	0.328	0.308	0.336
12.5		0.331	0.328	0.287	0.308
25		0.255	0.282	0.226	0.236
50		0.045	0.027	0.049	0
75		0	0	0	0
100		0	0	0	0

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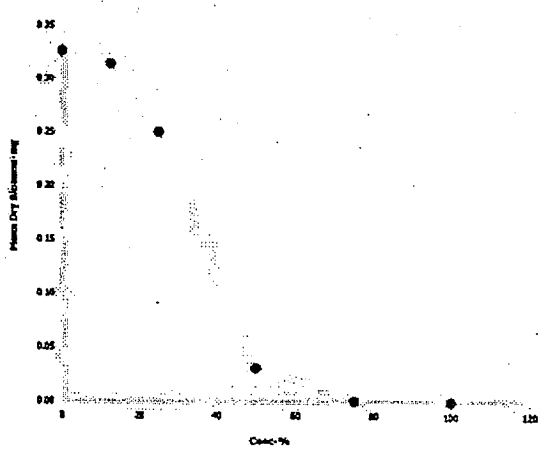

CETIS Analytical Report

Report Date: 28 Jan-10 12:00 (p 1 of 4)
Test Code: 18-9261-4769/37319

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	16-2821-8885	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 12:00	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run	25	50	35.4	4	28.0%

Steel Many-One Rank Test

Control vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Lab Water Control	12.5	14.5	10	3	0.4092	Non-Significant Effect
	25	11	10	0	0.0805	Non-Significant Effect
	50*	10	10	0	0.0417	Significant Effect
	75*	10	10	0	0.0417	Significant Effect
	100*	10	10	0	0.0417	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.4550254	0.09100507	5	31.6	<0.0001	Significant Effect
Error	0.05180039	0.002877799	18			
Total	0.5068257	0.09388287	23			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	1.41	4.25	0.2669	Equal Variances
Distribution	Shapiro-Wilk Normality	0.704		<0.0001	Non-normal Distribution

Mean Dry Weight-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.326	0.321	0.33	0.308	0.336	0.00228	0.0123	3.77%	0.0%
12.5		4	0.313	0.306	0.321	0.287	0.331	0.00379	0.0204	6.51%	3.76%
25		4	0.28	0.267	0.293	0.236	0.319	0.0063	0.0339	12.1%	14.1%
50		4	0.185	0.138	0.232	0	0.27	0.0232	0.125	67.4%	43.2%
75		4	0	0	0	0	0	0	0		100.0%
100		4	0	0	0	0	0	0	0		100.0%

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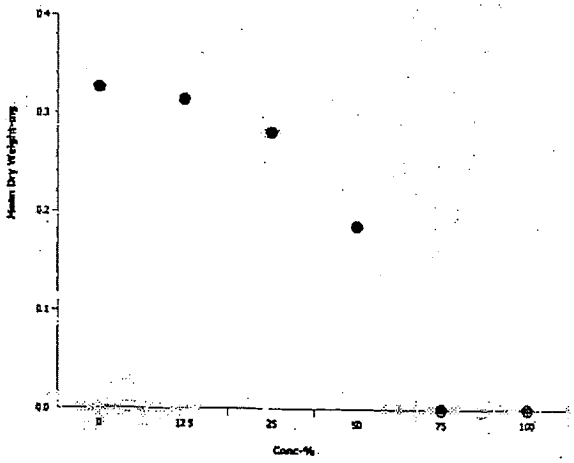
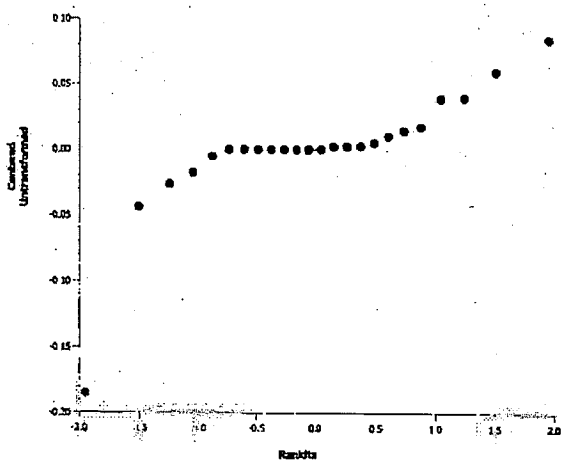




7 Day Chronic Fathead Minnow Toxicity Test Data

Client: P. Analytical - Chevron Cawelo
Test Material: Outlet to Canals
Test ID#: 37319 Project #: 15508
Test Date: 1/12/10 Randomization: 4-6-8

Organism Log#: 4993 Age: <48 hrs
Organism Supplier: Chesapeake Cultures
Control/Diluent: EPAMH
Control Water Batch: 1275

Treatment (% Effluent)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Water Control	25.0	7.65		8.5		299	10	10	10	10	Date: 1/12/10
12.5%	25.0	7.51		8.4		357	10	10	10	10	Sample ID: 23378
25%	25.0	7.36		8.2		415	10	10	10	10	Test Solution Prep: SM
50%	25.0	7.20		7.9		539	10	10	10	10	New WQ: OVB
75%	25.0	7.11		6.8		653	10	10	10	10	Initiation Time: 1100
100%	25.0	7.03		5.0		764	10	10	10	10	Initiation Sign-off: [illegible]
Meter ID	33A	PH14		RD07		EC03					
Lab Water Control	25.3	8.19	7.85	9.2	7.6	311	10	10	10	10	Date: 1-13-10
12.5%	25.3	7.90	7.81	9.1	7.6	363	10	10	10	10	Sample ID: 23378
25%	25.3	7.72	7.84	8.8	7.6	423	10	10	10	10	Test Solution Prep: JL
50%	25.3	7.57	7.93	8.6	7.7	540	10	10	10	10	New WQ: SM
75%	25.3	7.46	8.08	8.3	7.7	655	10	10	10	10	Renewal Time: 1400
100%	25.3	7.33	8.09	7.7	7.7	769	10	10	10	10	Renewal Sign-off: JM
Meter ID	33A	pH14	pH14	RD02	RD01	EC05					Old WQ: SM
Lab Water Control	25.5	8.16	8.23	8.7	8.3	321	10	10	10	10	Date: 1/14/10
12.5%	25.5	8.09	8.05	8.9	8.2	366	10	10	10	10	Sample ID: 23378
25%	25.5	7.97	7.85	9.0	8.4	426	9	10	10	10	Test Solution Prep: [illegible]
50%	25.5	7.84	7.85	9.0	8.5	547	10	10	8	10	New WQ: JL
75%	25.5	7.64	7.98	9.1	8.8	667	10	10	10	9	Renewal Time: 1415
100%	25.5	7.58	7.99	9.2	8.6	781	9	9	10	9	Renewal Sign-off: JM
Meter ID	33A	pH14	pH03	RD01	RD02	EC05					Old WQ: JM
Lab Water Control	25.5	8.15	8.02	9.0	8.5	310	10	10	10	10	Date: 1/15/10
12.5%	25.5	8.09	8.07	9.1	8.0	365	10	10	10	10	Sample ID: 23378
25%	25.5	7.94	8.06	9.2	8.1	426	9	10	8	10	Test Solution Prep: [illegible]
50%	25.5	7.72	8.11	9.3	8.2	542	10	8	7	9	New WQ: [illegible]
75%	25.5	7.49	8.21	9.2	8.1	654	5	6	8	8	Renewal Time: 1420
100%	25.5	7.30	8.32	9.2	8.1	772	6	6	6	5	Renewal Sign-off: [illegible]
Meter ID	33A	PH14	pH14	RD01	RD01	EC05					Old WQ: [illegible]

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: P. Analytical - Chevron Cawelo
Test Material: Outlet to Canals
Test ID#: 37319 Project #: 15508
Test Date: 1/12/10 Randomization: 4-6-8

Organism Log#: 4993 Age: <48hrs
Organism Supplier: Chesapeake Cultures
Control/Diluent: EPAMH
Control Water Batch: 1275

Treatment (% Effluent)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Water Control	25.5	7.86	8.24	9.1	7.9	311	10	10	10	10	Date: ~~1/12/10~~ 1/19/10
12.5%	25.5	7.71	8.16	9.0	8.0	379	10	10	10	10	Sample ID 23378
25%	25.5	7.51	8.15	9.2	8.1	440	9	10	8	10	Test Solution Prep SM
50%	25.5	7.43	8.23	9.4	7.9	555	10	6	6	4	New WQ ~~SM~~ SH
75%	25.5	7.33	8.19	9.6	7.9	678	2	1	3	2	Renewal Time 1130
100%	25.5	7.22	8.16	9.5	6.7 / 7.49	787	0	0	0	1	Renewal Signoff SM
Meter ID	33A	pH12	pH12	RD01	RD01	EC04					Old WQ KP
Lab Water Control	25.1	8.14	7.90	9.3	7.4	309	10	10	10	10	Date: 1/17/10
12.5%	25.1	7.85	7.90	9.0	7.2	369	10	10	10	10	Sample ID 23378
25%	25.1	7.55	7.94	9.2	7.1	423	9	10	8	10	Test Solution Prep SM
50%	25.1	7.42	8.11	9.3	7.1	541	7	3	6	2	New WQ SG
75%	25.1	7.29	8.08	9.6	7.1	655	0	0	0	0	Renewal Time 1400
100%	25.1	7.20	8.14	10.2	7.0	766	-	-	-	0	Renewal Signoff JR
Meter ID	33A	pH14	pH12	RD02	RD03	EC05					Old WQ SG
Lab Water Control	25.3	8.10	7.84	9.3	7.3	311	10	10	10	10	Date: 1/18/10
12.5%	25.3	8.03	8.02	9.0	7.3	366	10	10	10	10	Sample ID 23378
25%	25.3	7.89	7.91	9.0	7.1	425	9	10	8	10	Test Solution Prep [illegible]
50%	25.3	7.75	8.08	9.2	7.4	534	5	1	3	1	New WQ JR
75%	—	—	—	—	—	—	—	—	—	—	Renewal Time 1330
100%	—	—	—	—	—	—	—	—	—	—	Renewal Signoff [illegible]
Meter ID	33A	pH12	pH09	RD01	RD03	EC05					Old WQ BH
Lab Water Control	25.6		8.13		8.3	324	10	10	10	10	Date 1/19/10
12.5%	25.6		8.10		8.0	371	10	10	10	10	Termination Time ~~JT 1000~~ 1030
25%	25.6		8.11		8.0	442	8	10	8	10	Termination Signoff JT
50%	25.6		8.25		7.8	550	2	1	2	0	Old WQ KP
75%	—		—		—	—	—	—	—	—	
100%	—		—		—	—	—	—	—	—	
Meter ID	33A		pH14		RD03	EC03					

Fathead Minnow Dry Weight Data Sheet

Client: P. Analytical - Chevron Cawelo Test ID #: 37319 Project # 15508
Sample: Outlet to Canals Tare Weight Date: 1/16/10 Sign-off: DS/KQ
Test Date: 1-12-10 Final Weight Date: 1/23/10 Sign-off: DS

Pan ID	Concentration	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Lab Water	A	193.59	196.90	10	0.331
2		B	174.24	177.52	10	0.328
3		C	193.73	196.81	10	0.308
4		D	174.15	177.51	10	0.336
5	12.5	A	196.13	199.44	10	0.331
6		B	162.89	166.17	10	0.328
7		C	152.05	154.92	10	0.287
8		D	163.73	166.81	10	0.308
9	25	A	174.54	177.09	10	0.255
10		B	159.44	162.26	10	0.282
11		C	182.04	184.30	10	0.226
12		D	176.36	178.72	10	0.236
13	50	A	156.95	157.40	10	0.045
14		B	173.15	173.42	10	0.027
15		C	157.15	157.64	10	0.049
16		D	163.40	—	10	—
17	75	A	153.89	—	10	—
18		B	175.02	—	10	—
19		C	172.50	—	10	—
20		D	172.62	—	10	—
21	100	A	163.07	—	10	—
22		B	173.09	—	10	—
23		C	198.49	—	10	—
24		D	199.43	—	10	—
QA 1			173.19	173.16		
QA 2			180.92	180.91		
Balance ID			#1	#1		

Appendix G

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Pre-Poso Creek Water to *Selenastrum capricornutum*

CETIS Summary Report

Report Date: 28 Jan-10 14:37 (p 1 of 1)
Test Code: 12-2256-6262/37372

Algal Growth Test — Pacific EcoRisk

Batch ID:	14-8489-0444	Test Type:	Cell Growth	Analyst:	Jason Walker
Start Date:	12 Jan-10 16:00	Protocol:	EPA-821-R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	16 Jan-10 15:15	Species:	Selenastrum capricornutum	Brine:	Not Applicable
Duration:	95h	Source:	In-House Culture	Age:	6

Sample ID:	19-0947-8289	Code:	Eff	Client:	Precision Analytical
Sample Date:	11 Jan-10 09:55	Material:	Effluent	Project:	15508
Receive Date:	11 Jan-10 19:01	Source:	Precision Analytical		
Sample Age:	30h (1.2 °C)	Station:	Pre-Poso Creek		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
17-8019-4917	96h Cell Density-with EDTA	100	>100	N/A	10.0%	1	Dunnett's Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
17-4532-9007	96h Cell Density-with EDTA	IC5	85.8	80.3	99.9	1.17	Linear Interpolation (ICPIN)
		IC10	98.2	85.8	N/A	1.02	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

96h Cell Density-with EDTA Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	2.07E+6	2.05E+6	2.09E+6	1.99E+6	2.11E+6	1.04E+4	5.68E+4	2.75%	0.0%
12.5		4	2.79E+6	2.73E+6	2.84E+6	2.62E+6	2.91E+6	2.59E+4	1.42E+5	5.09%	-34.8%
25		4	2.96E+6	2.94E+6	2.97E+6	2.91E+6	3.02E+6	8.76E+3	4.80E+4	1.62%	-42.9%
50		4	3.10E+6	3.05E+6	3.15E+6	2.91E+6	3.23E+6	2.49E+4	1.36E+5	4.39%	-49.9%
75		4	3.11E+6	3.06E+6	3.17E+6	2.93E+6	3.26E+6	2.64E+4	1.45E+5	4.65%	-50.5%
100		4	2.51E+6	2.45E+6	2.56E+6	2.28E+6	2.63E+6	2.84E+4	1.55E+5	6.21%	-21.2%

96h Cell Density-with EDTA Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	2.06E+6	2.11E+6	2.11E+6	1.99E+6
12.5		2.62E+6	2.91E+6	2.90E+6	2.72E+6
25		2.91E+6	2.93E+6	3.02E+6	2.96E+6
50		3.23E+6	3.11E+6	3.15E+6	2.91E+6
75		3.07E+6	3.26E+6	3.19E+6	2.93E+6
100		2.28E+6	2.63E+6	2.58E+6	2.53E+6

CETIS Analytical Report

Report Date: 28 Jan-10 14:37 (p 1 of 1)
Test Code: 12-2256-6262/37372

Algal Growth Test — Pacific EcoRisk

Analysis ID:	17-8019-4917	Endpoint:	96h Cell Density-with EDTA	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 14:37	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run	100	>100	N/A	1	10.0%

Dunnett's Multiple Comparison Test

Control vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water Control	12.5	-8.35	2.41	208000	1.0000	Non-Significant Effect
	25	-10.3	2.41	208000	1.0000	Non-Significant Effect
	50	-12	2.41	208000	1.0000	Non-Significant Effect
	75	-12.1	2.41	208000	1.0000	Non-Significant Effect
	100	-5.07	2.41	208000	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	3.292171E+12	6.584342E+11	5	44.3	<0.0001	Significant Effect
Error	2.67825E+11	14879170000	18			
Total	3.559996E+12	6.733133E+11	23			

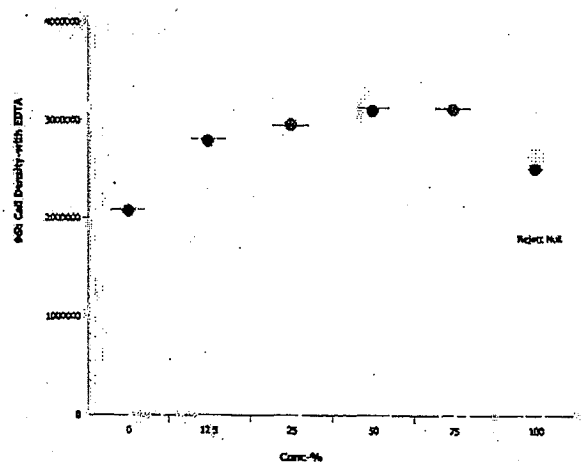
ANOVA Assumptions

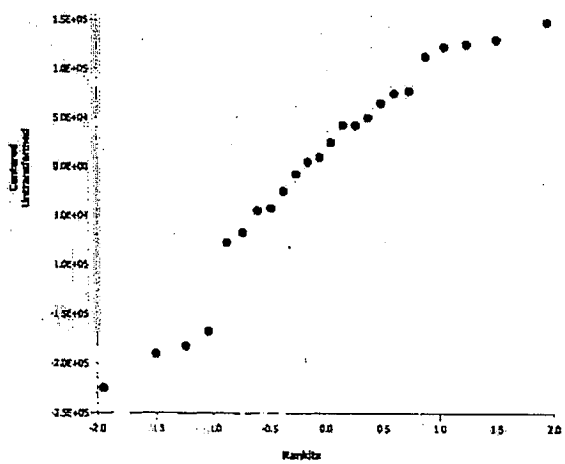
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Bartlett Equality of Variance	5.44	15.1	0.3645	Equal Variances
Distribution	Shapiro-Wilk Normality	0.93		0.0981	Normal Distribution

96h Cell Density-with EDTA Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	2.07E+6	2.05E+6	2.09E+6	1.99E+6	2.11E+6	1.05E+4	5.68E+4	2.75%	0.0%
12.5		4	2.79E+6	2.73E+6	2.84E+6	2.62E+6	2.91E+6	2.63E+4	1.42E+5	5.09%	-34.8%
25		4	2.96E+6	2.94E+6	2.97E+6	2.91E+6	3.02E+6	8.91E+3	4.80E+4	1.62%	-42.9%
50		4	3.10E+6	3.05E+6	3.15E+6	2.91E+6	3.23E+6	2.53E+4	1.36E+5	4.39%	-49.9%
75		4	3.11E+6	3.06E+6	3.17E+6	2.93E+6	3.26E+6	2.69E+4	1.45E+5	4.65%	-50.5%
100		4	2.51E+6	2.45E+6	2.56E+6	2.28E+6	2.63E+6	2.89E+4	1.55E+5	6.21%	-21.2%

