

## **Appendix E**

### **Toxicity Test Results**

***BIOLOGICAL TESTING OF  
SEDIMENT FROM THE PROPOSED  
US SUGAR LAND ACQUISITION***

**October 2008**

*Prepared for:*

South Florida Water Management District  
3301 Gun Club Road,  
West Palm Beach, Florida 33406

*Prepared by:*

NewFields Northwest LLC  
PO Box 216  
4729 View Drive  
Port Gamble, Washington 98364



## 1.0 Background

The South Florida Water Management District and State of Florida are considering the purchase of 187,000 acres of agricultural land north of the Everglades for restoration. This land includes sugar plantations owned and operated by US Sugar. In order to better understand the potential risk to fish and wildlife from residual pesticides and other chemicals associated with historic agricultural use, the SFWMD has asked NewFields to conduct an ecological risk assessment of soils that may be transitioned to aquatic lands. Included in this risk assessment is an evaluation of chemical contaminants of concern, the potential toxicity of soils to aquatic receptors, and an evaluation of uptake potential of contaminants into tissues of sediment-dwelling organisms. As part of this evaluation, NewFields conducted toxicity tests on acclimated and unacclimated soils from the US Sugar Acquisition (USSA) properties. Toxicity evaluations were conducted on soils that were acclimated, or “aged”, in freshwater for seven days prior to test initiation, as well as soils that were not acclimated. Toxicity tests included 10-day benthic tests with *Hyalella azteca* and *Chironomus dilutus*.

## 2.0 Methods

This section summarizes the methods that were followed for preparing and testing the soils from the US Sugar properties. Whole-sediment bioassays were conducted to estimate the potential acute toxicity of the test material to benthic/epibenthic organisms using the freshwater amphipod *Hyalella azteca* and the midge larvae *Chironomus dilutus* (formerly *C. tentans*).

The proposed restoration project includes inundating organically-enriched terrestrial soils to create aquatic sediments. When soils are inundated, they make a transition from soil to sediment that includes the development of an aquatic microbial community, as well as changes in chemical partitioning between the sediment, interstitial porewater, and the overlying water. Changes in partitioning can in turn alter chemical bioavailability and toxicity. In order to evaluate potential changes in partitioning and toxicity during inundation, sediments were acclimated, or “aged” in the laboratory prior to testing. Toxicity tests were conducted with a selected set of samples using both acclimated and unacclimated soils. Samples that were tested under acclimated and unacclimated conditions are listed in Table 1.

The toxicity testing methods followed guidance provided in standard method ASTM E 1706-05, “Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates” (ASTM 2006) and USEPA method, “Methods for Measuring the Toxicity and Bioaccumulation of Sediment-Associated Contaminants with Freshwater Invertebrates (USEPA/600-R-99/064)” (USEPA 2000). These methods are detailed in Sections 2.1 and 2.2.

Table 1. Samples and Analyses for the USSA Biological Testing Program.

Sample	Sediment Toxicity		Bioaccumulation	Pore Water
	Acclimated	Unacclimated		
4501 IM West			√	√
4631 LP East			√	√
4617 MN North	√	√		
4501 JN West	√	√		
4502 OP South	√	√		
4501 F	√	√		√
4621 AE East		√	√	√
4403 DH	√	√		
3425 EF South	√	√		
001E2-5		√		
3222-AB-S			√	√
2324AB-N		√		
4509CD-S	√	√	√	√
3433AE-E		√		



## 2.1 Toxicity Testing with *Hyalallela azteca*

The 10-day acute toxicity test with *Hyalallela azteca* was initiated on August 26, 2008. Test organisms were supplied by Aquatic Biosystems, Inc. of Fort Collins, Colorado. Upon receipt, the animals were acclimated to test conditions following ASTM guidance of no more than 5°C per 24-hour period.

To prepare the test exposures, approximately 100 mL of sediment was placed in clean, acid and solvent-rinsed 300-mL glass jars, which were then filled with 175 mL of reconstituted freshwater with a hardness ranging from 120 to 170 mg/L CaCO<sub>3</sub>. Nine replicate chambers were prepared for each test treatment and the native control sediment. Eight replicates were used to evaluate sample toxicity and the ninth replicate was used as a water-quality surrogate and to measure pore-water ammonia on Day 10. Test chambers were placed in randomly assigned positions in a 23°C water bath and allowed to equilibrate overnight.

For test samples that were also tested with acclimated sediment, 100-mL of test sediment and 175 mL of reconstituted freshwater was placed into an additional nine test jars seven days prior to test initiation. Jars were held at test conditions (aerobic, 23°C) during acclimation. Acclimated samples were then initiated and tested as additional test treatments concurrent with the unacclimated samples.

Immediately prior to test initiation, dissolved oxygen (DO), temperature, pH, and conductivity were measured in one replicate for each treatment. Target ranges for water quality parameters are provided in Table 2. In addition, water hardness, alkalinity, and overlying water ammonia were measured in the water-quality surrogate.

The tests were initiated by randomly allocating 10 *H. azteca* into each test chamber, ensuring that each of the amphipods successfully buried into the sediment. Amphipods that did not bury within approximately one hour were replaced with healthy amphipods. Test chambers were outfitted with a Zumwalt-style water delivery system to facilitate twice-daily water renewals. Water quality parameters (DO, temperature, pH, and conductivity) were monitored in one replicate on days 1-9. Daily observations were made on each replicate throughout the test and included the number of dead and surfaced animals. Test chambers received 2.5 mg of ground Tetrafin® daily to provide sufficient food for the test organisms.

At test termination, water quality observations were made in the water-quality surrogate. In addition, water hardness, alkalinity, and overlying and porewater ammonia were measured. To terminate the test, sediment from each test chamber was sieved through a 0.5-mm screen and all recovered amphipods transferred into a Petri dish. Surviving animals from each replicate were placed in pre-weighed, aluminum boats, and dried at 60°C for 24 hours. The dry weight measurements provided an estimate of mean growth per surviving individual.

Test acceptability was based on greater than 80 percent mean control survival. There are no established criteria for acceptable growth. Test treatments were evaluated based on a statistical comparison of mean percent survival and mean biomass (mass per number at termination) in the test treatments relative to the control.

Copper sulfate was used as the reference toxicant test with concentration series of 62.5, 125, 250, 500, and 1000 µg Cu/L. The reference toxicant data is used to establish the sensitivity of the test organisms used for this project. Table 2 summarizes bioassay procedures and organism data for the test with *H. azteca*.