Graphics





CETIS Analytical Report

Report Date: 28 Jan-10 14:37 (p 1 of 1)
Test Code: 12-2256-6262/37372

Algal Growth Test — Pacific EcoRisk

Analysis ID:	17-4532-9007	Endpoint:	96h Cell Density-with EDTA	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 14:37	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	57951	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	85.8	80.3	99.9	1.17	1	1.25
IC10	98.2	85.8	N/A	1.02	N/A	1.17
IC15	>100	N/A	N/A	<1	N/A	N/A
IC20	>100	N/A	N/A	<1	N/A	N/A
IC25	>100	N/A	N/A	<1	N/A	N/A
IC40	>100	N/A	N/A	<1	N/A	N/A
IC50	>100	N/A	N/A	<1	N/A	N/A

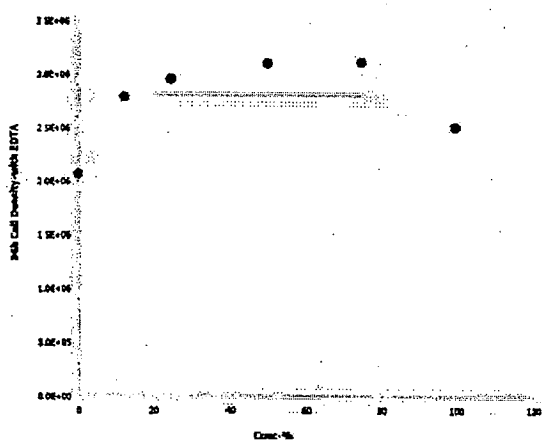
96h Cell Density-with EDTA Summary

			Calculated Variate						
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	2.07E+6	1.99E+6	2.11E+6	1.04E+4	5.68E+4	2.75%	0.0%
12.5		4	2.79E+6	2.62E+6	2.91E+6	2.59E+4	1.42E+5	5.09%	-34.8%
25		4	2.96E+6	2.91E+6	3.02E+6	8.76E+3	4.80E+4	1.62%	-42.9%
50		4	3.10E+6	2.91E+6	3.23E+6	2.49E+4	1.36E+5	4.39%	-49.9%
75		4	3.11E+6	2.93E+6	3.26E+6	2.64E+4	1.45E+5	4.65%	-50.5%
100		4	2.51E+6	2.28E+6	2.63E+6	2.84E+4	1.55E+5	6.21%	-21.2%

96h Cell Density-with EDTA Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Control	2.06E+6	2.11E+6	2.11E+6	1.99E+6
12.5		2.62E+6	2.91E+6	2.90E+6	2.72E+6
25		2.91E+6	2.93E+6	3.02E+6	2.96E+6
50		3.23E+6	3.11E+6	3.15E+6	2.91E+6
75		3.07E+6	3.26E+6	3.19E+6	2.93E+6
100		2.28E+6	2.63E+6	2.58E+6	2.53E+6

Graphics



Selenastrum capricornutum Cell Density Enumeration Data

Client: P. Analytical - Chevron Cawelo
Initial Count: 10,000 cells/mL
Test Material: Pre-Poso Creek
Enumerating Scientist: SH
Test Start Date: 1/12/10 Start Time: 1400
Project #: 15508
Test End Date: 1/16/10 End Time: 1515
Test ID #: 37372

Treatment	Rep A	Rep B	Rep C	Rep D	Mean
Lab Water Control	2.06	2.11	2.11	1.99	2.07
12.5%	2.62	2.91	2.90	2.72	2.79
25%	2.91	2.93	3.02	2.96	2.96
50%	3.23	3.11	3.15	2.91	3.10
75%	3.07	3.26	3.19	2.93	3.11
100%	2.28	2.63	2.58	2.53	2.50
This datasheet has been reviewed for completeness and consistency with Test Acceptability Criteria and/or other issues of concern.	Control Mean Density (cells/mL x 10^6)	% CV	Date:	Time:	Signoff:
	2.07	2.7	1-16-10	1810	JZ

Selenastrum capricornutum Algal Toxicity Test Water Quality Data

Client: P. Analytical - Chevron Cawelo Test ID #: 37372 Test Date: 1/12/10
Test Material: Pre-Poso Creek Project #: 15508 Control/Diluent: Lab Water
Stock # R551

Test Treatment	Temp (°C)	pH	D.O. (mg/L)	Conductivity (µS/cm)	Sign-Off
Lab Water Control	25.8	7.49	~~9.6~~ 10.0	119	Date: 1/12/10
12.5% Effluent	25.8	7.56	9.6	204	Sample ID: 23376
25% Effluent	25.8	7.48	9.6	298	Test Solution Prep: SH
50% Effluent	25.8	7.40	9.5	486	New WQ: [illegible]
75% Effluent	25.8	7.42	9.5	664	Inoculation Time: 1600
100% Effluent	25.8	7.39	9.1	815	Inoculation Signoff: SH
Meter ID:	31	PH09	RD03	EC04	
Lab Water Control	25.7	8.79			Date: 1/13/10
12.5% Effluent	25.7	8.35			WQ Time: 1150
25% Effluent	25.7	8.19			WQ Signoff: OOB
50% Effluent	25.7	8.26			
75% Effluent	25.7	8.30			
100% Effluent	25.7	8.49			
Meter ID:	31	PH09			
Lab Water Control	25.4	8.40			Date: 01/14/10
12.5% Effluent	25.4	8.59			WQ Time: 10:55
25% Effluent	25.4	8.62			WQ Signoff: SB
50% Effluent	25.4	8.61			
75% Effluent	25.4	8.61			
100% Effluent	25.4	8.65			
Meter ID:	31	PH14			
Lab Water Control	25.5	9.59			Date: 1/15/10
12.5% Effluent	25.5	9.76			WQ Time: 0930
25% Effluent	25.5	9.62			WQ Signoff: HV
50% Effluent	25.5	9.44			
75% Effluent	25.5	9.34			
100% Effluent	25.5	9.14			
Meter ID:	31	PH09			
Lab Water Control	25.2	9.91	11.8	115	Date: 1/16/10
12.5% Effluent	25.2	10.05	14.8	212	Termination Time: 1515
25% Effluent	25.2	9.95	14.9	307	Termination Signoff: SH
50% Effluent	25.2	9.68	15.3	478	WQ Time: 1231
75% Effluent	25.2	9.63	15.5	657	WQ Signoff: NVS
100% Effluent	25.2	9.35	15.0	821	
Meter ID:	31	pH14	RD03	EC03	

Initial Test Conditions	Alkalinity		Hardness		Light Intensity (ftc)
	226	✓	93	✓	409

Appendix H

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Pre-Poso Creek Water to *Ceriodaphnia dubia*

CETIS Summary Report

Report Date: 28 Jan-10 12:58 (p 1 of 2)
Test Code: 13-6944-8504/37315

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Batch ID:	17-5062-9842	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Jason Walker
Start Date:	12 Jan-10 11:30	**Protocol:**	EPA-821-R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	18 Jan-10 17:30	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 6h	**Source:**	In-House Culture	**Age:**	1

Sample ID:	19-0947-8289	**Code:**	Eff	**Client:**	Precision Analytical
Sample Date:	11 Jan-10 09:55	**Material:**	Effluent	**Project:**	15508
Receive Date:	11 Jan-10 19:01	**Source:**	Precision Analytical		
Sample Age:	26h (1.2 °C)	**Station:**	Pre-Poso Creek		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
19-7582-1831	Reproduction	75	100	86.6	20.9%	1.33	Steel Many-One Rank Test
05-2613-7176	Survival	100	>100	N/A	N/A	1	Fisher Exact/Bonferroni-Holm Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
13-1372-8978	Reproduction	IC5	61	34.1	75.5	1.64	Linear Interpolation (ICPIN)
		IC10	74.3	50.6	78.6	1.35	
		IC15	77.8	65.2	81.8	1.28	
		IC20	80.9	75.3	85.5	1.24	
		IC25	84.2	78.8	89.1	1.19	
		IC40	94.6	88	N/A	1.06	
		IC50	>100	N/A	N/A	<1	

Reproduction Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	10	36.2	33	39.4	16	46	1.54	8.44	23.3%	0.0%
12.5		10	37.4	34.2	40.6	15	46	1.56	8.57	22.9%	-3.31%
25		10	42	39.9	44.1	29	48	1.03	5.66	13.5%	-16.0%
50		10	38.6	36.7	40.5	30	47	0.94	5.15	13.3%	-6.63%
75		10	34.6	33	36.2	23	38	0.804	4.4	12.7%	4.42%
100		10	20.4	16.6	24.2	2	35	1.87	10.2	50.1%	43.6%

Survival Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	10	1	1	1	1	1	0	0	0.0%	0.0%
12.5		10	1	1	1	1	1	0	0	0.0%	0.0%
25		10	0.9	0.782	1	0	1	0.0577	0.316	35.1%	10.0%
50		10	1	1	1	1	1	0	0	0.0%	0.0%
75		10	1	1	1	1	1	0	0	0.0%	0.0%
100		10	0.9	0.782	1	0	1	0.0577	0.316	35.1%	10.0%

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water Contr	36	40	16	30	46	42	34	41	41	36
12.5		44	41	39	38	38	38	34	46	15	41
25		44	44	41	29	48	47	40	46	37	44
50		37	47	41	30	42	39	41	42	32	35
75		34	37	37	23	35	38	36	38	35	33
100		10	35	25	14	30	13	23	25	2	27

Survival Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water Contr	1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	0
50		1	1	1	1	1	1	1	1	1	1
75		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	0	1

CETIS Analytical Report

Report Date: 28 Jan-10 12:58 (p 1 of 1)
Test Code: 13-6944-8504/37315

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Analysis ID:	05-2613-7176	Endpoint:	Survival	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 12:57	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run	100	>100	N/A	1	N/A

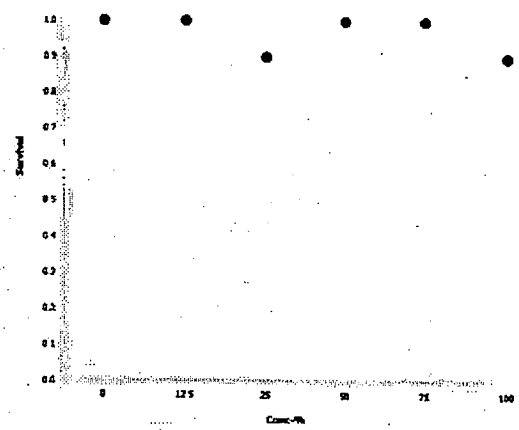
Fisher Exact/Bonferroni-Holm Test

Control	vs	Conc-%	Test Stat	P-Value	Decision(0.05)
Lab Water Control		12.5	1	1.0000	Non-Significant Effect
		25	0.5	1.0000	Non-Significant Effect
		50	1	1.0000	Non-Significant Effect
		75	1	1.0000	Non-Significant Effect
		100	0.5	1.0000	Non-Significant Effect

Data Summary

Conc-%	Control Type	No-Resp	Resp	Total
0	Lab Water Cont	10	0	10
12.5		10	0	10
25		9	1	10
50		10	0	10
75		10	0	10
100		9	1	10

Graphics



CETIS Analytical Report

Report Date: 28 Jan-10 12:58 (p 1 of 1)
Test Code: 13-6944-8504/37315

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Analysis ID:	19-7582-1831	Endpoint:	Reproduction	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 12:57	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run	75	100	86.6	1.33	20.9%

Steel Many-One Rank Test

Control vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Lab Water Control	12.5	110	75	3	0.9223	Non-Significant Effect
	25	130	75	3	0.9994	Non-Significant Effect
	50	113	75	3	0.9503	Non-Significant Effect
	75	90.5	75	2	0.3707	Non-Significant Effect
	100*	63.5	75	1	0.0039	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	2823.733	564.7466	5	10.4	<0.0001	Significant Effect
Error	2943.2	54.5037	54			
Total	5766.934	619.2504	59			

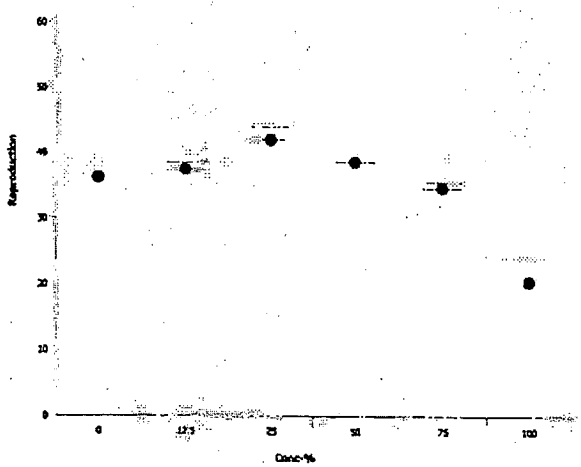
ANOVA Assumptions

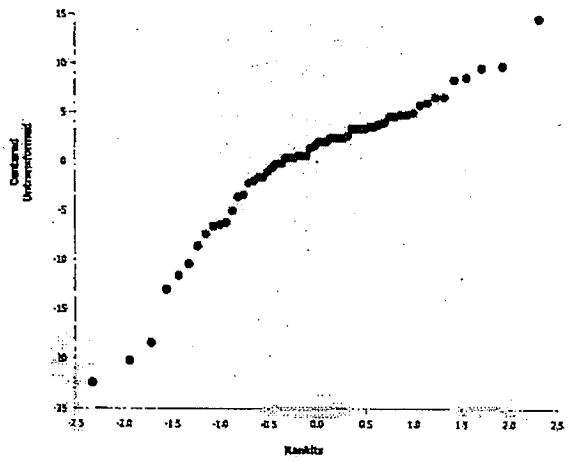
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Bartlett Equality of Variance	9.24	15.1	0.0997	Equal Variances
Distribution	Shapiro-Wilk Normality	0.905		0.0002	Non-normal Distribution

Reproduction Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	10	36.2	33	39.4	16	46	1.57	8.44	23.3%	0.0%
12.5		10	37.4	34.1	40.7	15	46	1.59	8.57	22.9%	-3.31%
25		10	42	39.8	44.2	29	48	1.05	5.66	13.5%	-16.0%
50		10	38.6	36.6	40.6	30	47	0.956	5.15	13.3%	-6.63%
75		10	34.6	32.9	36.3	23	38	0.817	4.4	12.7%	4.42%
100		10	20.4	16.5	24.3	2	35	1.9	10.2	50.1%	43.6%

Graphics





CETIS Analytical Report

Report Date: 28 Jan-10 12:58 (p 1 of 1)
Test Code: 13-6944-8504/37315

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Analysis ID:	13-1372-8978	Endpoint:	Reproduction	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 12:57	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	57951	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	61	34.1	75.5	1.64	1.32	2.93
IC10	74.3	50.6	78.6	1.35	1.27	1.98
IC15	77.8	65.2	81.8	1.28	1.22	1.53
IC20	80.9	75.3	85.5	1.24	1.17	1.33
IC25	84.2	78.8	89.1	1.19	1.12	1.27
IC40	94.6	88	N/A	1.06	N/A	1.14
IC50	>100	N/A	N/A	<1	N/A	N/A

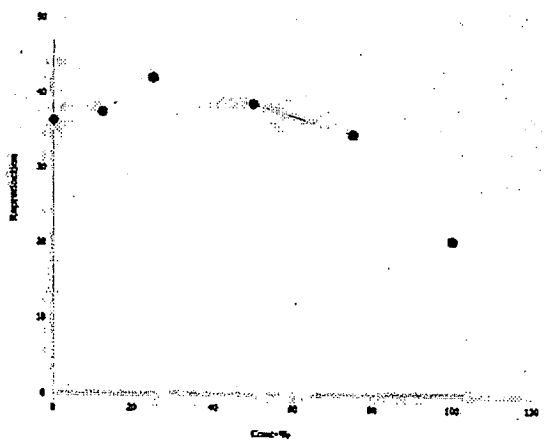
Reproduction Summary

			Calculated Variate						
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	10	36.2	16	46	1.54	8.44	23.3%	0.0%
12.5		10	37.4	15	46	1.56	8.57	22.9%	-3.31%
25		10	42	29	48	1.03	5.66	13.5%	-16.0%
50		10	38.6	30	47	0.94	5.15	13.3%	-6.63%
75		10	34.6	23	38	0.804	4.4	12.7%	4.42%
100		10	20.4	2	35	1.87	10.2	50.1%	43.6%

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water Control	36	40	16	30	46	42	34	41	41	36
12.5		44	41	39	38	38	38	34	46	15	41
25		44	44	41	29	48	47	40	46	37	44
50		37	47	41	30	42	39	41	42	32	35
75		34	37	37	23	35	38	36	38	35	33
100		10	35	25	14	30	13	23	25	2	27

Graphics



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: P. Analytical - Chevron Cawelo Material: Pre-Poso Creek Test Date: 1-12-10

Project #: 15508 Test ID: 37315 Randomization: Board 7 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	SIGN-OFF
Lab Water Control	0	7.44	7.95	9.3		223	25.5	0	0	0	0	0	0	0	0	0	0	Date: 1/12/10 New WQ: Test Init.: JT Sol'n Prep: Time: 1130
	1	7.73	8.22	9.2	7.8	220	25.4	0	0	0	0	0	0	0	0	0	0	Date: 1-13-10 New WQ: Counts: Sol'n Prep: JT Old WQ: Time: 1145
	2	8.15	8.53	8.6	8.4	230	25.9	0	0	0	0	0	0	0	0	0	0	Date: 1/14/10 New WQ: JT Counts: Sol'n Prep: Old WQ: Time: 1500
	3	8.45	8.24	9.1	8.1	217	25.6	6	3	4	5	7	5	4	6	0	5	Date: 1/15/10 New WQ: Counts: JT Sol'n Prep: Old WQ: Time: 1400
	4	8.40	8.00	9.3	7.9	238	25.0	0	0	0	0	0	0	0	0	7	1	Date: 1/16/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1220
	5	8.03	8.09	9.1	7.2	218	25.4	14	15	12	10	13	14	14	14	13	15	Date: 1/17/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1500
	6	7.97	8.11	9.2	7.5	214	25.4	16	22	19	15	26	23	16	21	21	15	Date: 1/18/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1700
	7																	Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
	8																	Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
							Total=	36	40	46	30	46	42	34	41	41	36	Mean Neonates/Female = 36.2