**Table 2. Test Conditions for the 10-Day Bioassay using *H. azteca***

Parameter	Information	
Test Treatments	16 test treatments, silica sand control	
Sample Collection Date	August 11 – August 17, 2008	
Sample storage conditions	4°C, dark, minimal head space	
Test Species	<i>Hyalella azteca</i>	
Supplier	Aquatic BioSystems, Fort Collins, Colorado	
Date acquired	August 26, 2008	
Acclimation/holding time	Animals were received at test conditions.	
Age / size class	6-8 days old	
Test location	Port Gamble Laboratory	
Test type/duration	Twice Daily Renewals / 10 days	
Test dates	August 26 to September 5, 2008	
Test photoperiod	16 hours light : 8 hours dark	
Test chamber	300 - mL glass jars	
Replicates/treatment	8	
Organisms/replicate	10	
Exposure volume	100 mL sediment, 175 mL water	
Control water	Reconstituted Freshwater	
Feeding	2.5 mg of ground Tetrafin® daily	
Test temperature	Recommended: 23° ± 1°C	Actual: 21.5 to 23.0
Test conductivity	Recommended: N/A	Actual: 447 to 747 (µS/cm)
Test dissolved oxygen	Recommended: > 2.5 mg/L	Actual: 4.9 to 8.6
Test pH	Recommended: 7.8 – 8.2	Actual: 6.6 to 8.1
Deviations from test protocol	Temperature is slightly out of recommended testing range; predicted to have no impact to the test results	

## 2.2 Toxicity Testing with *Chironomus dilutus*

The 10-day acute toxicity test with *Chironomus dilutus* was initiated on September 2, 2008. *C. dilutus* (2<sup>nd</sup> Instar) were supplied by Aquatic BioSystems of Fort Collins, Colorado. Animals were received at test conditions. Upon receipt, the animals were held at test conditions prior to testing.

To prepare the test exposures, approximately 100 mL of sediment was placed in clean, acid and solvent-rinsed 300-mL glass jars, which were then filled with 175 mL of reconstituted freshwater with a hardness ranging from 120 to 170 mg/L CaCO<sub>3</sub>. Nine replicate chambers were prepared for each test treatment and the silica-sand control sediment. Two additional laboratory controls consisting of silica sand amended with sphagnum peat moss (Lakeland™) that was press sieved through a 300µm stainless steel sieve, and peat moss only were also analyzed concurrently with the Site material. Only the silica sand control was used in interpreting the test results. Eight replicates were used to evaluate sample toxicity and the ninth replicate was used as a water-quality surrogate to measure daily water quality and pore-water ammonia on Day 10. Test chambers were placed in randomly assigned positions in a 23°C water bath and allowed to equilibrate overnight.

For test samples that were also tested with acclimated sediment, 100-mL of test sediment and 175 mL of reconstituted freshwater was placed into an additional nine test jars seven days prior to test initiation. Jars were held at test conditions during acclimation. Acclimated samples were then initiated and tested as additional test treatments concurrent with the unacclimated samples.

Immediately prior to test initiation, dissolved oxygen (DO), temperature, pH, and conductivity were measured in one replicate for each treatment. Target ranges for water quality parameters are provided in Table 3. In addition, water hardness, alkalinity, and overlying water ammonia were measured in one replicate.

The tests were initiated by randomly allocating 12 *C. dilutus* into each test chamber. Test chambers were outfitted with a Zumwalt-style water delivery system to facilitate twice-daily water renewals. Water quality parameters (DO, temperature, pH, and conductivity) were monitored in one replicate on days 1-9. Daily observations were made on each replicate throughout the test and included the number of dead and surfaced animals. Test chambers received 6.0 mg of ground Tetrafin® daily to provide sufficient food for the test organisms.

At test termination, water quality observations were made in the water-quality surrogate. In addition, water hardness, alkalinity, and overlying and porewater ammonia were measured. To terminate the test, sediment from each test chamber was sieved through a 0.5-mm screen and all recovered *C. dilutus* transferred into a Petri dish. Survivorship was measured as the total number of *C. dilutus* larvae and pupae remaining at test termination; however, only the larvae were used for determining the growth endpoint. Surviving larvae from each replicate were placed in pre-weighed aluminum boats and dried at 60°C for 24 hours to determine dry weights. The weigh boats were subsequently ashed at 550°C for 2 hours and reweighed in order to calculate the ash-free dry weight (AFDW) of the surviving larvae. Biomass was calculated as AFDW per surviving individual.

Test acceptability was based on greater than 70% mean control survival and a mean biomass per survivor of greater than 0.48 mg AFDW. Test treatments were evaluated based on a statistical comparison of mean percent survival and mean biomass in the test treatments relative to the control.

A reference toxicant test was conducted using copper sulfate in a concentration series of 250, 500, 1000, 2000, and 4000 µg Cu<sup>2+</sup>/L. The reference toxicant test verifies the sensitivity of test organisms used for this project. Table 3 summarizes bioassay procedures and organism data for 10-day *C. dilutus* solid phase testing.

**Table 3. Test Conditions for the 10-Day Bioassay using *C. dilutus*.**

Parameter	Information	
Test Treatments	16 test treatments, 3 controls	
Date received at NewFields	August 11 – August 17, 2008	
Sample storage conditions	4°C, dark, minimal head space	
Test Species	<i>Chironomus dilutus</i> (formerly <i>Chironomus tentans</i> )	
Supplier	Aquatic BioSystems, Fort Collins, Colorado	
Date acquired	August 30, 2008	
Acclimation/holding time	2 days	
Age / size class	2 <sup>nd</sup> – 3 <sup>rd</sup> instar	
Test location	Port Gamble Laboratory	
Test type/duration	Twice Daily Renewals / 10 days	
Test dates	September 2 – September 12, 2008	
Test photoperiod	16 hours light : 8 hours dark	
Test chamber	300 - mL glass jars	
Replicates/treatment	8	
Organisms/replicate	10	
Exposure volume	100 mL sediment, 175 mL water	
Control water	Reconstituted Freshwater	
Feeding	6.0 mg of ground Tetrafin® daily	
Test temperature	Recommended: 23° ± 1°C	Actual: 21.5 to 22.9
Test conductivity	Recommended: N/A	Actual: 369 to 686
Test dissolved oxygen	Recommended: > 2.5 mg/L	Actual: 2.1 to 8.9
Test pH	Recommended: 6 - 9	Actual: 7.0 to 8.1
Deviations from test protocol	D.O. was below the recommended level in one treatment. It did not appear to alter test results.	

### 2.3 Water for Bioassay Testing

Water used in this study was reconstituted freshwater following methods presented in EPA-821-R-02-012. Reconstituted fresh water was prepared using deionized laboratory water mixed with reagent-grade salts (CaSO<sub>4</sub>, CaCl<sub>2</sub>, MgSO<sub>4</sub>, and KCl) to target a hardness range of 120 to 170 as CaCO<sub>3</sub>. Extensive testing with a variety of species and biannual chemical analysis of this water has shown that this water source provides for good survival in laboratory controls with little to no measurable levels of contaminants.

Water quality was monitored using Orion™ 5-Star multimeter, with oxygen, pH, and conductivity probes. Ammonia was analyzed using an Orion™ 5-Star multimeter fitted with an ammonia-ion specific probe, with a three-point calibration curve (1, 10, and 100 mg/L). Hardness and alkalinity were measured utilizing Hach™ and LaMotte™ titration kits, respectively.

## 2.4 Data Analysis and Statistical Analysis

All water quality and endpoint data were entered into Excel spreadsheets. Water quality parameters were summarized by calculating the mean, minimum, and maximum values for each test treatment. Endpoint data were calculated for each replicate with mean values and standard deviations calculated for each test treatment.

All hand-entered data was reviewed for data entry errors, which were corrected prior to summary calculations. A minimum of 10% of all calculations and data sorting were reviewed for errors. Review counts were conducted on any apparent outliers.

All data were tested for normality using the Wilks-Shapiro test and equality of variance using Levene's test. Determinations of statistical significance were based on an Analysis of Variance (ANOVA) with an alpha of 0.05, followed by a Dunnett's one-tailed t-test for rank. Analysis of survival endpoints were conducted on arc-sine, square-root transformed data.

## 3.0 Results

The results of the sediment testing, including a summary of test results and water quality observations are presented in this section. Data for each of the replicates, as well as laboratory bench sheets are provided in the appendices.

### 3.1 Results of Toxicity Tests with *Hyalalela azteca*

A summary of *H. azteca* survival and growth is presented in Table 4 and a summary of water quality observations is presented in Table 5. Statistical results and laboratory data sheets are presented in Appendix A. Mean percent survival in the control was 96.3%, above the 80% acceptance criterion. This indicates that the test conditions were suitable for adequate amphipod survival. Mean dry weight per survivor in the control was 0.061 mg. There is no criterion for acceptable growth; however, measurable growth was noted in the control, with an initial weight of 0.057 mg/ind. The LC<sub>50</sub> for the copper reference-toxicant test was 108 µg Cu/L, which is within the control chart limits (74.7 to 738 µg Cu/L), indicating that the test organisms used in this study were of similar sensitivity of those previously tested at NewFields.

All water quality parameters were within target ranges, with the exception of temperature (21.5°C in the control) which fell slightly out of range from the target range of 22°C to 24°C. However, this temperature is within the tolerance range for this species (ASTM 2006).

Mean percent survival in the test treatments ranged from 87.5% to 96.3% and there were no significant differences in survival, relative to the controls. Mean biomass (dry weight per survivor) in the test treatments ranged from 0.073 mg to 0.099 mg, with no significant differences from the control. There were no significant differences in survival or growth between the acclimated and unacclimated treatments.

### 3.2 Results of Toxicity Tests with *Chironomus dilutus*

A summary of *C. dilutus* survival and growth is presented in Table 6 and a summary of water quality observations is presented in Table 7. Statistical results and laboratory data sheets are presented in Appendix B. Tests were conducted as two batches, with each batch including a control treatment. Mean percent survival in the controls was 93.8% in batch 1 and 88.8% in batch 2, above the 70% acceptance criterion. Mean dry weight per survivor in the controls was 1.668 mg and 1.804 mg AFDW, above the acceptance criterion of 0.48 mg AFDW. This indicates that the test conditions for both batches were suitable for adequate *C. dilutus* growth.

and survival. The LC<sub>50</sub> for the copper reference-toxicant test was 1164 µg Cu/L, which is within the control chart limits (281 to 2500 µg Cu/L).

All water quality parameters were within target ranges, with the exception of dissolved oxygen, which was slightly below the target range of 2.5 mg/L and temperature. However, the deviation in dissolved oxygen occurred only in treatment 3433 AE-E at the end of the exposure period and did not appear to result in significant mortality or reduced growth. Temperature deviations were within 1°C of the target range and were above the minimum suggested temperature (20°C) for this species in ASTM (2006).

With the exception of treatments 4501 F and 4501 JN West, survival in each of the test treatments was not significantly different than that of the controls. Survival in both the acclimated and unacclimated treatments for 4501 F and 4501 JN West ranged from 70% to 76.5%, and was significantly different than the control treatment. Mean AFDW per survivor in the test treatments ranged from 0.318 mg to 1.953 mg. There were statistically significant decreases in biomass for treatments 4501 F (acclimated and unacclimated) and 4501 JN West (acclimated and unacclimated) with AFDW/surviving individual of 0.318 mg to 0.442 mg. A significant decrease in AFDW/surviving individual was also observed in 4621 AE East and 001E2-5, with AFDW/ surviving individual of 1.299 mg and 1.323 mg, respectively.

While there were no statistically significant differences between the acclimated and unacclimated test treatments, biomass was higher in the 4501 F and 4501 JN West acclimated treatments.

#### 4.0 Discussion

The potential toxicity of soils from the USSA agricultural lands to aquatic receptors was evaluated using the amphipod, *Hyalella azteca* and larvae of the midge, *Chironomus dilutus*. Tests were conducted as 10-day, static-renewal exposures using both the survival and biomass endpoints.