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	SAMPLE ID
12.5%	0	7.70		9.3		296	0	0	0	0	0	0	0	0	0	0	23376
	1	7.78	8.23	9.2	7.3	294	0	0	0	0	0	0	0	0	0	0	23376
	2	8.16	8.53	8.7	8.1	307	0	0	0	0	0	0	0	0	0	0	23376
	3	8.16	8.31	8.9	8.2	299	6	6	8	5	4	6	5	6	1	0	23376
	4	8.08	8.08	9.3	7.8	296	0	0	0	0	0	0	0	0	4	6	23376
	5	7.80	8.16	9.1	7.3	294	15	15	14	13	13	14	13	17	10	16	23376
	6	7.99	8.16	9.1	7.9	330	23	20	17	20	21	18	16	23	0	19	23376
	7																
	8																
							Total=	44	41	39	38	38	38	34	46	15	41	Mean Neonates/Female = 37.4

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: P. Analytical - Chevron Cawelo Material: Pre-Poso Creek Test Date: 1/12/10

Project #: 15508 Test ID: 37315 Randomization: Board 7 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	SIGN-OFF
25%	0	7.64		9.1		369	0	0	0	0	0	0	0	0	0	0	
	1	~~7.57~~ 7.71	8.32	8.8	7.2	365	0	0	0	0	0	0	0	0	0	0	
	2	8.10	8.55	8.7	8.1	367	0	0	0	0	0	0	0	0	0	0	
	3	7.98	8.36	8.9	8.4	369	5	5	5	3	6	6	6	7	0	0	
	4	7.98	8.18	9.3	7.7	362	1	0	1	0	0	0	0	0	6	8	
	5	7.66	8.24	9.2	7.0	360	15	15	14	10	18	16	17	15	14	16	
	6	8.04	8.22	9.1	7.8	387	23	24	21	16	24	25	17	24	17	X/20	
	7															–	
	8															–	
							Total=	44	44	41	29	48	47	40	46	37	X/44 Mean Neonates/Female = 42.0

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	
50%	0	7.55		9.0		503	0	0	0	0	0	0	0	0	0	0	
	1	7.63	8.42	8.8	7.2	507	0	0	0	0	0	0	0	0	0	0	
	2	8.03	8.70	8.6	7.80	501	0	0	0	0	0	0	0	0	0	0	
	3	7.83	8.46	8.6	8.3	504	6	7	8	4	8	6	5	7	0	0	
	4	7.77	8.25	9.2	7.7	508	0	0	0	0	0	0	0	0	5	8	
	5	7.53	8.31	9.4	7.0	506	14	15	14	10	16	14	14	15	13	14	
	6	8.10	8.35	9.1	7.8	~~554~~ 521	17	25	19	16	18	19	22	20	14	13	
	7																
	8																
							Total=	37	47	41	30	42	39	41	42	32	35 Mean Neonates/Female = 38.6

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: P. Analytical - Chevron Cawelo Material: Pre-Poso Creek Test Date: 1/12/10

Project #: 15508 Test ID: 37315 Randomization: Board 7 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	SIGN-OFF
75%	0	7.51		8.9		637	0	0	0	0	0	0	0	0	0	0	
	1	7.53	8.57	8.6	7.2	642	0	0	0	0	0	0	0	0	0	0	
	2	7.91	8.68	8.6	7.9	633	0	0	0	0	0	0	0	0	0	0	
	3	7.71	8.53	8.4	8.5	650	5	5	0	2	36	6	6	6	8	0	
	4	7.61	8.40	9.0	7.7	641	0	0	8	0	0	0	0	0	7	0	
	5	7.42	8.43	9.6	7.1	643	12	13	14	10	12	14	12	15	12	16	
	6	~~6.05~~ 7.62	8.46	9.3	7.8	643	17	19	15	11	17	18	18	17	16	17	
	7																
	8																
						Total=	34	37	37	23	35	38	36	38	35	33	Mean Neonates/Female = 34.6

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	SIGN-OFF
100%	0	7.43		8.7		782	0	0	0	0	0	0	0	0	0	0	
	1	7.46	8.60	8.0	7.2	783	0	0	0	0	0	0	0	0	0	0	
	2	7.87	8.75	8.6	8.0	780	0	0	0	0	0	0	0	0	0	0	
	3	7.67	8.59	8.3	8.3	781	0	5	0	0	6	0	3	5	0	0	
	4	7.54	8.50	9.0	7.7	781	4	0	1	0	1	0	1	0	2	4	
	5	7.38	8.54	9.8	6.9	776	0	13	10	5	10	0	9	5	X/0	10	
	6	7.61	8.56	9.2	7.8	776	6	17	14	9	14	13	10	15	-	13	
	7														-		
	8														-		
						Total=	10	35	25	14	30	13	23	25	X/2	27	Mean Neonates/Female = 20.4

Appendix I

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Pre-Poso Creek Water to Fathead Minnows

CETIS Summary Report

Report Date: 28 Jan-10 12:12 (p 1 of 2)
Test Code: 00-7644-9059/37320

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Batch ID:	08-8791-2503	**Test Type:**	Growth-Survival (7d)	**Analyst:**	Jason Walker
Start Date:	12 Jan-10 14:50	**Protocol:**	EPA-821-R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	19 Jan-10 10:00	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	6d 19h	**Source:**	Chesapeake Cultures, Inc.	**Age:**	1

Sample ID:	19-0947-8289	**Code:**	Eff	**Client:**	Precision Analytical
Sample Date:	11 Jan-10 09:55	**Material:**	Effluent	**Project:**	15508
Receive Date:	11 Jan-10 19:01	**Source:**	Precision Analytical		
Sample Age:	29h (1.2 °C)	**Station:**	Pre-Poso Creek		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
02-1670-0279	7d Survival Rate	25	50	35.4	10.9%	4	Steel Many-One Rank Test
18-8166-0460	Mean Dry Biomass-mg	12.5	25	17.7	12.5%	8	Steel Many-One Rank Test
09-2301-7190	Mean Dry Weight-mg	12.5	25	17.7	6.16%	8	Dunnett's Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
05-7669-3023	7d Survival Rate	EC5	18.9	14.4	22.7	5.29	Linear Regression (MLE)
		EC10	22.1	17.5	26	4.53	
		EC15	24.5	19.9	28.4	4.08	
		EC20	26.6	22	30.6	3.76	
		EC25	28.6	24	32.6	3.5	
		EC40	34.2	29.7	38.4	2.92	
		EC50	38.1	33.6	42.7	2.62	
00-5061-2979	Mean Dry Biomass-mg	IC5	14.4	N/A	18.5	6.93	Linear Interpolation (ICPIN)
		IC10	16.8	11.8	26.6	5.95	
		IC15	19.6	13.4	29.7	5.11	
		IC20	22.8	14.2	29.9	4.39	
		IC25	25.6	15.3	30.4	3.91	
		IC40	30.7	21.4	34.7	3.26	
		IC50	34.6	26.8	38.5	2.89	

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	1	1	1	1	1	0	0	0.0%	0.0%
12.5		4	0.975	0.956	0.994	0.9	1	0.00913	0.05	5.13%	2.5%
25		4	0.85	0.785	0.915	0.6	1	0.0316	0.173	20.4%	15.0%
50		4	0.375	0.339	0.411	0.3	0.5	0.0175	0.0957	25.5%	62.5%
75		4	0	0	0	0	0	0	0		100.0%
100		4	0	0	0	0	0	0	0		100.0%

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.322	0.314	0.331	0.297	0.343	0.00397	0.0218	6.75%	0.0%
12.5		4	0.321	0.315	0.328	0.297	0.339	0.00321	0.0176	5.48%	0.39%
25		4	0.248	0.23	0.266	0.177	0.29	0.00896	0.0491	19.8%	23.1%
50		4	0.0622	0.0574	0.0671	0.048	0.079	0.00237	0.013	20.8%	80.7%
75		4	0	0	0	0	0	0	0		100.0%
100		4	0	0	0	0	0	0	0		100.0%

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Mean Dry Weight-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.322	0.314	0.331	0.297	0.343	0.00397	0.0218	6.75%	0.0%
12.5		4	0.329	0.327	0.332	0.323	0.339	0.00127	0.00695	2.11%	-2.17%
25		4	0.292	0.291	0.293	0.29	0.295	0.000456	0.0025	0.86%	9.43%
50		4	0.168	0.161	0.174	0.158	0.193	0.00311	0.017	10.1%	48.0%
75		4	0	0	0	0	0	0	0		100.0%
100		4	0	0	0	0	0	0	0		100.0%

7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	1	1	1	1
12.5		1	1	1	0.9
25		1	0.9	0.9	0.6
50		0.5	0.3	0.3	0.4
75		0	0	0	0
100		0	0	0	0

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	0.312	0.297	0.343	0.338
12.5		0.339	0.323	0.326	0.297
25		0.29	0.261	0.264	0.177
50		0.079	0.058	0.048	0.064
75		0	0	0	0
100		0	0	0	0

Mean Dry Weight-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	0.312	0.297	0.343	0.338
12.5		0.339	0.323	0.326	0.33
25		0.29	0.29	0.293	0.295
50		0.158	0.193	0.16	0.16
75		0	0	0	0
100		0	0	0	0

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	02-1670-0279	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 12:11	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	25	50	35.4	4	10.9%

Steel Many-One Rank Test

Control vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Lab Water Control	12.5	16	10	1	0.6105	Non-Significant Effect
	25	12	10	1	0.1424	Non-Significant Effect
	50*	10	10	0	0.0417	Significant Effect
	75*	10	10	0	0.0417	Significant Effect
	100*	10	10	0	0.0417	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	6.794836	1.358967	5	124	<0.0001	Significant Effect
Error	0.1974484	0.01096936	18			
Total	6.992284	1.369936	23			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	1.8	4.25	0.1639	Equal Variances
Distribution	Shapiro-Wilk Normality	0.79		0.0002	Non-normal Distribution

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	1	1	1	1	1	0	0	0.0%	0.0%
12.5		4	0.975	0.956	0.994	0.9	1	0.00928	0.05	5.13%	2.5%
25		4	0.85	0.784	0.916	0.6	1	0.0322	0.173	20.4%	15.0%
50		4	0.375	0.339	0.411	0.3	0.5	0.0178	0.0957	25.5%	62.5%
75		4	0	0	0	0	0	0	0		100.0%
100		4	0	0	0	0	0	0	0		100.0%

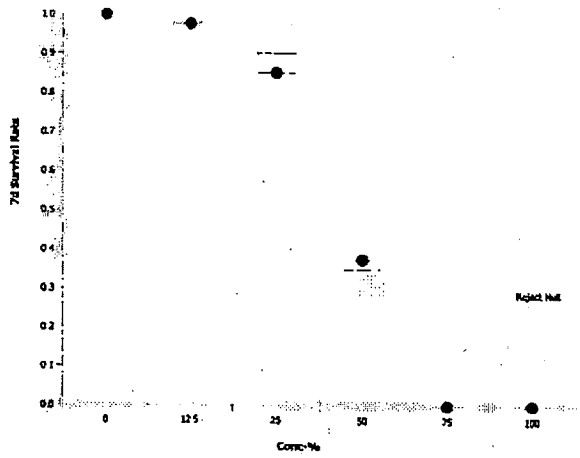
Angular (Corrected) Transformed Summary

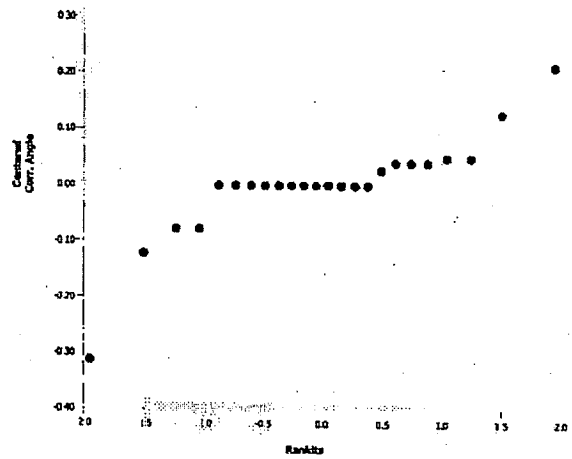
Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Cont	4	1.41	1.41	1.41	1.41	1.41	0	0	0.0%	0.0%
12.5		4	1.37	1.34	1.4	1.25	1.41	0.0151	0.0815	5.94%	2.89%
25		4	1.2	1.11	1.28	0.886	1.41	0.0413	0.222	18.5%	15.1%
50		4	0.657	0.62	0.695	0.58	0.785	0.0183	0.0987	15.0%	53.4%
75		4	0.159	0.159	0.159	0.159	0.159	0	0	0.0%	88.8%
100		4	0.159	0.159	0.159	0.159	0.159	0	0	0.0%	88.8%

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	02-1670-0279	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 12:11	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Graphics





CETIS Analytical Report

Report Date: 28 Jan-10 12:12 (p 1 of 2)
Test Code: 00-7644-9059/37320

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	05-7669-3023	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 12:11	Analysis:	Linear Regression (MLE)	Official Results:	Yes

Linear Regression Options

Model Function	Threshold Option	Threshold	Optimized	Pooled	Het Corr	Weighted
Log-Normal [NED=A+B*log(X)]	Control Threshold	0	Yes	No	No	Yes

Regression Summary

Iters	LL	AICc	Mu	Sigma	G Stat	Chi-Sq	Critical	P-Value	Decision(5%)
6	-53	111	-0.656	0.185	0.0523	15.7	18.3	0.1070	Non-Significant Heterogeneity

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	18.9	14.4	22.7	5.29	4.4	6.96
EC10	22.1	17.5	26	4.53	3.85	5.73
EC15	24.5	19.9	28.4	4.08	3.52	5.03
EC20	26.6	22	30.6	3.76	3.27	4.54
EC25	28.6	24	32.6	3.5	3.07	4.17
EC40	34.2	29.7	38.4	2.92	2.6	3.37
EC50	38.1	33.6	42.7	2.62	2.34	2.98

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(5%)
Slope	5.41	0.631	4.17	6.64	8.57	<0.0001	Significant Parameter
Intercept	-3.55	1.04	-5.58	-1.51	-3.41	0.0031	Significant Parameter

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(5%)
Variances	Mod Levene Equality of Variance	0.76	3.06	0.5672	Equal Variances
Distribution	Shapiro-Wilk Normality	0.838		0.0034	Non-normal Distribution

7d Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Lab Water Contr	4	1	1	1	0	0	0.0%	0.0%	40	40
12.5		4	0.975	0.9	1	0.00913	0.05	5.13%	2.5%	39	40
25		4	0.85	0.6	1	0.0316	0.173	20.4%	15.0%	34	40
50		4	0.375	0.3	0.5	0.0175	0.0957	25.5%	62.5%	15	40
75		4	0	0	0	0	0		100.0%	0	40
100		4	0	0	0	0	0		100.0%	0	40

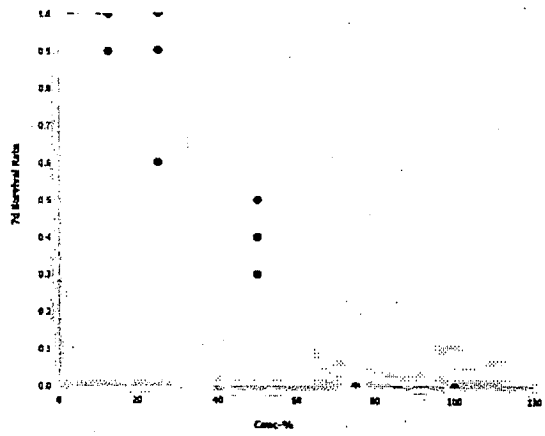
7d Survival Rate Detail

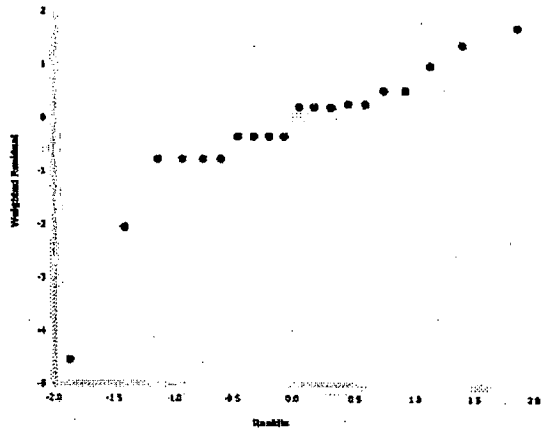
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Control	1	1	1	1
12.5		1	1	1	0.9
25		1	0.9	0.9	0.6
50		0.5	0.3	0.3	0.4
75		0	0	0	0
100		0	0	0	0

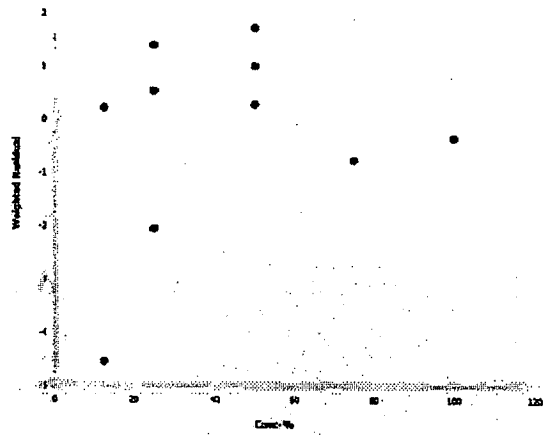
Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

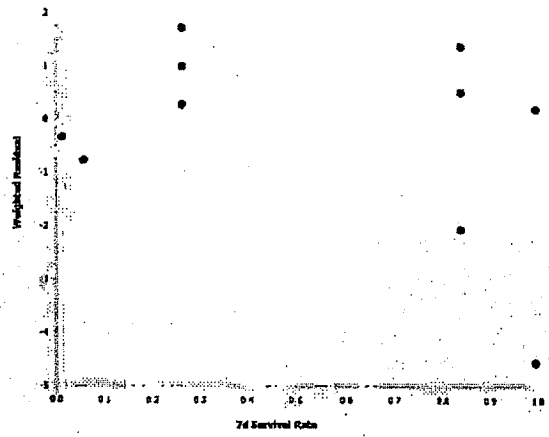
Analysis ID:	05-7669-3023	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 12:11	**Analysis:**	Linear Regression (MLE)	**Official Results:**	Yes

Graphics









Chronic Larval Fish Survival and Growth Test — **Pacific EcoRisk**

Analysis ID:	18-8166-0460	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 12:11	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run	12.5	25	17.7	8	12.5%

Steel Many-One Rank Test

Control vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Lab Water Control	12.5	18	10	0	0.8333	Non-Significant Effect
	25*	10	10	0	0.0417	Significant Effect
	50*	10	10	0	0.0417	Significant Effect
	75*	10	10	0	0.0417	Significant Effect
	100*	10	10	0	0.0417	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.4836029	0.09672058	5	173	<0.0001	Significant Effect
Error	0.01008457	0.000560254	18			
Total	0.4936875	0.09728084	23			