Test results were evaluated in two ways. First, mean survival or biomass in the test treatments was compared to the controls using an ANOVA and Dunnett's t-tests to determine statistical significance and rank. Second, biological significance was determined using a numerical comparison of mean survival or biomass per survivor in the test treatment to that of the control. While Florida does not have specific numeric criteria for sediment tests, they have been developed for surface waters. According to paragraph 62-302.500(1)(c) of the Florida Administrative Code, "acute toxicity" is defined a concentration that is greater than one-third of the 96-hour LC<sub>50</sub>. The 1/3 96-hour LC<sub>50</sub> is typically applied as 20% mortality (David Whiting, personal communication). For chronic, non-lethal endpoints, the IC<sub>25</sub> is recommended (the level at which the organisms exhibit a 25% reduction in a biological measurement such as reproduction or growth, relative to the control). For the purposes of this evaluation, toxicity will be defined as statistical significance, and 20% mortality (<80% survival) or a reduction in growth of 25%, relative to the controls.

There were no significant decreases in survival or growth for *H. azteca* exposed to the test soils, relative to the controls. This was true for both acclimated and unacclimated treatments. Biomass in each of the test treatments was higher than that of the controls, with dry weight per survivor ranging from 0.73 to 0.97 mg/individual. There were also no significant differences between any of the test treatments. Biomass was generally low throughout the test, which may have affected the ability to detect differences for this endpoint.

There were statistically significant decreases in *Chironomus* survival and growth, relative to the control. Survival was 73.8% in both the acclimated and unacclimated soils from 4501 F. Survival was 70.0% in the unacclimated soil from 4501 JN West and 76.8% in the acclimated treatment. In each case, mean survival was statistically different than that of the controls and was <80%. Mean survival in the acclimated 4501 JN West sample was higher than that of the unacclimated treatment, indicating that after an initial period of adjustment from soil to sediment, survival in this treatment may increase to acceptable levels.

Biomass in both 4501 F and 4501 JN West was also significantly reduced, relative to the controls. Mean biomass for the unacclimated and acclimated treatments was 19% to 26% of the biomass observed in the controls, a reduction of 74% to 81%. This is well above the suggested 25% threshold.

Significant reductions in growth were also observed in test treatments 4621 AE East and 001E2-5, with mean biomass of 1.299 and 1.323 mg/survivor, respectively. While biomass in these treatments was statistically significantly different than that of the controls, biomass was 78% and 79% that of the controls, representing reductions of 22% and 21%, respectively. This is within the suggested limit of 25%. It should be noted that both samples were tested as unacclimated treatments and it is possible that acclimation to aquatic conditions prior to testing may allow for increased performance in the toxicity tests.

## 5.0 Conclusions

The potential toxicity of soils from the US Sugar Acquisition fields to aquatic receptors was evaluated using the amphipod, *Hyaella azteca* and the larvae of the midge, *Chironomus dilutus*.

- In tests with *H. azteca*, there were no significant reductions in survival or biomass in any of the acclimated or unacclimated soils.
- In tests with *C. dilutus*, toxicity was observed in samples collected from 4501 F and 4501 JN West, with statistically significant reductions in biomass that was reduced 78 to 79% relative to the controls.
- In tests with *C. dilutus*, low toxicity was observed in samples collected from 4621 AE East and 001E2-5, with statistically significant reductions in growth that was reduced 21% to 22% relative to the controls. This is within the suggested limit of 25%. Biomass in these treatments may be improved with acclimation.

## 6.0 References

ASTM. 2006. *Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates* ASTM E1706-05. ASTM International, Conshohocken, PA.

USEPA. 2000. *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-Associated Contaminants with Freshwater Invertebrates* (USEPA/600-R-99/064). U.S. Environmental Protection Agency, Office of Water. Washington DC.

**Table 4. Summary of Results of 10-day test with *Hyallela azteca***

Sample		Mean Percentage Survival	SD	Mean Dry Wt. per Survivor (mg)	SD
Control	NA	96.3	5.2	0.061	0.02
4617 MN North	Acclimated	87.5	7.1	0.097	0.03
	Unacclimated	96.3	5.2	0.084	0.01
4502 OP South	Acclimated	93.8	7.4	0.084	0.01
	Unacclimated	96.3	5.2	0.081	0.01
4501 F	Acclimated	90.0	9.3	0.084	0.01
	Unacclimated	96.3	7.4	0.073	0.01
4501 JN West	Acclimated	96.3	5.2	0.081	0.01
	Unacclimated	95.0	7.6	0.085	0.01
4403 DH	Acclimated	93.8	7.4	0.087	0.02
	Unacclimated	95.0	5.3	0.093	0.03
4509 CD-S	Acclimated	90.0	9.3	0.099	0.01
	Unacclimated	92.5	7.1	0.089	0.01
4621 AE East	Unacclimated	95.0	7.6	0.094	0.02
001E2-5	Unacclimated	96.3	5.2	0.080	0.02
3433 AE-E	Unacclimated	90.0	7.6	0.084	0.01
2324 AB North	Unacclimated	91.3	8.3	0.088	0.01



Table 5. Summary of Water-quality Observations for the 10-day test with *Hyallela azteca*

Sample		Dissolved Oxygen (mg/L)			Temperature (°C)			Conductivity (µS/cm)			pH		
		Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Control	NA	6.4	5.4	8.6	22.4	21.5	22.8	568	487	710	7.7	7.3	8.0
4617MN North	Acclimated	6.5	5.4	7.4	22.5	22.2	22.8	549	476	688	7.6	7.2	8.0
	Unacclimated	6.6	5.5	8.2	22.6	22.3	22.9	544	478	660	7.5	7.2	7.9
4502OP South	Acclimated	6.9	6.0	8.0	22.4	22.1	22.7	521	441	732	7.3	6.8	7.9
	Unacclimated	6.9	6.0	8.2	22.4	22.1	22.8	528	448	650	7.3	6.9	7.7
4501F	Acclimated	6.9	6.1	8.0	22.5	22.2	23.0	532	451	683	7.3	6.8	7.7
	Unacclimated	6.7	5.6	8.4	22.4	22.1	22.7	530	454	661	7.4	6.6	7.9
4501JN West	Acclimated	6.8	6.0	8.0	22.4	22.1	22.8	533	459	671	7.3	6.7	7.8
	Unacclimated	7.0	5.9	8.3	22.4	22.0	22.9	531	458	654	7.5	7.3	8.0
4403DH	Acclimated	6.6	5.8	7.8	22.0	21.3	22.4	585	506	747	7.4	7.1	7.8
	Unacclimated	6.6	5.5	7.9	22.5	22.0	22.9	567	495	691	7.6	7.1	8.0
4509CD-S	Acclimated	6.2	4.9	7.7	22.4	21.9	22.8	582	488	721	7.5	7.2	7.8
	Unacclimated	6.7	5.7	8.1	22.6	22.2	23.0	558	487	701	7.6	7.2	8.0
4621AE East	Unacclimated	6.7	5.5	8.3	22.5	21.9	22.9	546	477	678	7.7	7.3	8.1
001E2-5	Unacclimated	6.8	5.8	8.6	22.5	22.0	22.9	554	481	677	7.5	7.0	7.9
3433AE-E	Unacclimated	6.5	5.7	8.1	22.5	22.1	22.9	555	480.0	691	7.6	7.2	8.0
2324AB-N	Unacclimated	6.7	5.4	8.2	22.5	22.0	22.9	570	490	732	7.7	7.4	8.0

Table 6. Results of 10-day test with *Chironomus dilutus*

Sample		Mean Percentage Survival	SD	Mean AFDW per Survivor (mg)	SD
Test Batch 1					
Control	NA	93.8	7.4	1.668	0.266
4617 MN North	Acclimated	90.0	7.6	1.582	0.252
	Unacclimated	93.8	14.1	1.459	0.234
4502 OP South	Acclimated	95.7	5.0	1.655	0.277
	Unacclimated	93.8	10.6	1.714	0.227
4501 F	Acclimated	<b>73.8 S</b>	20.7	<b>0.436 S</b>	0.172
	Unacclimated	<b>73.8 S</b>	11.9	<b>0.392 S</b>	0.108
4501 JN West	Acclimated	<b>76.5 S</b>	19.7	<b>0.442 S</b>	0.106
	Unacclimated	<b>70.0 S</b>	17.7	<b>0.318 S</b>	0.083
4403 DH	Acclimated	91.3	8.3	1.563	0.221
	Unacclimated	97.5	4.6	1.434	0.195
4509 CD-S	Acclimated	93.8	9.2	1.548	0.204
	Unacclimated	96.7	4.6	1.558	0.230
4621 AE East	Unacclimated	100	0.0	<b>1.299 S</b>	0.214
001E2-5	Unacclimated	95.0	5.3	<b>1.323 S</b>	0.251
3433 AE-E	Unacclimated	97.6	7.4	1.622	0.299
Test Batch 2					
Control	NA	88.8	8.4	1.804	0.227
2324 AB North	Unacclimated	78.8	12.8	1.953	0.267

Table 7. Summary of Water-quality Observations for the 10-day test with *Chironomus dilutus*

Sample		Dissolved Oxygen (mg/L)			Temperature (°C)			Conductivity (µS/cm)			pH		
		Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Test Batch 1													
Control	NA	5.0	3.7	8.9	22.2	21.8	22.6	505	419	677	7.4	7.0	7.8
4617 MN North	Acclimated	4.7	3.1	8.2	22.5	22.2	22.8	473	398	625	7.3	7.1	7.7
	Unacclimated	4.4	2.8	8.2	22.5	22.2	22.8	481	407	642	7.3	7.1	7.5
4502 OP South	Acclimated	4.8	2.7	8.4	22.5	22.2	22.9	450	369	481	7.3	7.1	7.4
	Unacclimated	5.2	3.6	8.4	22.5	22.3	22.9	449	373	619	7.2	7.0	7.4
4501 F	Acclimated	5.1	3.4	8.4	22.4	22.2	22.7	443	379	635	7.3	7.2	7.4
	Unacclimated	5.4	4.0	8.4	22.4	22.0	22.8	450	391	632	7.3	7.2	7.4
4501 JN West	Acclimated	5.3	3.9	8.4	22.5	22.2	22.8	471	392	630	7.3	7.1	7.5
	Unacclimated	5.2	4.0	8.5	22.5	22.1	22.9	460	383	623	7.3	7.2	7.4
4403 DH	Acclimated	4.6	3.1	8.5	22.5	22.2	22.8	502	414	686	7.4	7.2	7.8
	Unacclimated	4.9	3.0	8.2	22.3	21.9	22.7	497	408	663	7.4	7.0	7.8
4509CD-S	Acclimated	4.7	3.1	8.1	22.4	21.9	22.8	498	420	676	7.4	7.2	7.7
	Unacclimated	4.5	3.1	8.1	22.5	22.2	22.7	494	417	673	7.4	7.3	7.7
4621 AE East	Unacclimated	4.7	2.8	8.3	22.5	22.2	22.7	489	395	670	7.4	7.2	7.5
001E2-5	Unacclimated	5.0	3.2	8.7	22.5	22.2	22.9	488	405	656	7.4	7.2	7.6
3433 AE-E	Unacclimated	4.3	2.1	8.2	22.5	22.1	22.8	496	410	678	7.3	7.2	7.7
Test Batch 2													
Control	NA	4.3	2.7	8.7	22.1	21.5	22.7	455	388	471	7.4	6.9	8.2
2324 AB-N	Unacclimated	4.4	3.2	8.0	22.4	21.9	22.9	468	423	493	7.3	7.1	7.6

## Appendix A

### *Hyalella azteca* 10-day Test

Treatment	Replicate	Initial Number	# Remaining	Mean Survival	SD	Tare Weight (mg)	Total Dry Weight	Dry Weight per Survivor	Dry Weight per Initial Number	Mean Dry Weight per Survivor	SD	Mean Dry Weight per Initial Number
Control	1	10	10	96.3%	5.18	103.53	103.98	0.045	0.045	0.061	0.02	0.059
	2	10	9			114.17	114.53	0.040	0.036			
	3	10	10			119.18	119.72	0.054	0.054			
	4	10	9			115.74	116.20	0.051	0.046			
	5	10	10			115.41	116.54	0.113	0.113			
	6	10	9			123.90	124.46	0.062	0.056			
	7	10	10			104.52	105.08	0.056	0.056			
	8	10	10			106.54	107.19	0.065	0.065			
Port Gamble Spring "C" Control	1	10	10	92.5%	7.07	112.92	113.55	0.063	0.063	0.059	0.01	0.055
	2	10	9			108.54	109.06	0.058	0.052			
	3	10	10			101.43	102.05	0.062	0.062			
	4	10	8			106.44	107.00	0.070	0.056			
	5	10	9			132.47	132.94	0.052	0.047			
	6	10	9			122.89	123.40	0.057	0.051			
	7	10	9			114.42	114.90	0.053	0.048			
	8	10	10			111.20	111.80	0.060	0.060			
4617 MN North Aged	1	10	9	87.5%	7.07	115.40	116.25	0.094	0.085	0.097	0.03	0.085
	2	10	9			94.31	95.86	0.172	0.155			
	3	10	8			102.38	103.30	0.115	0.092			
	4	10	8			106.02	106.61	0.074	0.059			
	5	10	9			114.07	114.80	0.081	0.073			
	6	10	8			116.39	116.98	0.074	0.059			
	7	10	9			109.36	110.12	0.084	0.076			
	8	10	10			93.43	94.26	0.083	0.083			
4617 MN North Unaged	1	10	9	96.3%	5.18	96.32	97.16	0.093	0.084	0.084	0.01	0.079
	2	10	9			106.44	107.20	0.084	0.076			
	3	10	10			110.55	111.31	0.076	0.076			
	4	10	10			112.58	113.43	0.085	0.085			
	5	10	10			96.50	97.33	0.083	0.083			
	6	10	10			98.55	99.44	0.089	0.089			
	7	10	9			130.43	131.09	0.073	0.066			
	8	10	10			114.05	114.81	0.084	0.076			