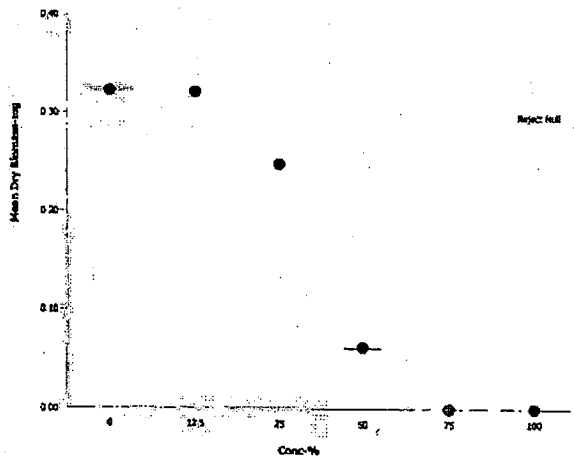
ANOVA Assumptions

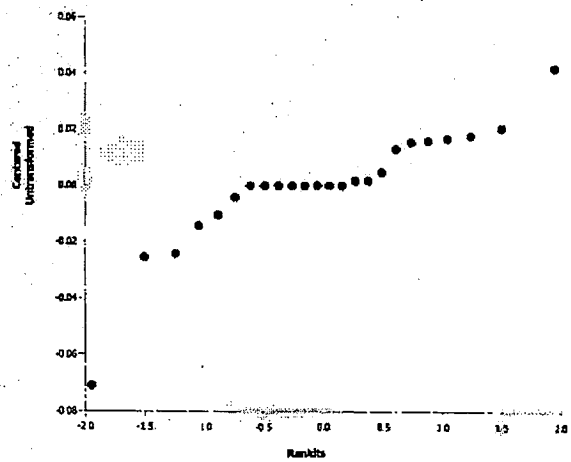
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	1.62	4.25	0.2053	Equal Variances
Distribution	Shapiro-Wilk Normality	0.847		0.0019	Non-normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.322	0.314	0.331	0.297	0.343	0.00404	0.0218	6.75%	0.0%
12.5		4	0.321	0.315	0.328	0.297	0.339	0.00327	0.0176	5.48%	0.39%
25		4	0.248	0.229	0.267	0.177	0.29	0.00912	0.0491	19.8%	23.1%
50		4	0.0622	0.0573	0.0672	0.048	0.079	0.00241	0.013	20.8%	80.7%
75		4	0	0	0	0	0	0	0		100.0%
100		4	0	0	0	0	0	0	0		100.0%

Graphics





CETIS Analytical Report

Report Date: 28 Jan-10 12:12 (p 1 of 1)
Test Code: 00-7644-9059/37320

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	00-5061-2979	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 12:11	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	57951	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	14.4	N/A	18.5	6.93	5.4	N/A
IC10	16.8	11.8	26.6	5.95	3.76	8.49
IC15	19.6	13.4	29.7	5.11	3.37	7.46
IC20	22.8	14.2	29.9	4.39	3.35	7.05
IC25	25.6	15.3	30.4	3.91	3.29	6.55
IC40	30.7	21.4	34.7	3.26	2.88	4.67
IC50	34.6	26.8	38.5	2.89	2.6	3.72

Mean Dry Biomass-mg Summary

			Calculated Variate						
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.322	0.297	0.343	0.00397	0.0218	6.75%	0.0%
12.5		4	0.321	0.297	0.339	0.00321	0.0176	5.48%	0.39%
25		4	0.248	0.177	0.29	0.00896	0.0491	19.8%	23.1%
50		4	0.0622	0.048	0.079	0.00237	0.013	20.8%	80.7%
75		4	0	0	0	0	0		100.0%
100		4	0	0	0	0	0		100.0%

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Control	0.312	0.297	0.343	0.338
12.5		0.339	0.323	0.326	0.297
25		0.29	0.261	0.264	0.177
50		0.079	0.058	0.048	0.064
75		0	0	0	0
100		0	0	0	0

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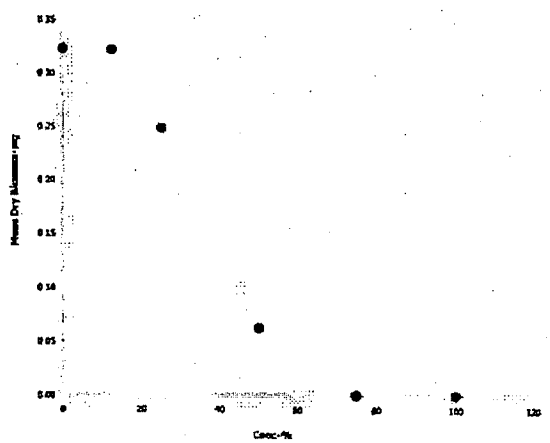

CETIS Analytical Report

Report Date: 28 Jan-10 12:11 (p 1 of 4)
Test Code: 00-7644-9059/37320

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	09-2301-7190	Endpoint:	Mean Dry Weight-mg	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 12:11	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run	12.5	25	17.7	8	6.16%

Dunnett's Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water Control		12.5	-0.848	2.41	0.0199	0.9742	Non-Significant Effect
		25*	3.68	2.41	0.0199	0.0036	Significant Effect
		50*	16.7	2.41	0.0199	<0.0001	Significant Effect
		75*	39.1	2.41	0.0199	<0.0001	Significant Effect
		100*	39.1	2.41	0.0199	<0.0001	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.4799893	0.09599786	5	704	<0.0001	Significant Effect
Error	0.00245459	0.0001363661	18			
Total	0.4824438	0.09613422	23			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	3.42	4.25	0.0240	Equal Variances
Distribution	Shapiro-Wilk Normality	0.888		0.0120	Normal Distribution

Mean Dry Weight-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.322	0.314	0.331	0.297	0.343	0.00404	0.0218	6.75%	0.0%
12.5		4	0.329	0.327	0.332	0.323	0.339	0.00129	0.00695	2.11%	-2.17%
25		4	0.292	0.291	0.293	0.29	0.295	0.000464	0.0025	0.86%	9.43%
50		4	0.168	0.161	0.174	0.158	0.193	0.00316	0.017	10.1%	48.0%
75		4	0	0	0	0	0	0	0		100.0%
100		4	0	0	0	0	0	0	0		100.0%

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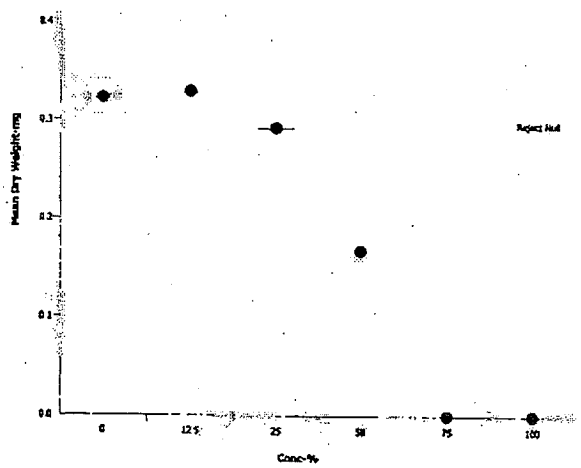

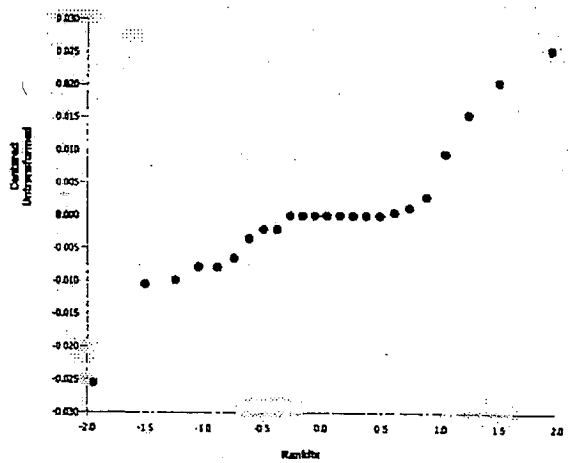

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: P. Analytical - Chevron Cawelo
Test Material: Pre-Poso Creek
Test ID#: 37320 Project #: 15508
Test Date: 1-12-10 Randomization: 7.4.2

Organism Log#: 4993 Age: <48 hrs
Organism Supplier: Chesapeake
Control/Diluent: EPAMH
Control Water Batch: 1275

Treatment (% Effluent)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Water Control	25.0	8.15		9.2		301	10	10	10	10	Date: 1-12-10
12.5%	25.0	7.91		9.1		365	10	10	10	10	Sample ID 23376
25%	25.0	7.77		9.0		422	10	10	10	10	Test Solution Prep AB
50%	25.0	7.65		9.0		544	10	10	10	10	New WQ [illegible]
75%	25.0	7.55		8.9		666	10	10	10	10	Initiation Time 1450
100%	25.0	7.47		8.5		~~7.89~~ 784	10	10	10	10	Initiation Signoff KO
Meter ID	33A	PH09		RD03		EC04					
Lab Water Control	25.3	7.82	7.93	10.0	8.3	302	10	10	10	10	Date: 1-13-10
12.5%	25.3	7.78	7.92	9.7	8.3	363	10	10	10	10	Sample ID 23376
25%	25.3	7.68	7.93	9.3	8.3	424	10	10	10	10	Test Solution Prep JL
50%	25.3	7.57	8.09	9.1	8.2	544	10	10	10	10	New WQ Sm
75%	25.3	7.45	8.22	8.8	8.2	664	10	10	10	10	Renewal Time 1215
100%	25.3	7.39	8.32	8.4	8.2	774	10	10	10	10	Renewal Signoff SH
Meter ID	33A	pH14	pH14	RD01	RD01	EC05					Old WQ Sm
Lab Water Control	25.5	8.22	7.34	9.3	~~6.7~~ 8.2	308	10	10	10	10	Date: 1/14/10
12.5%	25.5	8.11	7.67	9.2	~~6.73~~ 8.2	368	10	10	10	9	Sample ID 23376
25%	25.5	7.93	7.57	9.0	7.6	430	10	10	10	9	Test Solution Prep [illegible]
50%	25.5	7.83	7.63	9.0	7.7	548	9	10	10	10	New WQ OOB
75%	25.5	7.78	7.78	8.9	7.7	665	10	10	10	10	Renewal Time 1600
100%	25.5	7.68	8.01	8.8	8.0	785	10	~~10~~ 9	10	10	Renewal Signoff [illegible]
Meter ID	33A	PH14	PH03	RD01	RD02	EC05					Old WQ [illegible]
Lab Water Control	25.3	8.11	7.90	8.9	8.0	308	10	10	10	10	Date: 1/15/10
12.5%	25.3	7.90	7.96	9.0	8.1	371	10	10	10	9	Sample ID 23376
25%	25.3	7.77	8.04	9.1	7.9	443	10	9	10	9	Test Solution Prep [illegible]
50%	25.3	7.62	8.09	9.5	7.5	544	7	10	8	10	New WQ FOUR
75%	25.3	7.48	8.21	9.7	7.6	656	9	10	8	7	Renewal Time 1130
100%	25.3	7.41	8.24	9.6	6.9	764	6	8	4	9	Renewal Signoff PA
Meter ID	33A	PH12	PH14	RD01	RD01	EC05					Old WQ BH

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: P. Analytical - Chevron Cawelo
Test Material: Pre-Poso Creek
Test ID#: 37320 Project #: 15508
Test Date: 1-12-10 Randomization: 7-4-2.

Organism Log#: 4993 Age: <48 hrs
Organism Supplier: Chesapeake
Control/Diluent: EPAMH
Control Water Batch: 1275

Treatment (% Effluent)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Water Control	24.8	8.25	7.84	9.0	8.4	325	10	10	10	10	Date: 1/16/10
12.5%	24.8	7.95	7.97	9.1	8.2	372	10	10	10	9	Sample ID 23376
25%	24.8	7.71	8.01	9.0	8.2	449	10	9	10	9	Test Solution Prep SM
50%	24.8	7.52	8.10	8.8	8.2	556	6	8	7	7	New WQ SG
75%	24.8	7.46	8.20	8.9	8.1	676	2	7	6	3	Renewal Time 1210
100%	24.8	7.39	8.29	8.9	8.1	789	5	2	1	5	Renewal Signoff
Meter ID	33A	ph12	ph12	RD01	RD01	EC04					Old WQ JT
Lab Water Control	25.4	8.02	7.93	8.8	7.3	309	10	10	10	10	Date: 1/17/10
12.5%	25.4	7.86	7.93	8.9	7.1	381	10	10	10	9	Sample ID 23376
25%	25.4	7.79	7.96	9.1	7.1	436	10	9	9	8	Test Solution Prep
50%	25.4	7.58	8.13	9.4	7.2	548	5	8	4	6	New WQ SG
75%	25.4	7.51	8.10	9.8	6.7	671	0	4	2	1	Renewal Time 1215
100%	25.4	7.41	8.20	9.6	6.8	771	4	0	0	2	Renewal Signoff SH
Meter ID	33A	ph14	ph14	RD02	RD02	EC05					Old WQ SG
Lab Water Control	25.4	8.07	7.85	7.6	7.8	309	10	10	10	10	Date: 1/18/10
12.5%	25.4	7.75	7.86	7.6	7.5	378	10	10	10	9	Sample ID 23376
25%	25.4	7.68	7.98	7.7	7.5	436	10	9	9	8	Test Solution Prep
50%	25.4	7.49	8.17	7.8	7.4	556	5	5	3	5	New WQ BH
75%	25.4	7.45	8.23	7.9	7.6	673	-	1	1	0	Renewal Time 1300
100%	25.4	7.39	8.19	7.8	7.0	788	0	—	—	1	Renewal Signoff
Meter ID	33A	ph09	ph09	RD03	RD03	EC04					Old WQ BH
Lab Water Control	25.4		8.16		8.4	313	10	10	10	10	Date 1/19/10
12.5%	25.4		8.07		8.3	381	10	10	10	9	Termination Time 1000
25%	25.4		8.08		8.1	442	10	9	9	6	Termination Signoff SH
50%	25.4		8.21		8.0	560	5	3	3	4	Old WQ
75%	25.4		8.37		8.1	675	—	0	0	—	
100%	25.4		8.41		8.1	797	—	—	—	0	
Meter ID	33A		ph14		RD03	EC03					

Fathead Minnow Dry Weight Data Sheet

Client: **P. Analytical - Chevron Cawelo** Test ID #: 37320 Project # 15508

Sample: Pre-Poso Creek Tare Weight Date: 1/16/10 Sign-off: KQ

Test Date: 1-12-10 Final Weight Date: 1/23/10 Sign-off: DJ

Pan ID	Concentration	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Lab Water	A	179.36	182.48	10	0.312
2		B	175.96	178.93	10	0.297
3		C	179.64	183.07	10	0.343
4		D	176.52	179.90	10	0.338
5	12.5	A	186.28	189.67	10	0.339
6		B	184.80	188.03	10	0.323
7		C	160.33	163.59	10	0.326
8		D	145.43	148.40	10	0.297
9	25	A	165.04	167.94	10	0.290
10		B	158.69	161.30	10	0.261
11		C	177.32	~~180~~ 179.96	10	0.264
12		D	169.36	171.13	10	0.177
13	50	A	158.60	159.39	10	0.079
14		B	188.47	189.05	10	0.058
15		C	170.70	171.18	10	0.048
16		D	173.09	173.73	10	0.064
17	75	A	137.64	—	10	—
18		B	178.60	—	10	—
19		C	185.25	—	10	—
20		D	171.00	—	10	—
21	100	A	178.47	—	10	—
22		B	158.84	—	10	—
23		C	180.79	—	10	—
24		D	150.00	—	10	—
QA 1			~~177.32~~ 164.96	164.02		
QA 2			184.65	184.65		
Balance ID			1	1		

Appendix J

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Splitter Box Water to *Ceriodaphnia dubia*

CETIS Summary Report

Report Date: 28 Jan-10 12:27 (p 1 of 1)
Test Code: 02-5667-2177/37316-17

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Batch ID:	20-3510-6927	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Jason Walker
Start Date:	12 Jan-10 15:00	**Protocol:**	EPA-821-R-02-013 (2002)	**Diluent:**	Not Applicable
Ending Date:	18 Jan-10 16:45	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 2h	**Source:**	In-House Culture	**Age:**	1

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
Lab Water	19-9588-8274	12 Jan-10 15:00	12 Jan-10 15:00	N/A (25.2 °C)	Precision Analytical	15508
Wetlands	03-1879-5970	11 Jan-10 12:30	11 Jan-10 19:01	26h (0.3 °C)		
Splitter Box	08-4709-4869	11 Jan-10 11:00	11 Jan-10 19:01	28h (1 °C)		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
Lab Water	Lab Water	Precision Analytical	Lab Water Control		
Wetlands	Effluent	Precision Analytical	Wetland Effluent		
Splitter Box	Effluent	Precision Analytical	Splitter Box		

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	10	33.5	31.4	35.6	19	39	1.04	5.7	17.0%	0.0%
Wetlands	10	33.1	32	34.2	29	39	0.527	2.88	8.72%	1.19%
Splitter Box	10	21.7	18.3	25.1	4	34	1.68	9.19	42.4%	35.2%

Survival Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	10	1	1	1	1	1	0	0	0.0%	0.0%
Wetlands	10	1	1	1	1	1	0	0	0.0%	0.0%
Splitter Box	10	1	1	1	1	1	0	0	0.0%	0.0%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
Lab Water	36	30	34	36	36	39	36	37	19	32
Wetlands	31	35	34	32	29	34	39	31	31	35
Splitter Box	24	34	21	17	4	31	24	27	10	25

Survival Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
Lab Water	1	1	1	1	1	1	1	1	1	1
Wetlands	1	1	1	1	1	1	1	1	1	1
Splitter Box	1	1	1	1	1	1	1	1	1	1

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Analysis ID:	21-1656-9934	Endpoint:	Survival	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 12:26	Analysis:	Parametric-Two Sample	Official Results:	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run				N/A	25.0%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water		Splitter Box	0	1.73	0	0.5000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0	0	1	65500	<0.0001	Significant Effect
Error	0	0	18			
Total	0	0	19			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65500	8.29	<0.0001	Unequal Variances

Survival Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	10	1	1	1	1	1	0	0	0.0%	0.0%
Splitter Box	10	1	1	1	1	1	0	0	0.0%	0.0%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	10	1.05	1.05	1.05	1.05	1.05	0	0	0.0%	0.0%
Splitter Box	10	1.05	1.05	1.05	1.05	1.05	0	0	0.0%	0.0%