Treatment	Replicate	Initial Number	# Remaining	Mean Survival	SD	Tare Weight (mg)	Total Dry Weight	Dry Weight per Survivor	Dry Weight per Initial Number	Mean Dry Weight per Survivor	SD	Mean Dry Weight per Initial Number
4501 JN West Aged	1	10	10	96.3%	5.18	241.63	242.54	0.091	0.091	0.081	0.01	0.077
	2	10	9			232.38	233.27	0.099	0.089			
	3	10	10			230.52	231.43	0.091	0.091			
	4	10	10			232.55	233.35	0.080	0.080			
	5	10	10			218.87	219.46	0.059	0.059			
	6	10	9			265.38	266.11	0.081	0.073			
	7	10	9			213.52	214.23	0.079	0.071			
	8	10	10			228.08	228.74	0.066	0.066			
4501 JN West Unaged	1	10	9	95.0%	7.56	135.32	136.31	0.110	0.099	0.085	0.01	0.081
	2	10	10			277.04	277.90	0.086	0.086			
	3	10	10			215.51	216.27	0.076	0.076			
	4	10	8			208.84	209.50	0.082	0.066			
	5	10	10			217.26	218.02	0.076	0.076			
	6	10	9			181.97	182.76	0.088	0.079			
	7	10	10			168.10	168.80	0.070	0.070			
	8	10	10			179.16	180.10	0.094	0.094			
4502 OP South Aged	1	10	9	93.8%	7.44	174.10	174.86	0.084	0.076	0.084	0.01	0.078
	2	10	9			201.96	202.70	0.082	0.074			
	3	10	10			203.36	204.18	0.082	0.082			
	4	10	10			225.95	226.75	0.080	0.080			
	5	10	9			220.69	221.47	0.087	0.078			
	6	10	10			258.03	258.70	0.067	0.067			
	7	10	8			213.61	214.34	0.091	0.073			
	8	10	10			225.81	226.73	0.102	0.092			
4502 OP South Unaged	1	10	10	96.3%	5.18	230.97	231.74	0.077	0.077	0.081	0.01	0.077
	2	10	9			207.08	207.79	0.079	0.071			
	3	10	9			199.72	200.55	0.092	0.083			
	4	10	9			223.99	224.72	0.081	0.073			
	5	10	10			191.68	192.48	0.080	0.080			
	6	10	10			196.96	197.70	0.074	0.074			
	7	10	10			219.17	219.84	0.067	0.067			
	8	10	10			192.87	193.75	0.098	0.088			

Treatment	Replicate	Initial Number	# Remaining	Mean Survival	SD	Tare Weight (mg)	Total Dry Weight	Dry Weight per Survivor	Dry Weight per Initial Number	Mean Dry Weight per Survivor	SD	Mean Dry Weight per Initial Number
4501 F Aged	1	10	10	90.0%	9.26	220.64	221.47	0.083	0.083	0.084	0.01	0.075
	2	10	8			191.82	192.38	0.070	0.056			
	3	10	10			185.66	186.65	0.099	0.099			
	4	10	9			214.88	215.57	0.077	0.069			
	5	10	9			219.22	220.06	0.093	0.084			
	6	10	8			244.58	245.29	0.089	0.071			
	7	10	8			185.79	186.42	0.079	0.063			
	8	10	10			190.69	191.44	0.083	0.075			
4501 F Unaged	1	10	10	96.3%	7.44	184.39	185.14	0.075	0.075	0.073	0.01	0.072
	2	10	10			197.46	198.07	0.061	0.061			
	3	10	10			194.59	195.17	0.058	0.058			
	4	10	10			193.61	194.37	0.076	0.076			
	5	10	10			197.47	198.21	0.074	0.074			
	6	10	10			209.88	210.87	0.099	0.099			
	7	10	9			215.01	215.71	0.078	0.070			
	8	10	8			210.24	210.83	0.066	0.059			
4621 AE East	1	10	10	95.0%	7.56	223.95	225.32	0.137	0.137	0.094	0.02	0.089
	2	10	10			205.33	206.27	0.094	0.094			
	3	10	9			232.58	233.49	0.101	0.091			
	4	10	10			202.09	202.90	0.081	0.081			
	5	10	9			183.92	184.67	0.083	0.075			
	6	10	10			245.74	246.75	0.101	0.101			
	7	10	8			216.50	217.11	0.076	0.061			
	8	10	10			206.56	207.28	0.080	0.072			

Treatment	Replicate	Initial Number	# Remaining	Mean Survival	SD	Tare Weight (mg)	Total Dry Weight	Dry Weight per Survivor	Dry Weight per Initial Number	Mean Dry Weight per Survivor	SD	Mean Dry Weight per Initial Number
4403 DH Aged	1	10	8	93.8%	7.44	200.09	200.58	0.061	0.049	0.087	0.02	0.081
	2	10	10			219.71	220.61	0.090	0.090			
	3	10	10			243.42	244.38	0.096	0.096			
	4	10	9			257.20	257.88	0.076	0.068			
	5	10	9			194.50	195.35	0.094	0.085			
	6	10	10			194.68	195.48	0.080	0.080			
	7	10	9			195.90	196.77	0.097	0.087			
	8	10	10			200.65	201.56	0.101	0.091			
4403 DH Unaged	1	10	9	95.0%	5.35	215.46	216.27	0.090	0.081	0.093	0.03	0.088
	2	10	9			210.42	211.30	0.098	0.088			
	3	10	10			202.12	202.83	0.071	0.071			
	4	10	10			225.74	226.67	0.093	0.093			
	5	10	10			232.61	234.13	0.152	0.152			
	6	10	9			203.51	204.31	0.089	0.080			
	7	10	9			206.95	207.61	0.073	0.066			
	8	10	10			177.57	178.26	0.077	0.069			
001E2-5	1	10	10	96.3%	5.18	180.29	180.87	0.058	0.058	0.080	0.02	0.075
	2	10	10			190.76	191.37	0.061	0.061			
	3	10	9			235.39	236.10	0.079	0.071			
	4	10	9			196.90	198.01	0.123	0.111			
	5	10	9			218.00	218.74	0.082	0.074			
	6	10	10			190.90	191.66	0.076	0.076			
	7	10	10			198.73	199.38	0.065	0.065			
	8	10	10			165.32	166.17	0.094	0.085			
2324 AB North	1	10	9	91.3%	8.35	190.31	191.12	0.090	0.081	0.088	0.01	0.082
	2	10	9			209.71	210.47	0.084	0.076			
	3	10	8			224.90	225.56	0.082	0.066			
	4	10	10			215.11	215.98	0.087	0.087			
	5	10	10			216.46	217.53	0.107	0.107			
	6	10	9			240.39	241.22	0.092	0.083			
	7	10	10			171.71	172.55	0.084	0.084			
	8	10	8			192.33	193.04	0.079	0.071			



Treatment	Replicate	Initial Number	# Remaining	Mean Survival	SD	Tare Weight (mg)	Total Dry Weight	Dry Weight per Survivor	Dry Weight per Initial Number	Mean Dry Weight per Survivor	SD	Mean Dry Weight per Initial Number
4509CD-S Aged	1	10	8	90.0%	9.26	194.86	195.79	0.116	0.093	0.099	0.01	0.090
	2	10	9			188.93	189.82	0.099	0.089			
	3	10	8			202.99	203.79	0.100	0.080			
	4	10	9			206.40	207.40	0.111	0.100			
	5	10	10			211.56	212.56	0.100	0.100			
	6	10	10			201.41	202.31	0.090	0.090			
	7	10	10			223.79	224.60	0.081	0.081			
	8	10	8			222.82	223.70	0.098	0.088			
4509CD-S Unaged	1	10	10	92.5%	7.07	191.82	192.50	0.068	0.068	0.089	0.01	0.082
	2	10	8			182.82	183.47	0.081	0.065			
	3	10	9			207.02	207.86	0.093	0.084			
	4	10	10			215.94	216.88	0.094	0.094			
	5	10	9			200.10	200.94	0.093	0.084			
	6	10	9			217.70	218.51	0.090	0.081			
	7	10	10			206.92	207.78	0.086	0.086			
	8	10	9			256.27	257.24	0.108	0.097			
3433AE-E	1	10	9	90.0%	7.56	252.63	253.22	0.066	0.059	0.084	0.01	0.076
	2	10	8			240.35	241.17	0.102	0.082			
	3	10	9			249.34	250.07	0.081	0.073			
	4	10	9			213.11	213.95	0.093	0.084			
	5	10	9			199.40	200.22	0.091	0.082			
	6	10	10			215.67	216.35	0.068	0.068			
	7	10	10			205.10	206.08	0.098	0.098			
	8	10	8			190.12	190.74	0.069	0.062			

Treatment	Dry Weight per Survivor	
4509CD-S Aged	0.099	
4617 MN North Aged	0.097	
4621 AE East	0.094	
4403 DH Unaged	0.093	
4509CD-S Unaged	0.089	
2324 AB North	0.088	
4403 DH Aged	0.087	
4501 JN West Unaged	0.085	
4502 OP South Aged	0.084	
4501 F Aged	0.084	
4617 MN North Un-aged	0.084	
3433AE-E	0.084	
4502 OP South Unaged	0.081	
4501 JN West Aged	0.081	
001E2-5	0.080	
4501 F Unaged	0.073	*
Control	0.061	*
Port Gamble Spring C Control	0.059	*

Distribution not normal, variance homogeneous.

ANOVA on ranks significant ( $p=0.003$ )

\* Treatments significantly less than 4509CD-S Aged

Treatment	Percent Survival
001E2-5	96.25
4501 F Unaged	96.25
4501 JN West Aged	96.25
4502 OP South Unaged	96.25
4617 MN North Un-aged	96.25
Control	96.25
4403 DH Unaged	95.00
4501 JN West Unaged	95.00
4621 AE East	95.00
4403 DH Aged	93.75
4502 OP South Aged	93.75
4509CD-S Unaged	92.50
Port Gamble Spring C Control	92.50
2324 AB North	91.25
3433AE-E	90.00
4501 F Aged	90.00
4509CD-S Aged	90.00
4617 MN North Aged	87.50

Distribution not normal, variance homogeneous

ANOVA on ranks not significant ( $p>0.05$ )

# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER

NEWFIELDS

CLIENT	PROJECT	JOB NUMBER	PROJECT MAN.	LABORATORY	PROTOCOL	SPECIES
SFWM	US Sugar	0645-030-900	Bill Gardiner	Port Gamble, WA BATH 4	DATA 2007 - 2008/09/01/08	<i>Hyalella azteca</i>