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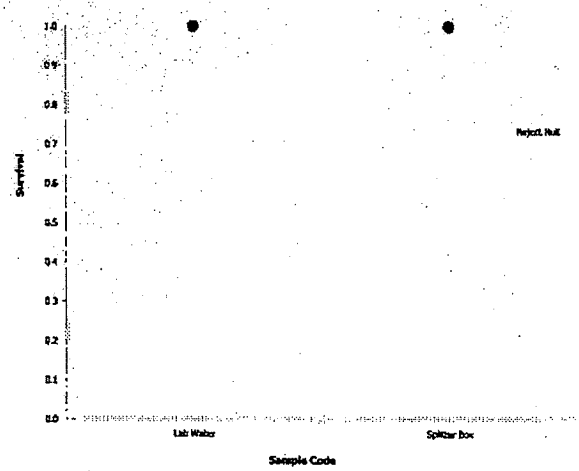
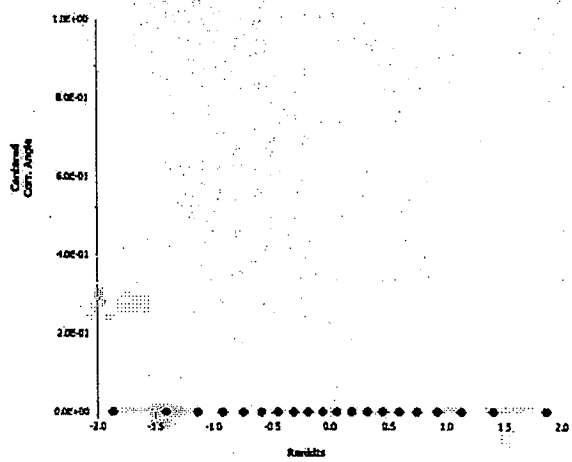




CETIS Analytical Report

Report Date: 28 Jan-10 12:27 (p 1 of 4)
Test Code: 02-5667-2177/37316-17

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Analysis ID:	01-5693-5357	Endpoint:	Reproduction	CETIS Version:	CETISv1.7.0
Analyzed:	28 Jan-10 12:27	Analysis:	Parametric-Two Sample	Official Results:	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run				N/A	17.7%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water		Splitter Box	3.45	1.73	5.93	0.0014	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	696.2	696.2	1	11.9	0.0029	Significant Effect
Error	1052.6	58.47778	18			
Total	1748.8	754.6778	19			

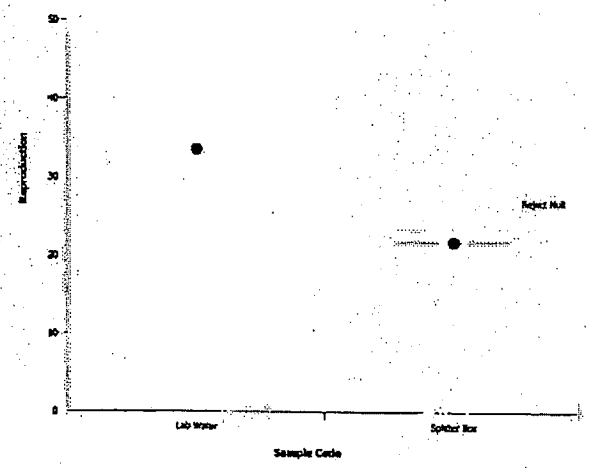
ANOVA Assumptions

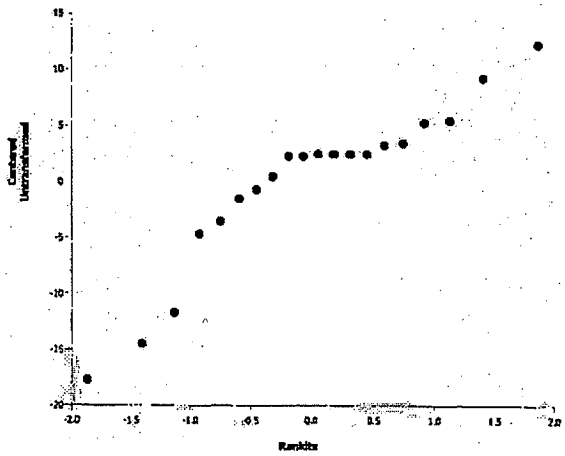
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.6	6.54	0.1710	Equal Variances
Distribution	Shapiro-Wilk Normality	0.892		0.0291	Normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	10	33.5	31.3	35.7	19	39	1.06	5.7	17.0%	0.0%
Splitter Box	10	21.7	18.2	25.2	4	34	1.71	9.19	42.4%	35.2%

Graphics





Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: P. Analytical - Chevron Cawelo Material: Splitter Box Test Date: 1/12/10

Project #: 15508 Test ID: 37316 Randomization: C.3.2 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E	F	G	H	I	J	SIGN-OFF
Lab Water Control	0	8.00		9.2		220	25.2	0	0	0	0	0	0	0	0	0	0	Date: 1/12/10 New WQ: Test Init.: Sol'n Prep: Old WQ: Time: 1500
	1	7.89	8.09	9.1	7.9	220	25.3	0	0	0	0	0	0	0	0	0	0	Date: 1/13/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1135
	2	7.93	8.15	9.4	8.4	228	25.5	0	0	0	0	0	0	0	0	0	0	Date: 1/14/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1350
	3	7.75	8.25	9.5	7.5	214	25.5	6	4	0	0	4	6	7	0	0	0	Date: 1/15/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1640
	4	7.95	8.06	9.4	8.1	215	25.0	0	0	6	7	0	0	0	7	5	5	Date: 1/16/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1255
	5	8.52	8.03	8.3	7.2	237	25.9	11	8	13	17	11	16	12	15	14	20	Date: 1/17/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1445
	6	7.92	8.13	9.2	8.0	221	25.4	19	18	15	12	19	19	17	15	0	7	Date: 1/18/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1245
	7																	Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
	8																	Date: Old WQ: Counts: Time:
							Total=	36	30	34	36	36	39	36	37	19	32	Mean Neonates/Female = 33.5

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	A	B	C	D	E	F	G	H	I	J	SAMPLE ID
100%	0	7.83		6.8		745	0	0	0	0	0	0	0	0	0	0	23379
	1	7.45	8.54	8.3	8.2	777	0	0	0	0	0	0	0	0	0	0	23379
	2	7.37	8.48	8.2	8.0	768	0	0	0	0	0	0	0	0	0	0	23379
	3	7.59	8.64	8.8	7.7	749	4	5	0	0	0	0	6	0	0	0	23379
	4	7.39	8.52	9.5	7.5	769	0	0	0	0	4	5	0	6	3	5	23379
	5	7.52	8.50	7.3	7.0	785	9	12	7	6	8	13	7	10	7	10	23379
	6	7.82	8.55	9.2	9.9	769	11	17	14	11	8	13	11	11	0	10	23379
	7																
	8																
							Total= 24	34	21	17	4	31	24	27	10	25	Mean Neonates/Female = 21.7

Appendix K

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Splitter Box Water to Fathead Minnows

CETIS Summary Report

Report Date: 28 Jan-10 11:45 (p 1 of 1)
Test Code: 18-6198-4236/37321-22

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Batch ID:	10-9591-6114	Test Type:	Growth-Survival (7d)	Analyst:	Jason Walker
Start Date:	12 Jan-10 12:15	Protocol:	EPA-821-R-02-013 (2002)	Diluent:	Not Applicable
Ending Date:	19 Jan-10 10:45	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Chesapeake Cultures, Inc.	Age:	1

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
Lab Water	17-0851-6318	12 Jan-10 12:15	12 Jan-10 12:15	N/A (25 °C)	Precision Analytical	15508
Wetlands	03-1879-5970	11 Jan-10 12:30	11 Jan-10 19:01	24h (0.3 °C)		
Splitter Box	08-4709-4869	11 Jan-10 11:00	11 Jan-10 19:01	25h (1 °C)		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
Lab Water	Lab Water	Precision Analytical	Lab Water Control		
Wetlands	Effluent	Precision Analytical	Wetland Effluent		
Splitter Box	Effluent	Precision Analytical	Splitter Box		

7d Survival Rate Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	4	0.9	0.87	0.93	0.8	1	0.0149	0.0816	9.07%	0.0%
Wetlands	4	0.8	0.747	0.853	0.6	0.9	0.0258	0.141	17.7%	11.1%
Splitter Box	4	0	0	0	0	0	0	0		100.0%

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	4	0.304	0.301	0.307	0.292	0.313	0.00168	0.0092	3.03%	0.0%
Wetlands	4	0.242	0.234	0.25	0.218	0.268	0.00373	0.0204	8.45%	20.4%
Splitter Box	4	0	0	0	0	0	0	0		100.0%

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	4	0.34	0.329	0.351	0.309	0.377	0.00545	0.0298	8.78%	0.0%
Wetlands	4	0.308	0.29	0.327	0.268	0.363	0.00884	0.0484	15.7%	9.19%
Splitter Box	4	0	0	0	0	0	0	0		100.0%

7d Survival Rate Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
Lab Water	1	0.9	0.8	0.9
Wetlands	0.9	0.9	0.6	0.8
Splitter Box	0	0	0	0

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
Lab Water	0.309	0.292	0.302	0.313
Wetlands	0.241	0.241	0.218	0.268
Splitter Box	0	0	0	0

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
Lab Water	0.309	0.324	0.377	0.348
Wetlands	0.268	0.268	0.363	0.335
Splitter Box	0	0	0	0

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	10-4437-1402	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 11:43	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run				N/A	8.84%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
Lab Water		Splitter Box	10		0	0.0143	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	2.400389	2.400389	1	309	<0.0001	Significant Effect
Error	0.04658309	0.007763848	6			
Total	2.446972	2.408153	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	2.97	13.7	0.1355	Equal Variances
Distribution	Shapiro-Wilk Normality	0.751		0.0084	Non-normal Distribution

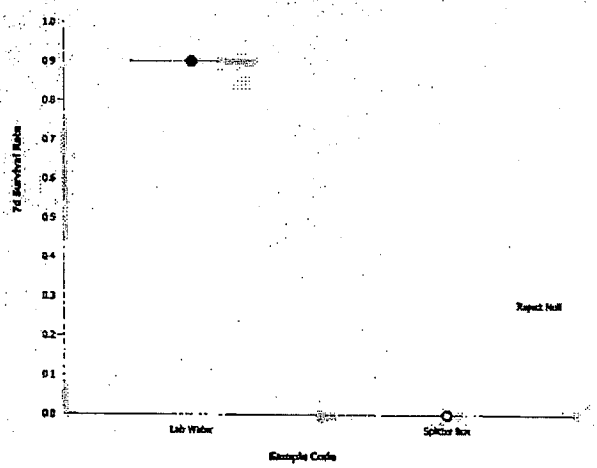
7d Survival Rate Summary

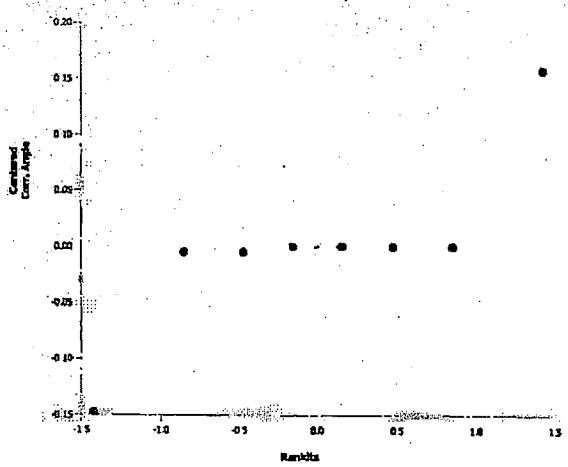
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	4	0.9	0.869	0.931	0.8	1	0.0152	0.0816	9.07%	0.0%
Splitter Box	4	0	0	0	0	0	0	0		100.0%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	4	1.25	1.21	1.3	1.11	1.41	0.0231	0.125	9.93%	0.0%
Splitter Box	4	0.159	0.159	0.159	0.159	0.159	0	0	0.0%	87.3%

Graphics





Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	18-8267-7289	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 11:44	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run				N/A	2.94%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water		Splitter Box	66.1	1.94	0.00894	<0.0001	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.1848321	0.1848321	1	4370	<0.0001	Significant Effect
Error	0.0002540292	4.23382E-05	6			
Total	0.1850861	0.1848744	7			

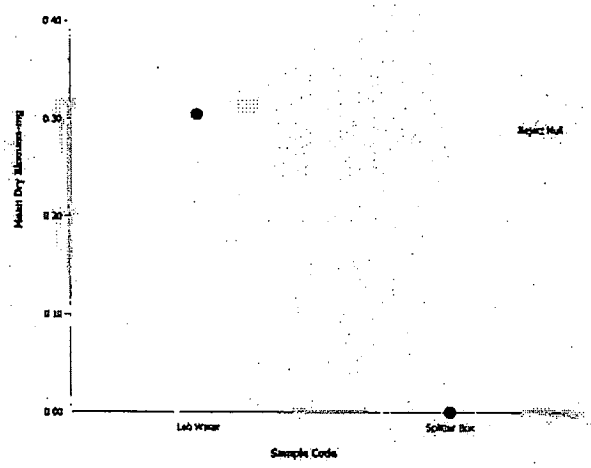
ANOVA Assumptions

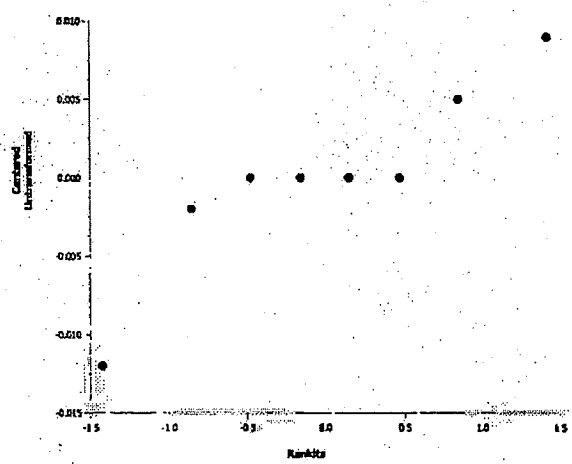
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	8.76	13 7	0.0252	Equal Variances
Distribution	Shapiro-Wilk Normality	0.876		0.1742	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	4	0.304	0.3	0.308	0.292	0.313	0.00171	0.0092	3.03%	0.0%
Splitter Box	4	0	0	0	0	0	0	0		100.0%

Graphics





CETIS Analytical Report

Report Date: 28 Jan-10 11:44 (p 1 of 6)
Test Code: 18-6198-4236/37321-22

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	08-5777-8516	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 11:44	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run				N/A	8.53%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water		Splitter Box	22.8	1.94	0.029	<0.0001	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.2307658	0.2307658	1	519	<0.0001	Significant Effect
Error	0.002669152	0.0004448587	6			
Total	0.2334349	0.2312106	7			

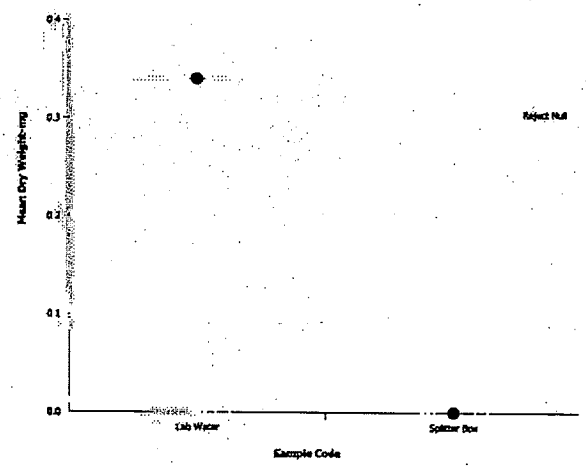
ANOVA Assumptions

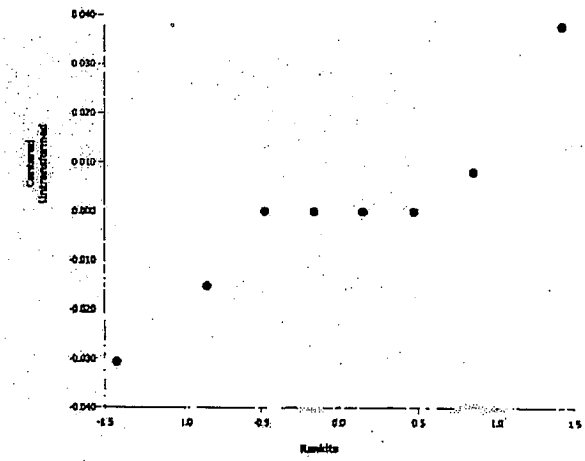
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	10.3	13.7	0.0182	Equal Variances
Distribution	Shapiro-Wilk Normality	0.893		0.2503	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	4	0.34	0.328	0.351	0.309	0.377	0.00554	0.0298	8.76%	0.0%
Splitter Box	4	0	0	0	0	0	0	0		100.0%

Graphics





7 Day Chronic Fathead Minnow Toxicity Test Data

Client: P. Analytical - Chevron Cawelo
Test Material: Splitter Box
Test ID#: 37321 Project #: 15508
Test Date: 1/12/10 Randomization: 4:4:1

Organism Log#: 4993 Age: <48hrs
Organism Supplier: Chesepeake
Control/Diluent: EPAMH
Control Water Batch: 1275

Test Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µS/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	25.0	7.92		9.7		300	10	10	10	10	Date 1/12/10 Test Solution Prep [illegible]
100%	25.0	7.09		5.6		774	10	10	10	10	Sample ID 23379 Initiation Time 1215
Meter ID	33A	PH14		RD02		EC03	New WQ SOB				Initiation Signoff [illegible]
Lab Control	25.3	8.16	8.11	9.5	7.0	301	10	10	10	10	Date 1/13/10 Test Solution Prep [illegible]
100%	25.3	7.45	8.21	8.7	6.7	782	9	10	9	10	Sample ID 23379 Renewal Time 1245
Meter ID	33A	PH14	PH14	RD01	RD01	EC05	New WQ SOB		Old WQ [illegible]		Renewal Signoff [illegible]
Lab Water Control	25.9	8.14	7.83	9.2	7.9	306	10	10	10	9	Date 1/14/10 Test Solution Prep [illegible]
100%	25.9	7.43	8.11	8.6	8.4	780	7	7	7	9	Sample ID 23379 Renewal Time 1445
Meter ID	33A	PH09	PH05	RD03	RD02	EC03	New WQ [illegible]		Old WQ [illegible]		Renewal Signoff [illegible]
Lab Control	25.3	8.22	7.92	9.2	7.6	309	10	9	8	9	Date 1/15/10 Test Solution Prep [illegible]
100%	25.3	7.47	8.28	9.8	7.9	786	3	6	3	4	Sample ID 23379 Renewal Time 1310
Meter ID	33A	PH12	PH12	RD03	RD03	EC04	New WQ SOB		Old WQ NVS		Renewal Signoff PA
Lab Control	25.5	7.94	7.98	9.1	7.7	309	10	9	8	9	Date 1/16/10 Test Solution Prep [illegible]
100%	25.5	7.25	8.15	10.0	6.8	783	0	~~2~~ 1 [illegible]	1	0	Sample ID 23379 Renewal Time 1020
Meter ID	33A	PH14	PH12	RD03	RD01	EC03	New WQ JT/SC		Old WQ SC		Renewal Signoff [illegible]
Lab Control	24.8	8.18	8.15	9.1	7.1	310	10	9	8	9	Date 1/17/10 Test Solution Prep SK
100%	24.8	7.33	8.24	7.8	6.7	779	–	0	0	–	Sample ID 23379 Renewal Time 1045
Meter ID	33A	PH14	PH14	RD02	RD02	EC05	New WQ SOB		Old WQ SC		Renewal Signoff [illegible]
Lab Control	25.4	8.08	7.99	9.2	7.6	306	10	9	8	9	Date 1/18/10 Test Solution Prep [illegible]
100%	—	—	—	—	—	—	—	—	—	—	Sample ID [illegible] 23379 Renewal Time 1245
Meter ID	33A	PH12	PH 09	RD01	RD03	EC03	New WQ [illegible]		Old WQ		Renewal Signoff [illegible]
Lab Control	25.7		8.12		8.3	311	10	9	8	9	Date 1/19/10 Termination Time 1045
100%	—		—		—	—	—	—	—	—	Termination Signoff JPC
Meter ID	33A		PH		RD03	EC03			Old WQ [illegible]		

Fathead Minnow Dry Weight Data Sheet

Client: P. Analytical - Chevron Cawelo
Test ID #: 37321
Project # 15508
Sample ID: Splitter box
Tare Weight Date: 1/18/10
Sign-off: [illegible]
Test Date: 1/12/10
Final Weight Date: 1/23/10
Sign-off: DS

Pan ID	Concentration	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
	Lab Control	A	160.65	163.74	10	0.309
		B	175.42	178.34	10	0.292
		C	163.21	166.23	10	0.302
		D	152.37	155.50	10	0.313
	100%	A	167.22	~~180.52~~	10	–
		B	169.58	153.99 –	10	–
		C	173.36	~~202.13~~ –	10	–
		D	167.64	~~158.95~~ –	10	–
QA1			198.79	198.79		

Appendix L

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Wetlands Water to *Ceriodaphnia dubia*

CETIS Summary Report

Report Date: 28 Jan-10 12:27 (p 1 of 1)
Test Code: 02-5667-2177/37316-17

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Batch ID:	20-3510-6927	Test Type:	Reproduction-Survival (7d)	Analyst:	Jason Walker
Start Date:	12 Jan-10 15:00	Protocol:	EPA-821-R-02-013 (2002)	Diluent:	Not Applicable
Ending Date:	18 Jan-10 16:45	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	6d 2h	Source:	In-House Culture	Age:	1

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
Lab Water	19-9588-8274	12 Jan-10 15:00	12 Jan-10 15:00	N/A (25.2 °C)	Precision Analytical	15508
Wetlands	03-1879-5970	11 Jan-10 12:30	11 Jan-10 19:01	26h (0.3 °C)		
Splitter Box	08-4709-4869	11 Jan-10 11:00	11 Jan-10 19:01	28h (1 °C)		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
Lab Water	Lab Water	Precision Analytical	Lab Water Control		
Wetlands	Effluent	Precision Analytical	Wetland Effluent		
Splitter Box	Effluent	Precision Analytical	Splitter Box		

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	10	33.5	31.4	35.6	19	39	1.04	5.7	17.0%	0.0%
Wetlands	10	33.1	32	34.2	29	39	0.527	2.88	8.72%	1.19%
Splitter Box	10	21.7	18.3	25.1	4	34	1.68	9.19	42.4%	35.2%

Survival Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	10	1	1	1	1	1	0	0	0.0%	0.0%
Wetlands	10	1	1	1	1	1	0	0	0.0%	0.0%
Splitter Box	10	1	1	1	1	1	0	0	0.0%	0.0%

Reproduction Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
Lab Water	36	30	34	36	36	39	36	37	19	32
Wetlands	31	35	34	32	29	34	39	31	31	35
Splitter Box	24	34	21	17	4	31	24	27	10	25

Survival Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
Lab Water	1	1	1	1	1	1	1	1	1	1
Wetlands	1	1	1	1	1	1	1	1	1	1
Splitter Box	1	1	1	1	1	1	1	1	1	1

Ceriodaphnia Survival and Reproduction Test — **Pacific EcoRisk**

Analysis ID:	19-1327-3496	**Endpoint:**	Survival	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 12:26	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run				N/A	25.0%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water		Wetlands	0	1.73	0	0.5000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0	0	1	65500	<0.0001	Significant Effect
Error	0	0	18			
Total	0	0	19			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65500	8.29	<0.0001	Unequal Variances

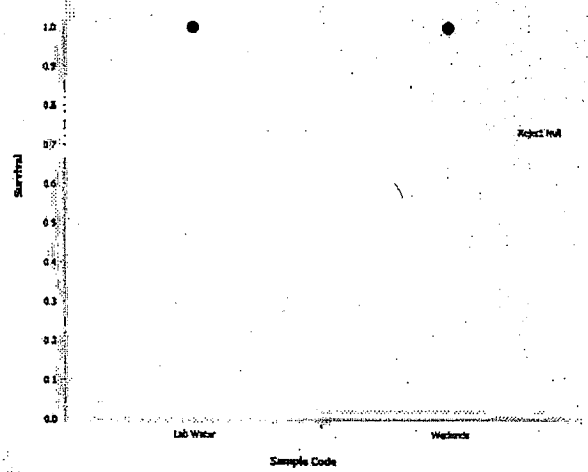
Survival Summary

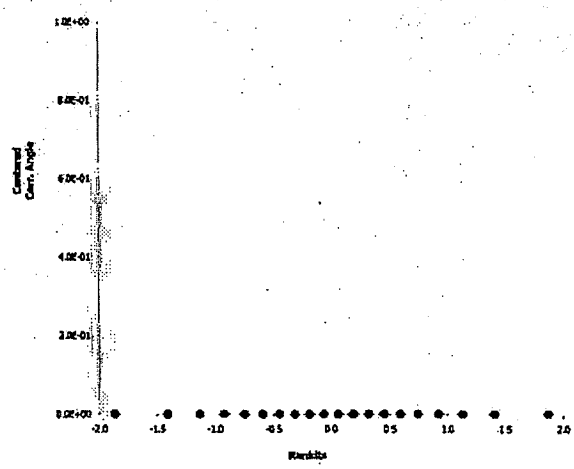
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	10	1	1	1	1	1	0	0	0.0%	0.0%
Wetlands	10	1	1	1	1	1	0	0	0.0%	0.0%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	10	1.05	1.05	1.05	1.05	1.05	0	0	0.0%	0.0%
Wetlands	10	1.05	1.05	1.05	1.05	1.05	0	0	0.0%	0.0%

Graphics





Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Analysis ID:	18-8375-0793	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 12:26	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run				N/A	10.5%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water		Wetlands	0.198	1.73	3.5	0.4226	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.8	0.8	1	0.0392	0.8453	Non-Significant Effect
Error	367.4	20.41111	18			
Total	368.2	21.21111	19			

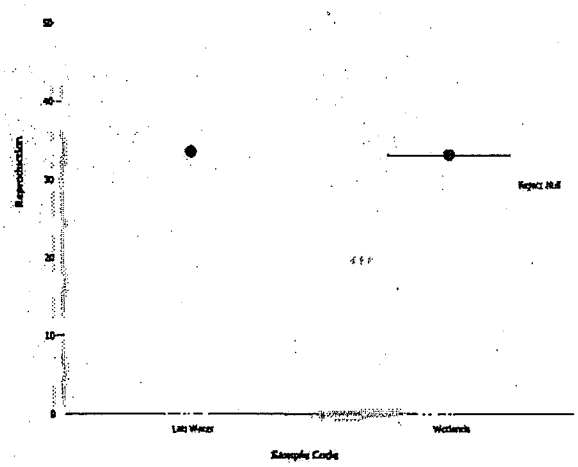
ANOVA Assumptions

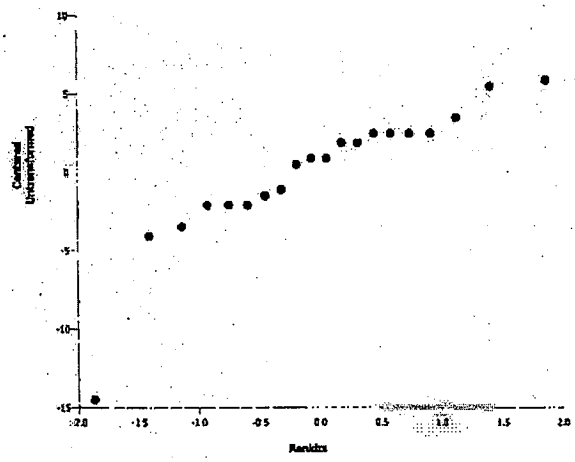
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	3.91	6.54	0.0549	Equal Variances
Distribution	Shapiro-Wilk Normality	0.84		0.0036	Non-normal Distribution

Reproduction Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	10	33.5	31.3	35.7	19	39	1.06	5.7	17.0%	0.0%
Wetlands	10	33.1	32	34.2	29	39	0.536	2.88	8.72%	1.19%

Graphics





Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: P. Analytical - Chevron Cawelo Material: Wetlands Test Date: 1/12/10

Project #: 15508 Test ID: 37317 Randomization: C.3.2 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E	F	G	H	I	J	SIGN-OFF
Lab Water Control	0	8.00		9.2		220	25.2	0	0	0	0	0	0	0	0	0	0	Date: 1/12/10 New WQ: Test Init: Sol'n Prep: Time: 1500
	1	7.89	8.09	9.1	7.9	220	25.0	0	0	0	0	0	0	0	0	0	0	Date: 1/13/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1135
	2	7.93	8.15	9.4	8.4	228	25.5	0	0	0	0	0	0	0	0	0	0	Date: 1/14/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1355
	3	7.86	8.25	9.5	7.5	214	25.5	6	4	0	0	6	4	7	0	0	0	Date: 1/15/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1640
	4	7.95	8.06	9.4	8.1	215	25.0	0	0	6	7	0	0	0	7	5	5	Date: 1/16/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1255
	5	8.52	8.03	8.8	7.2	237	25.9	11	8	13	17	11	16	12	15	14	20	Date: 1/17/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1415
	6	7.92	8.13	9.2	8.0	221	25.4	19	18	15	12	19	19	17	15	0	7	Date: 1/18/10 New WQ: Counts: Sol'n Prep: Old WQ: Time: 1645
	7																	Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
	8																	Date: Old WQ: Counts: Time:
							Total=	36	30	34	36	36	39	36	37	19	32	Mean Neonates/Female = 33.5

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	A	B	C	D	E	F	G	H	I	J	SAMPLE ID
100%	0	7.69		9.9		796	0	0	0	0	0	0	0	0	0	0	23377
	1	7.83	8.56	9.4	8.3	833	0	0	0	0	0	0	0	0	0	0	23377
	2	7.69	8.47	10.1	7.8	800	0	0	0	0	0	0	0	0	0	0	23377
	3	7.76	8.58	10.2	7.1	792	4	7	4	7	4	7	7	0	0	0	23377
	4	7.83	8.53	10.0	7.6	810	0	0	0	0	0	0	0	7	5	8	23377
	5	7.95	8.51	9.8	nm	803	13	15	14	11	10	11	15	13	12	12	23377
	6	7.90	8.55	10.4	7.3	800	14	13	16	14	15	16	17	11	14	15	23377
	7																
	8																
						Total=	31	35	34	32	29	34	39	31	31	35	Mean Neonates/Female = 33.1

Appendix M

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Wetlands Water to Fathead Minnows

CETIS Summary Report

Report Date: 28 Jan-10 11:45 (p 1 of 1)
Test Code: 18-6198-4236/37321-22

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Batch ID:	10-9591-6114	**Test Type:**	Growth-Survival (7d)	**Analyst:**	Jason Walker
Start Date:	12 Jan-10 12:15	**Protocol:**	EPA-821-R-02-013 (2002)	**Diluent:**	Not Applicable
Ending Date:	19 Jan-10 10:45	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	6d 22h	**Source:**	Chesapeake Cultures, Inc.	**Age:**	1

Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
Lab Water	17-0851-6318	12 Jan-10 12:15	12 Jan-10 12:15	N/A (25 °C)	Precision Analytical	15508
Wetlands	03-1879-5970	11 Jan-10 12:30	11 Jan-10 19:01	24h (0.3 °C)		
Splitter Box	08-4709-4869	11 Jan-10 11:00	11 Jan-10 19:01	25h (1 °C)		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
Lab Water	Lab Water	Precision Analytical	Lab Water Control		
Wetlands	Effluent	Precision Analytical	Wetland Effluent		
Splitter Box	Effluent	Precision Analytical	Splitter Box		

7d Survival Rate Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	4	0.9	0.87	0.93	0.8	1	0.0149	0.0816	9.07%	0.0%
Wetlands	4	0.8	0.747	0.853	0.6	0.9	0.0258	0.141	17.7%	11.1%
Splitter Box	4	0	0	0	0	0	0	0		100.0%

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	4	0.304	0.301	0.307	0.292	0.313	0.00168	0.0092	3.03%	0.0%
Wetlands	4	0.242	0.234	0.25	0.218	0.268	0.00373	0.0204	8.45%	20.4%
Splitter Box	4	0	0	0	0	0	0	0		100.0%

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	4	0.34	0.329	0.351	0.309	0.377	0.00545	0.0298	8.78%	0.0%
Wetlands	4	0.308	0.29	0.327	0.268	0.363	0.00884	0.0484	15.7%	9.19%
Splitter Box	4	0	0	0	0	0	0	0		100.0%

7d Survival Rate Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
Lab Water	1	0.9	0.8	0.9
Wetlands	0.9	0.9	0.6	0.8
Splitter Box	0	0	0	0

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
Lab Water	0.309	0.292	0.302	0.313
Wetlands	0.241	0.241	0.218	0.268
Splitter Box	0	0	0	0

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
Lab Water	0.309	0.324	0.377	0.348
Wetlands	0.268	0.268	0.363	0.335
Splitter Box	0	0	0	0

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	12-0732-7008	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 11:43	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run				N/A	16.6%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water		Wetlands	1.24	1.94	0.206	0.1305	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.03457648	0.03457648	1	1.54	0.2610	Non-Significant Effect
Error	0.1347418	0.02245696	6			
Total	0.1693182	0.05703343	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.89	47.5	0.6135	Equal Variances
Distribution	Shapiro-Wilk Normality	0.909		0.3477	Normal Distribution

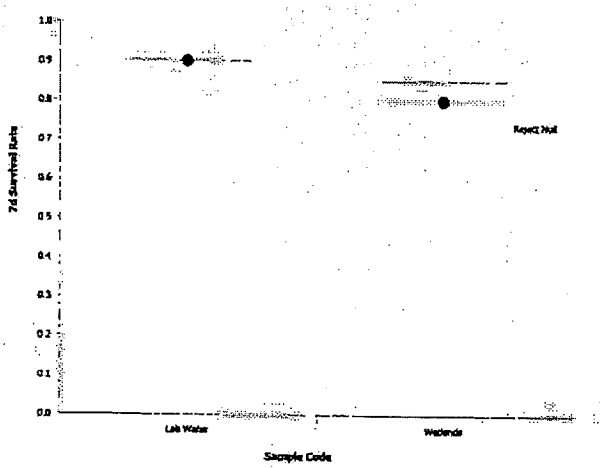
7d Survival Rate Summary

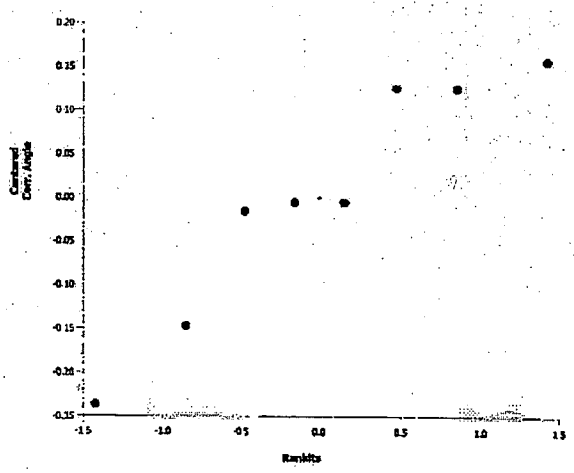
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	4	0.9	0.869	0.931	0.8	1	0.0152	0.0816	9.07%	0.0%
Wetlands	4	0.8	0.746	0.854	0.6	0.9	0.0263	0.141	17.7%	11.1%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	4	1.25	1.21	1.3	1.11	1.41	0.0231	0.125	9.93%	0.0%
Wetlands	4	1.12	1.06	1.19	0.886	1.25	0.0318	0.171	15.3%	10.5%

Graphics





Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	14-4676-1398	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 11:43	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run				N/A	7.17%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water		Wetlands	5.53	1.94	0.0218	0.0007	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.007687974	0.007687974	1	30.6	0.0015	Significant Effect
Error	0.001507951	0.0002513252	6			
Total	0.009195925	0.007939299	7			

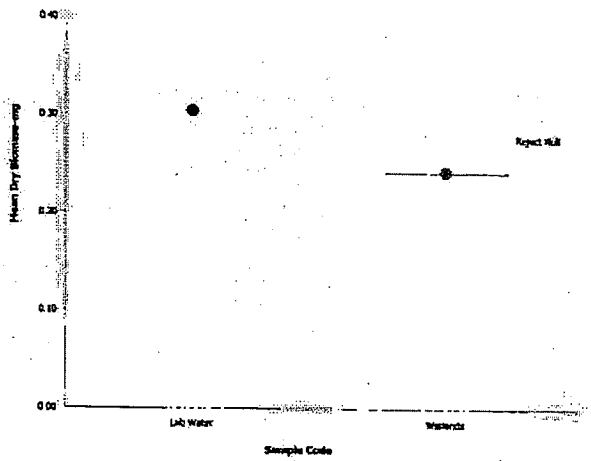
ANOVA Assumptions

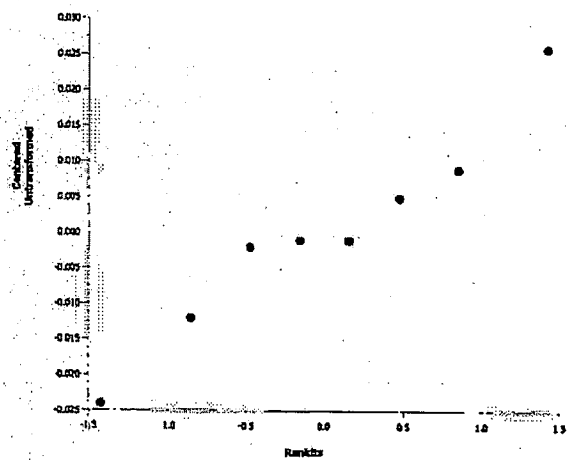
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	4.94	47.5	0.2225	Equal Variances
Distribution	Shapiro-Wilk Normality	0.964		0.8444	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	4	0.304	0.3	0.308	0.292	0.313	0.00171	0.0092	3.03%	0.0%
Wetlands	4	0.242	0.234	0.25	0.218	0.268	0.0038	0.0204	8.45%	20.4%

Graphics





Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis ID:	15-2615-0535	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Jan-10 11:43	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run				N/A	16.3%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water		Wetlands	1.1	1.94	0.0552	0.1572	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.001947885	0.001947885	1	1.21	0.3143	Non-Significant Effect
Error	0.009694722	0.001615787	6			
Total	0.01164261	0.003563672	7			

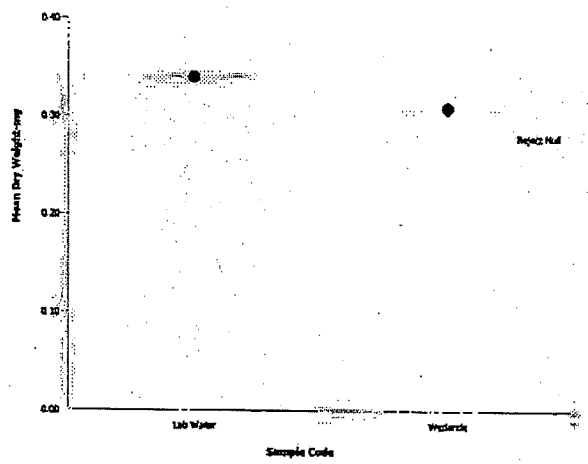
ANOVA Assumptions

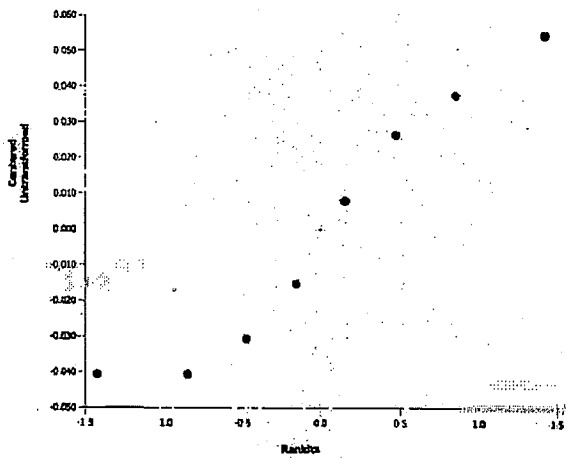
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.63	47.5	0.4477	Equal Variances
Distribution	Shapiro-Wilk Normality	0.911		0.3623	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Lab Water	4	0.34	0.328	0.351	0.309	0.377	0.00554	0.0298	8.78%	0.0%
Wetlands	4	0.308	0.29	0.327	0.268	0.363	0.00899	0.0484	15.7%	9.19%

Graphics





7 Day Chronic Fathead Minnow Toxicity Test Data

Client: P. Analytical - Chevron Cawelo
Test Material: Wetlands
Test ID#: 37322 Project #: 15508
Test Date: 1/12/10 Randomization: 4:43

Organism Log#: 4993 Age: <48 hrs
Organism Supplier: Chesepeake
Control/Diluent: EPAMH
Control Water Batch: 1275

Test Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µS/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	25.0	7.92		9.7		300	10	10	10	10	Date 1/12/10; Test Solution Prep [illegible]
100%	25.0	7.79		10.0 ~~9.9~~		789	10	10	10	10	Sample ID 23377; Initiation Time 1215
Meter ID	33A	PH14		RD02		EC03	New WQ				Initiation Signoff [illegible]
Lab Control	25.3	8.16	8.11	9.5	7.0	301	10	10	10	10	Date 1/13/10; Test Solution Prep [illegible]
100%	25.3	8.03	8.30	9.4	6.9	805	10	10	10	10	Sample ID 23377; Renewal Time 1215
Meter ID	33A	PH14	PH14	RD01	RD01	EC05	New WQ		Old WQ		Renewal Signoff [illegible]
Lab Water Control	25.9	8.14	7.93	9.2	7.9	306	10	10	10	9	Date 1/14/10; Test Solution Prep [illegible]
100%	25.9	7.95	8.07	10.3	8.5	806	10	10	10	9	Sample ID 23377; Renewal Time 1445
Meter ID	33A	PH09	PH03	RD03	RD02	EC03	New WQ		Old WQ		Renewal Signoff [illegible]
Lab Control	25.3	8.22	7.92	9.2	7.6	309	10	9	8	9	Date 1/15/10; Test Solution Prep [illegible]
100%	25.3	8.00	8.34	10.8	7.2	805	9	10	9	9	Sample ID 23377; Renewal Time 1310
Meter ID	33A	PH12	PH12	RD03	RD03	EC04	New WQ SG		Old WQ NVS		Renewal Signoff [illegible]
Lab Control	25.5	7.94	7.98	9.1	7.7	309	10	9	8	9	Date 1/16/10; Test Solution Prep [illegible]
100%	25.5	7.88	8.25	10.8	6.9	820	9	10	9	9	Sample ID 23377; Renewal Time 1020
Meter ID	33A	PH14	PH12	RD03	RD01	EC03	New WQ		Old WQ		Renewal Signoff [illegible]
Lab Control	24.8	8.18	8.15	9.1	7.1	310	10	9	8	9	Date 1/17/10; Test Solution Prep [illegible]
100%	24.8	7.99	8.49	10.3	7.3	806	9	9	7	8	Sample ID 23377; Renewal Time 1045
Meter ID	33A	PH14	PH14	RD02	RD02	EC05	New WQ SG		Old WQ SG		Renewal Signoff [illegible]
Lab Control	25.4	8.09	7.99	9.2	7.6	306	10	9	8	9	Date 1/18/10; Test Solution Prep [illegible]
100%	25.4	8.05	8.46	9.3	7.6	787	9	9	6	8	Sample ID 23377; Renewal Time 1245
Meter ID	33A	PH12	PH09	RD01	RD03	EC05	New WQ		Old WQ HV		Renewal Signoff [illegible]
Lab Control	25.7		8.12		8.3	311	10	9	8	9	Date 1/19/09; Termination Time 1045
100%	25.7		8.47		8.2	810	9	9	6	8	Termination Signoff [illegible]
Meter ID	33A		PH14		RD03	EC03			Old WQ		

Fathead Minnow Dry Weight Data Sheet

Client: P. Analytical - Chevron Cawelo
Test ID #: 37322
Project # 15508
Sample ID: Wetlands
Tare Weight Date: 1/18/10
Sign-off: [illegible]
Test Date: 1/12/10
Final Weight Date: 1/23/10
Sign-off: [illegible]

Pan ID	Concentration	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Lab Control	A	160.65	163.74	10	0.3090
2		B	175.42	178.34	10	0.2920
3		C	163.21	166.23	10	0.3020
4		D	152.37	155.50	10	0.3130
5	100%	A	178.11	180.52	10	0.2410
6		B	151.58	153.99	10	0.2410
7		C	199.95	202.13	10	0.2180
8		D	156.07	158.75	10	0.2680
QA1			198.79	198.79		

Appendix N

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the *Selenastrum capricornutum*

CETIS Summary Report

Report Date: 31 Jan-10 20:00 (p 1 of 1)
Test Code: 09-4510-8943/37375

Algal Growth Test — Pacific EcoRisk

Batch ID:	09-0921-2901	Test Type:	Cell Growth	Analyst:	Padrick Anderson
Start Date:	12 Jan-10 16:00	Protocol:	EPA-821-R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	16 Jan-10 15:45	Species:	Selenastrum capricornutum	Brine:	Not Applicable
Duration:	96h	Source:	In-House Culture	Age:	6

Sample ID:	19-0801-6506	Code:	NaCl	Client:	Reference Toxicant
Sample Date:	12 Jan-10 16:00	Material:	Sodium chloride	Project:	15612
Receive Date:	12 Jan-10 16:00	Source:	Reference Toxicant		
Sample Age:	N/A (24.8 °C)	Station:	In House		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
18-9471-3076	96h Cell Density-with EDTA	<0.5	0.5	N/A	4.03%		Dunnett's Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	g/L	95% LCL	95% UCL	TU	Method
05-2229-1929	96h Cell Density-with EDTA	IC5	0.131	0.0928	0.205		Linear Interpolation (ICPIN)
		IC10	0.28	0.194	0.449		
		IC15	0.448	0.303	0.614		
		IC20	0.581	0.455	0.697		
		IC25	0.703	0.591	0.806		
		IC40	1.15	0.989	1.27		
		IC50	1.56	1.43	1.65		

96h Cell Density-with EDTA Summary

Conc-g/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	2.21E+6	2.18E+6	2.23E+6	2.16E+6	2.31E+6	1.29E+4	7.05E+4	3.2%	0.0%
0.5		4	1.84E+6	1.81E+6	1.88E+6	1.73E+6	1.93E+6	1.60E+4	8.77E+4	4.76%	16.4%
1		4	1.42E+6	1.40E+6	1.43E+6	1.37E+6	1.48E+6	9.25E+3	5.07E+4	3.58%	35.8%
2		4	9.04E+5	8.96E+5	9.13E+5	8.77E+5	9.31E+5	4.04E+3	2.21E+4	2.45%	59.0%
4		4	1.28E+5	1.19E+5	1.36E+5	9.90E+4	1.56E+5	4.25E+3	2.33E+4	18.3%	94.2%
8		4	5.83E+4	5.39E+4	6.26E+4	4.80E+4	7.30E+4	2.12E+3	1.16E+4	19.9%	97.4%

96h Cell Density-with EDTA Detail

Conc-g/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	2.31E+6	2.16E+6	2.17E+6	2.18E+6
0.5		1.73E+6	1.89E+6	1.82E+6	1.93E+6
1		1.37E+6	1.48E+6	1.38E+6	1.43E+6
2		9.02E+5	9.07E+5	8.77E+5	9.31E+5
4		9.90E+4	1.56E+5	1.29E+5	1.26E+5
8		5.00E+4	7.30E+4	6.20E+4	4.80E+4

Analyst: PA QA: JN

Selenastrum capricornutum Cell Density Enumeration Data

Client: **Reference Toxicant** Initial Count: 10,000 cells/mL

Test Material: NaCl Enumerating Scientist: SH

Test Start Date: 1/12/10 Start Time: 1600 Test ID #: 37375

Test End Date: 1/16/10 End Time: 1545 Project #: 15612

Treatment	Rep A	Rep B	Rep C	Rep D	Mean
Lab Water Control (w/EDTA)	2.31	2.16	2.17	2.18	~~2.20~~ 2.21
0.5	1.73	1.89	1.82	1.93	1.84
1	1.37	1.48	1.38	1.43	1.42
2	0.902	0.907	0.877	0.931	0.904
4	0.099	0.156	0.129	0.126	0.128
8	0.050	0.073	0.062	0.068	0.058
This datasheet has been reviewed for completeness and consistency with Test Acceptability Criteria and/or other issues of concern.	**Control Mean Density (cells/mL x 10^6)**	**% CV**	**Date:**	**Time:**	**Signoff:**
	2.20	3.2	1-16-10	1810	JZ

Selenastrum capricornutum Algal Toxicity Test Water Quality Data

Client: **Reference Toxicant** Test ID #: 37375 Shelf Zone #: RU51

Test Material: NaCl Project #: 15612 Control/Diluent: Lab Water

Reference Toxicant Test Treatment (g/L NaCl)	Temp (°C)	pH	D.O. (mg/L)	Conductivity (µS/cm)	Sign-Off
Lab Water Control	24.8	7.49	9.5	114	Date: 1/12/10
0.5	24.8	7.57	9.6	1177	First Solution Prep: SH
1	24.8	7.56	9.4	2063	New WQ: [illegible]
2	24.8	7.53	9.3	3840	Innoculation Time: 1400
4	24.8	7.49	9.4	7290	Innoculation Signoff: SH
8	24.8	7.45	9.6	14120	RT Stock Batch #: 46
Meter ID:	47	Ph09	RD03	EC05 04	
Lab Water Control	25.7	8.49			Date: 1/13/10
0.5	25.7	8.31			WQ Time: 1135
1	25.7	8.20			WQ Signoff: DDB
2	25.7	NR			
4	25.7	8.07			
8	25.7	7.98			
Meter ID:	47	PH09			
Lab Water Control	25.3	8.58			Date: 01/14/10
0.5	25.3	8.34			WQ Time: 10:55
1	25.3	7.93			WQ Signoff: SG
2	25.3	NR			
4	25.3	7.74			
8	25.3	7.61			
Meter ID:	47	ph14			
Lab Water Control	24.6	~~9.9~~ 9.71			Date: 1/15/10
0.5	24.6	9.40			WQ Time: 0915
1	24.6	9.17			WQ Signoff: HV
2	24.6	NR			
4	24.6	7.88			
8	24.6	7.59			
Meter ID:	47	PH09			
Lab Water Control	25.3	9.92	12.8	120	Date: 1/16/10
0.5	25.3	9.79	12.1	1190	Termination Time: 1545
1	25.3	9.62	11.7	2041	Termination Signoff: SL
2	25.3	~~8.76~~ NR SH	9.4	3940	WQ Time: 1203
4	25.3	7.63	8.7	7210	WQ Signoff: NVS
8	25.3	7.48	8.6	13900	
Meter ID:	47	pH14	RD03	EC03	

Initial Test Conditions			
Target: 16g NaCl in 2 L	Alkalinity	Hardness	Light Intensity (ftc)
Actual: 16.001	12 ✓	18 ✓	412

Appendix O

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the *Ceriodaphnia dubia*

CETIS Summary Report

Report Date: 28 Jan-10 15:14 (p 1 of 2)
Test Code: 06-8303-7391/37343

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Batch ID:	07-7625-6319	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Jason Walker
Start Date:	12 Jan-10 15:15	**Protocol:**	EPA-821-R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	18 Jan-10 17:30	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 2h	**Source:**	In-House Culture	**Age:**	1

Sample ID:	14-1847-9695	**Code:**	NaCl	**Client:**	Reference Toxicant
Sample Date:	12 Jan-10 15:15	**Material:**	Sodium chloride	**Project:**	15611
Receive Date:	12 Jan-10 15:15	**Source:**	Reference Toxicant		
Sample Age:	N/A (25.1 °C)	**Station:**	In House		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
19-8117-9498	Reproduction	500	1000	707	24.7%		Steel Many-One Rank Test
01-1526-4136	Survival	1500	2000	1730	N/A		Fisher Exact/Bonferroni-Holm Test

Point Estimate Summary

Analysis ID	Endpoint	Level	g/L	95% LCL	95% UCL	TU	Method
14-9958-8869	Reproduction	IC5	9.67	1.29	629		Linear Interpolation (ICPIN)
		IC10	113	4.26	906		
		IC15	527	11.1	1040		
		IC20	608	26.6	1080		
		IC25	701	62.4	1130		
		IC40	1040	566	1310		
		IC50	1190	872	1430		
20-2422-2118	Survival	EC50	1730	1580	1900		Binomial/Graphical

Reproduction Summary

Conc-g/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	10	25.9	22.7	29.1	14	38	1.58	8.63	33.3%	0.0%
500		10	22.5	19.1	25.9	13	35	1.66	9.07	40.3%	13.1%
1000		10	16.2	13.2	19.2	6	29	1.45	7.96	49.1%	37.5%
1500		10	8.8	7.38	10.2	0	13	0.693	3.79	43.1%	66.0%
2000		10	0	0	0	0	0	0	0		100.0%
2500		10	0	0	0	0	0	0	0		100.0%

Survival Summary

Conc-g/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	10	1	1	1	1	1	0	0	0.0%	0.0%
500		10	1	1	1	1	1	0	0	0.0%	0.0%
1000		10	1	1	1	1	1	0	0	0.0%	0.0%
1500		10	1	1	1	1	1	0	0	0.0%	0.0%
2000		10	0	0	0	0	0	0	0		100.0%
2500		10	0	0	0	0	0	0	0		100.0%

Ceriodaphnia Survival and Reproduction Test — **Pacific EcoRisk**

Reproduction Detail

Conc-g/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water Contr	28	16	32	29	33	20	38	16	33	14
500		35	13	35	16	17	32	29	17	17	14
1000		27	23	14	19	8	14	29	11	11	6
1500		8	7	10	13	13	9	8	8	12	0
2000		0	0	0	0	0	0	0	0	0	0
2500		0	0	0	0	0	0	0	0	0	0

Survival Detail

Conc-g/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water Contr	1	1	1	1	1	1	1	1	1	1
500		1	1	1	1	1	1	1	1	1	1
1000		1	1	1	1	1	1	1	1	1	1
1500		1	1	1	1	1	1	1	1	1	1
2000		0	0	0	0	0	0	0	0	0	0
2500		0	0	0	0	0	0	0	0	0	0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Reference Toxicant Material: Sodium Chloride Test Date: 1/12/10

Project #: 15611 Test ID: 37343 Randomization: Board 5 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E	F	G	H	I	J
Lab Water Control	0	8.03		9.1		222	25.1	0	0	0	0	0	0	0	0	0	0
	1	8.17	8.23	9.5	8.7	237	25.4	0	0	0	0	0	0	0	0	0	0
	2	7.99	8.20	9.3	8.7	227	25.6	0	0	0	0	0	0	0	0	0	0
	3	8.11	8.26	9.3	8.0	229	24.9	0	0	0	0	0	0	0	0	0	0
	4	8.10	8.02	8.9	8.5	213	25.0	6	4	7	5	6	7	6	5	6	4
	5	8.05	8.44	9.1	8.4	230	25.1	10	12	10	10	12	13	13	11	12	10
	6	8.12	8.30	9.1	8.5	214	25.1	12	0	15	14	15	0	19	0	15	0
	7																
	8																
							Total=	28	16	32	29	33	20	38	16	33	14

SIGN-OFF

Date: 1/12/10	New WQ:	Test Init.: JT	
Sol'n Prep: Sm	Old WQ: OOB	Time: 1515	
Date: 1/13/10	New WQ: Sm	Counts: SH	
Sol'n Prep: Sm	Old WQ: JOJS	Time: 1445	
Date: 1/14/10	New WQ: HV	Counts: JPC	
Sol'n Prep: JV	Old WQ: OOB	Time: 1150	
Date: 1-15-10	New WQ: SG	Counts: [illegible]	
Sol'n Prep: [illegible]	Old WQ: SG	Time: 1535	
Date: 1-16-10	New WQ: Sm	Counts: SH	
Sol'n Prep: JT	Old WQ: JT	Time: 1215	
Date: 1-17-10	New WQ: SG	Counts: SH	
Sol'n Prep: [illegible]	Old WQ: SH	Time: 1415	
Date: 1/18/10	New WQ: JT	Counts: [illegible]	
Sol'n Prep: [illegible]	Old WQ: JT	Time: 1330	
Date:	New WQ:	Counts:	
Sol'n Prep:	Old WQ:	Time:	
Date:	Old WQ:	Counts:	
		Time:	

Mean Neonates/Female = 25.9

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	A	B	C	D	E	F	G	H	I	J
500 mg/L	0	8.02		9.0		1347	0	0	0	0	0	0	0	0	0	0
	1	8.13	8.20	9.0	8.5	1243	0	0	0	0	0	0	0	0	0	0
	2	8.08	8.21	9.6	8.3	1295	0	0	0	0	0	0	0	0	0	0
	3	8.08	8.24	9.4	7.8	1248	0	0	0	0	0	0	0	0	0	0
	4	8.01	7.95	8.9	8.0	1231	6	4	6	5	5	6	5	5	6	4
	5	8.13	8.31	9.1	8.5	1175	13	9	12	11	12	11	11	12	11	10
	6	8.07	8.44	9.1	8.5	1225	16	0	17	0	0	15	13	0	0	0
	7															
	8															
							Total=	35	13	35	16	17	32	29	17	17	14

RT BATCH NUMBER

11
11/12
12
12
12
12
12

Mean Neonates/Female = 22.5

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Reference Toxicant Material: Sodium Chloride Test Date: 1/12/10

Project #: 15611 Test ID: 37343 Randomization: Board 5 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E	F	G	H	I	J	SIGN-OFF
1000 mg/L	0	8.03		9.1		2240		0	0	0	0	0	0	0	0	0	0	
	1	8.08	8.23	8.9	8.6	2100		0	0	0	0	0	0	0	0	0	0	
	2	8.10	8.20	9.7	8.3	2221		0	0	0	0	0	0	0	0	0	0	
	3	8.09	8.24	9.8	7.8	2187		0	0	0	0	0	0	0	0	0	0	
	4	8.00	7.96	8.8	7.9	2194		5	4	5	4	2	6	5	4	4	0	
	5	8.11	8.42	9.4	8.5	2173		10	9	9	7	6	8	10	7	7	6	
	6	8.09	8.40	9.1	8.6	2215		12	10	0	8	0	0	14	0	0	0	
	7																	
	8																	
							Total=	27	23	14	19	8	14	29	11	11	6	Mean Neonates/Female = 16.2

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)		A	B	C	D	E	F	G	H	I	J	
1500 mg/L	0	8.01		9.2		3080		0	0	0	0	0	0	0	0	0	0	
	1	8.02	8.23	9.1	8.7	3200		0	0	0	0	0	0	0	0	0	0	
	2	8.08	8.19	9.8	8.3	3160		0	0	0	0	0	0	0	0	0	0	
	3	8.08	8.20	9.8	7.8	3190		0	0	0	0	0	0	0	0	0	0	
	4	7.97	7.92	8.8	8.0	3120		0	3	4	0	2	3	2	3	3	0	
	5	8.11	8.34	9.6	8.5	3090		8	4	6	3	6	6	6	5	5	0	
	6	8.06	8.38	9.3	8.7	3150		0	0	0	10	5	0	0	0	4	0	
	7																	
	8																	
							Total=	8	7	10	13	13	9	8	8	12	0	Mean Neonates/Female = 8.8

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Reference Toxicant Material: Sodium Chloride Test Date: 1/12/10

Project #: 15611 Test ID: 37343 Randomization: Board 5 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E	F	G	H	I	J	SIGN-OFF
2000 mg/L	0	7.98		9.4		4030		0	0	0	0	0	0	0	0	0	0	
	1	8.00	8.21	9.3	8.8	4030		0	0	0	0	0	0	0	0	0	0	
	2	8.07	8.18	10.0	8.3	4080		X/0	X/0	0	0	0	X/0	X/0	X/0	X/0	X/0	
	3	8.09	8.23	10.0	8.0	4060		–	–	X/0	X/0	X/0	–	–	–	–	–	
	4	7.90	–	8.8	–	3980		–	–	–	–	–	–	–	–	–	–	
	5	8.06	–	9.8	–	3930		–	–	–	–	–	–	–	–	–	–	
	6							–	–	–	–	–	–	–	–	–	–	
	7							–	–	–	–	–	–	–	–	–	–	
	8							–	–	–	–	–	–	–	–	–	–	
							Total=	X/0	X/0	X/0	X/0	X/0	X/0	X/0	X/0	X/0	X/0	Mean Neonates/Female = 0

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)		A	B	C	D	E	F	G	H	I	J	
2500 mg/L	0	7.95		9.5		5030		0	0	0	0	0	0	0	0	0	0	
	1	8.00	8.19	9.4	8.8	4990		X/0	X/0	0	0	0	0	0	0	0	X/0	
	2	8.06	8.17	10.0	8.4	4940		–	–	X/0	X/0	X/0	X/0	X/0	X/0	X/0	–	
	3	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	
	4	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	
	5	8.03	–	10.1	–	4840		–	–	–	–	–	–	–	–	–	–	
	6							–	–	–	–	–	–	–	–	–	–	
	7							–	–	–	–	–	–	–	–	–	–	
	8							–	–	–	–	–	–	–	–	–	–	
							Total=	X/0	X/0	X/0	X/0	X/0	X/0	X/0	X/0	X/0	X/0	Mean Neonates/Female = 0

Appendix P

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Fathead Minnows

CETIS Summary Report

Report Date: 01 Feb-10 18:25 (p 1 of 2)
Test Code: 04-3902-0471/37373

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Batch ID:	20-2507-7023	**Test Type:**	Growth-Survival (7d)	**Analyst:**	Padrick Anderson
Start Date:	12 Jan-10 17:50	**Protocol:**	EPA-821-R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	19 Jan-10 11:25	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	6d 18h	**Source:**	Chesapeake Cultures, Inc.	**Age:**	1

Sample ID:	14-1847-9695	**Code:**	NaCl	**Client:**	Reference Toxicant
Sample Date:	12 Jan-10 17:50	**Material:**	Sodium chloride	**Project:**	15610
Receive Date:	12 Jan-10 17:50	**Source:**	Reference Toxicant		
Sample Age:	N/A (25.6 °C)	**Station:**	In House		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
16-0774-6408	7d Survival Rate	1.5	3	2.12	25.3%		Steel Many-One Rank Test
16-0932-2647	Mean Dry Biomass-mg	1.5	3	2.12	24.9%		Steel Many-One Rank Test
11-5545-6448	Mean Dry Weight-mg	3	6	4.24	31.5%		Steel Many-One Rank Test

Point Estimate Summary

Analysis ID	Endpoint	Level	g/L	95% LCL	95% UCL	TU	Method
02-4270-2364	7d Survival Rate	EC5	2.49	0.899	3.22		Linear Regression (MLE)
		EC10	2.72	1.18	3.46		
		EC15	2.89	1.4	3.65		
		EC20	3.03	1.6	3.82		
		EC25	3.16	1.8	3.99		
		EC40	3.51	2.33	4.56		
		EC50	3.74	2.67	5.05		
00-6146-6034	Mean Dry Biomass-mg	IC5	0.796	N/A	2.14		Linear Interpolation (ICPIN)
		IC10	1.03	0.0866	2.29		
		IC15	1.29	0.389	2.57		
		IC20	1.61	0.529	2.84		
		IC25	2.04	0.512	3.19		
		IC40	3.21	1.5	3.57		
		IC50	3.58	3.1	3.91		

7d Survival Rate Summary

Conc-g/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.975	0.956	0.994	0.9	1	0.00913	0.05	5.13%	0.0%
0.75		4	0.925	0.906	0.944	0.9	1	0.00913	0.05	5.41%	5.13%
1.5		4	0.775	0.631	0.919	0.2	1	0.0705	0.386	49.8%	20.5%
3		4	0.725	0.669	0.781	0.5	0.8	0.0274	0.15	20.7%	25.6%
6		4	0.025	0.00633	0.0437	0	0.1	0.00913	0.05	200.0%	97.4%
9		4	0	0	0	0	0	0	0		100.0%

Mean Dry Biomass-mg Summary

Conc-g/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.241	0.235	0.248	0.217	0.257	0.00316	0.0173	7.17%	0.0%
0.75		4	0.232	0.219	0.245	0.186	0.269	0.00643	0.0352	15.2%	3.94%
1.5		4	0.196	0.169	0.224	0.086	0.244	0.0135	0.0741	37.7%	18.5%
3		4	0.159	0.152	0.167	0.13	0.178	0.00378	0.0207	13.0%	34.0%
6		4	0	0	0	0	0	0	0		100.0%
9		4	0	0	0	0	0	0	0		100.0%

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Mean Dry Weight-mg Summary

Conc-g/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.248	0.239	0.258	0.217	0.277	0.00459	0.0252	10.1%	0.0%
0.75		4	0.252	0.234	0.27	0.186	0.299	0.00883	0.0483	19.2%	-1.68%
1.5		4	0.289	0.253	0.324	0.227	0.43	0.0173	0.0948	32.8%	-16.4%
3		4	0.223	0.214	0.233	0.201	0.26	0.00473	0.0259	11.6%	9.96%
6		4	0	0	0	0	0	0	0		100.0%
9		4	0	0	0	0	0	0	0		100.0%

7d Survival Rate Detail

Conc-g/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	1	1	0.9	1
0.75		0.9	0.9	0.9	1
1.5		0.2	1	1	0.9
3		0.5	0.8	0.8	0.8
6		0	0	0.1	0
9		0	0	0	0

Mean Dry Biomass-mg Detail

Conc-g/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	0.217	0.257	0.249	0.242
0.75		0.226	0.246	0.269	0.186
1.5		0.086	0.227	0.244	0.229
3		0.13	0.161	0.178	0.168
6		0	0	0	0
9		0	0	0	0

Mean Dry Weight-mg Detail

Conc-g/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	0.217	0.257	0.277	0.242
0.75		0.251	0.273	0.299	0.186
1.5		0.43	0.227	0.244	0.254
3		0.26	0.201	0.222	0.21
6		0	0	0	0
9		0	0	0	0

7 Day Chronic Fathead Minnow Reference Toxicant Test Data

Client: Reference Toxicant
Test Material: Sodium Chloride
Test ID#: 37373 Project #: 15610
Test Date: 1-12-10 Randomization: 4-6-5

Organism Log#: 4993 Age: 48hrs
Organism Supplier: Chesapeake Cultures
Control/Diluent: EPAMH
Control Water Batch: 1225

Treatment (g/L)	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Control	25.6	8.04		9.1		299	10	10	10	10	Date: 1/12/10
0.75	25.6	8.02		9.0		1957	10	10	10	10	Test Solution Prep: SM
1.5	25.6	7.99		9.0		3210	10	10	10	10	New WQ: 008
3	25.6	7.96		9.1		5950	10	10	10	10	Initiation Time: 1750
6	25.6	7.90		9.3		11130	10	10	10	10	Initiation Signoff: MM
9	25.6	7.85		9.7		16060	10	10	10	10	RT Stock Batch #: 40
Meter ID	33A	PH14		RD02		EC03					
Control	25.1	8.23	8.12	9.0	8.5	311	10	10	10	10	Date: 1-13-10
0.75	25.1	8.14	8.03	9.0	8.1	1841	10	10	10	10	Test Solution Prep: JL
1.5	25.1	8.15	7.92	9.0	8.1	3330	7	10	10	10	New WQ: SM
3	25.1	8.08	7.87	9.1	8.0	6050	10	9	10	9	Renewal Time: 1030
6	25.1	8.03	7.81	9.4	8.2	11170	9	8	10	9	Renewal Signoff: SH
9	25.1	7.98	7.79	9.7	8.3	16230	3	0	2	2	Old WQ: YM
Meter ID	30A	pH14	PH12	RD02	RD02	EC05					RT Stock Batch #: 40
Control	25.6	8.10	8.31	9.0	6.9	300	10	10	10	10	Date: 1/14/10
0.75	25.6	8.06	8.22	9.0	6.8	1812	10	9	9	10	Test Solution Prep: JP
1.5	25.6	8.03	8.18	9.0	7.0	3240	6	10	10	10	New WQ: ZW
3	25.6	7.98	8.15	9.0	7.1	5900	5	8	10	9	Renewal Time: 1255
6	25.6	7.91	8.10	9.0	7.0	11180	4	3	8	4	Renewal Signoff: JP
9	25.6	—	8.04	—	7.2	—	0	—	0	0	Old WQ: MM
Meter ID	30A	pH09	pH14	RD03	RD01	EC03					RT Stock Batch #: 41
Control	25.1	8.10	8.15	8.7	7.2	309	10	10	10	10	Date: 1/15/10
0.75	25.1	8.10	7.92	8.8	6.8	1782	9	9	9	10	Test Solution Prep: [illegible]
1.5	25.1	8.05	7.86	8.9	6.9	3300	6	10	10	10	New WQ: SG
3	25.1	7.99	7.83	9.1	6.9	6050	5	8	8	8	Renewal Time: 1325
6	25.1	7.90	7.78	9.5	7.1	11160	1	0	5	1	Renewal Signoff: [illegible]
9	—	—	—	—	—	—	—	—	—	—	Old WQ: SG
Meter ID	30A	pH12	pH14	RD03	RD02	EC04					RT Stock Batch #: 41

7 Day Chronic Fathead Minnow Reference Toxicant Test Data

Client: Reference Toxicant
Test Material: Sodium Chloride
Test ID#: 37373 Project #: 15610
Test Date: 1-12-10 Randomization: 4-6-5

Organism Log#: 4993 Age: 24hrs
Organism Supplier: Chesapeake Cultures
Control/Diluent: EPAMH
Control Water Batch: 1275

Treatment (g/L)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Control	24.9	7.86	~~8.02~~ 7.88	9.1	~~8.2~~ 7.9	312	10	10	10	10	Date: 1-16-10
0.75	24.9	7.86	7.89	9.1	7.6	1800	9	9	9	10	Test Solution Prep: JR
1.5	24.9	7.84	7.82	9.2	7.6	3040	5	10	10	9	New WQ: JT
3	24.9	7.83	7.79	9.5	7.6	6020	5	8	8	8	Renewal Time: 1015
6	24.9	7.81	7.77	9.7	7.7	11080	1	–	2	1	Renewal Signoff: JPL
9	—	—	—	—	—	—	—	—	—	—	Old WQ: [illegible]
Meter ID	30A	PH14	PH14	RD03	RD03	EC03					KT Stock Batch #: 41
Control	25.2	8.05	7.96	9.1	8.4	307	10	10	10	10	Date: 1/17/10
0.75	25.2	8.04	7.93	8.8	8.2	1897	9	9	9	10	Test Solution Prep: [illegible]
1.5	25.2	8.01	7.90	8.9	8.1	3170	4	10	10	9	New WQ: SG
3	25.2	7.97	7.86	9.0	8.0	5960	5	8	8	8	Renewal Time: 1620
6	25.2	7.91	7.82	9.5	8.1	10830	0	–	2	1	Renewal Signoff: [illegible]
9	—	—	—	—	—	—	—	—	—	—	Old WQ: SG
Meter ID	30A	PH14	PH14	RD02	RD02	EC05					KT Stock Batch #: 41
Control	25.0	8.15	7.87	9.3	6.9	319	10	10	9	10	Date: 1/18/10
0.75	25.0	8.07	7.88	9.1	6.9	1810	9	9	9	10	Test Solution Prep: [illegible]
1.5	25.0	8.05	7.82	9.0	6.8	3230	2	10	10	9	New WQ: JR
3	25.0	8.00	7.81	9.0	6.8	5830	5	8	8	8	Renewal Time: 1115
6	25.0	7.94	7.84	9.4	6.9	11080	—	–	2	1	Renewal Signoff: [illegible]
9	—	—	—	—	—	—	—	—	—	—	Old WQ: BH
Meter ID	30A	PH12	PH09	RD01	RD03	EC03					KT Stock Batch #: 41
Control	24.7		~~8.12~~ 8.02		8.4	322	10	10	9	10	Date: 1/19/10
0.75	24.7		8.06		8.3	1840	9	9	9	10	Termination Time: 1125
1.5	24.7		8.06		8.3	3310	2	10	10	9	Termination Signoff: [illegible]
3	24.7		8.02		8.4	5990	5	8	8	8	Old WQ: KD
6	24.7		7.98		8.4	11350	—	—	1	0	
9	—		—		—	—	—	—	—	—	
Meter ID	30A		PH14		RD03	EC03					

Fathead Minnow Dry Weight Data Sheet

Client: **Reference Toxicant** Test ID #: 37373 Project # 15610

Sample: Sodium Chloride Tare Weight Date: 1-15-10 Sign-off: FOUB

Test Date: 1-12-10 Final Weight Date: 1-22-10 Sign-off: DJ

Pan ID	Concentration	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Control	A	164.16	166.33	10	0.217
2		B	162.36	164.93	10	0.257
3		C	162.62	165.11	10	0.249
4		D	157.61	160.03	10	0.242
5	0.75	A	165.75	168.01	10	0.226
6		B	161.78	164.24	10	0.246
7		C	146.65	149.34	10	0.269
8		D	167.60	169.46	10	~~0.2461.8~~ 0.186
9	1.5	A	178.57	179.43	10	0.086
10		B	186.10	188.37	10	0.227
11		C	158.15	160.59	10	0.244
12		D	167.47	169.76	10	0.229
13	3	A	167.46	168.76	10	0.130
14		B	178.91	180.52	10	0.161
15		C	170.32	172.10	10	0.178
16		D	137.56	139.24	10	~~0.178~~ 0.168
17	6	A	–	–	10	–
18		B	–	–	10	–
19		C	–	–	10	–
20		D	–	–	10	–
21	9	A	–	–	10	–
22		B	–	–	10	–
23		C	–	–	10	–
24		D	–	–	10	–
QA1			159.95	159.91		–
QA2			173.36	173.36		–
QA3			162.80	162.82		–
Balance ID:			#1	#1		