## ENDPOINT DATA & OBSERVATIONS

CLIENT/NEWFIELDS ID	REP	JAR #	INITIAL	G+ Growth										NUMBER REMAINING	WEIGH BOAT NUMBER	TARE WEIGHT (mg)	TOTAL WEIGHT (mg)	ASH-FREE DRY WEIGHT (mg)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
				DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE						TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
CONTROL /	1	1		8/27	TS	N	8/28	TS	N	8/29	TS	N	8/30	TS	N	8/31	TS	N	9/1	TS	N	9/2	TS	N	9/3	TS	N	9/4	TS	N	9/5	TS	N	9/6	TS	N	9/7	TS	N	9/8	TS	N	9/9	TS	N	9/10	TS	N	9/11	TS	N	9/12	TS	N	9/13	TS	N	9/14	TS	N	9/15	TS	N	9/16	TS	N	9/17	TS	N	9/18	TS	N	9/19	TS	N	9/20	TS	N	9/21	TS	N	9/22	TS	N	9/23	TS	N	9/24	TS	N	9/25	TS	N	9/26	TS	N	9/27	TS	N	9/28	TS	N	9/29	TS	N	9/30	TS	N	9/31	TS	N	10/1	TS	N	10/2	TS	N	10/3	TS	N	10/4	TS	N	10/5	TS	N	10/6	TS	N	10/7	TS	N	10/8	TS	N	10/9	TS	N	10/10	TS	N	10/11	TS	N	10/12	TS	N	10/13	TS	N	10/14	TS	N	10/15	TS	N	10/16	TS	N	10/17	TS	N	10/18	TS	N	10/19	TS	N	10/20	TS	N	10/21	TS	N	10/22	TS	N	10/23	TS	N	10/24	TS	N	10/25	TS	N	10/26	TS	N	10/27	TS	N	10/28	TS	N	10/29	TS	N	10/30	TS	N	10/31	TS	N	11/1	TS	N	11/2	TS	N	11/3	TS	N	11/4	TS	N	11/5	TS	N	11/6	TS	N	11/7	TS	N	11/8	TS	N	11/9	TS	N	11/10	TS	N	11/11	TS	N	11/12	TS	N	11/13	TS	N	11/14	TS	N	11/15	TS	N	11/16	TS	N	11/17	TS	N	11/18	TS	N	11/19	TS	N	11/20	TS	N	11/21	TS	N	11/22	TS	N	11/23	TS	N	11/24	TS	N	11/25	TS	N	11/26	TS	N	11/27	TS	N	11/28	TS	N	11/29	TS	N	11/30	TS	N	12/1	TS	N	12/2	TS	N	12/3	TS	N	12/4	TS	N	12/5	TS	N	12/6	TS	N	12/7	TS	N	12/8	TS	N	12/9	TS	N	12/10	TS	N	12/11	TS	N	12/12	TS	N	12/13	TS	N	12/14	TS	N	12/15	TS	N	12/16	TS	N	12/17	TS	N	12/18	TS	N	12/19	TS	N	12/20	TS	N	12/21	TS	N	12/22	TS	N	12/23	TS	N	12/24	TS	N	12/25	TS	N	12/26	TS	N	12/27	TS	N	12/28	TS	N	12/29	TS	N	12/30	TS	N	12/31	TS	N	1/1	TS	N	1/2	TS	N	1/3	TS	N	1/4	TS	N	1/5	TS	N	1/6	TS	N	1/7	TS	N	1/8	TS	N	1/9	TS	N	1/10	TS	N	1/11	TS	N	1/12	TS	N	1/13	TS	N	1/14	TS	N	1/15	TS	N	1/16	TS	N	1/17	TS	N	1/18	TS	N	1/19	TS	N	1/20	TS	N	1/21	TS	N	1/22	TS	N	1/23	TS	N	1/24	TS	N	1/25	TS	N	1/26	TS	N	1/27	TS	N	1/28	TS	N	1/29	TS	N	1/30	TS	N	1/31	TS	N	2/1	TS	N	2/2	TS	N	2/3	TS	N	2/4	TS	N	2/5	TS	N	2/6	TS	N	2/7	TS	N	2/8	TS	N	2/9	TS	N	2/10	TS	N	2/11	TS	N	2/12	TS	N	2/13	TS	N	2/14	TS	N	2/15	TS	N	2/16	TS	N	2/17	TS	N	2/18	TS	N	2/19	TS	N	2/20	TS	N	2/21	TS	N	2/22	TS	N	2/23	TS	N	2/24	TS	N	2/25	TS	N	2/26	TS	N	2/27	TS	N	2/28	TS	N	2/29	TS	N	2/30	TS	N	2/31	TS	N	3/1	TS	N	3/2	TS	N	3/3	TS	N	3/4	TS	N	3/5	TS	N	3/6	TS	N	3/7	TS	N	3/8	TS	N	3/9	TS	N	3/10	TS	N	3/11	TS	N	3/12	TS	N	3/13	TS	N	3/14	TS	N	3/15	TS	N	3/16	TS	N	3/17	TS	N	3/18	TS	N	3/19	TS	N	3/20	TS	N	3/21	TS	N	3/22	TS	N	3/23	TS	N	3/24	TS	N	3/25	TS	N	3/26	TS	N	3/27	TS	N	3/28	TS	N	3/29	TS	N	3/30	TS	N	3/31	TS	N	4/1	TS	N	4/2	TS	N	4/3	TS	N	4/4	TS	N	4/5	TS	N	4/6	TS	N	4/7	TS	N	4/8	TS	N	4/9	TS	N	4/10	TS	N	4/11	TS	N	4/12	TS	N	4/13	TS	N	4/14	TS	N	4/15	TS	N	4/16	TS	N	4/17	TS	N	4/18	TS	N	4/19	TS	N	4/20	TS	N	4/21	TS	N	4/22	TS	N	4/23	TS	N	4/24	TS	N	4/25	TS	N	4/26	TS	N	4/27	TS	N	4/28	TS	N	4/29	TS	N	4/30	TS	N	4/31	TS	N	5/1	TS	N	5/2	TS	N	5/3	TS	N	5/4	TS	N	5/5	TS	N	5/6	TS	N	5/7	TS	N	5/8	TS	N	5/9	TS	N	5/10	TS	N	5/11	TS	N	5/12	TS	N	5/13	TS	N	5/14	TS	N	5/15	TS	N	5/16	TS	N	5/17	TS	N	5/18	TS	N	5/19	TS	N	5/20	TS	N	5/21	TS	N	5/22	TS	N	5/23	TS	N	5/24	TS	N	5/25	TS	N	5/26	TS	N	5/27	TS	N	5/28	TS	N	5/29	TS	N	5/30	TS	N	5/31	TS	N	6/1	TS	N	6/2	TS	N	6/3	TS	N	6/4	TS	N	6/5	TS	N	6/6	TS	N	6/7	TS	N	6/8	TS	N	6/9	TS	N	6/10	TS	N	6/11	TS	N	6/12	TS	N	6/13	TS	N	6/14	TS	N	6/15	TS	N	6/16	TS	N	6/17	TS	N	6/18	TS	N	6/19	TS	N	6/20	TS	N	6/21	TS	N	6/22	TS	N	6/23	TS	N	6/24	TS	N	6/25	TS	N	6/26	TS	N	6/27	TS	N	6/28	TS	N	6/29	TS	N	6/30	TS	N	6/31	TS	N	7/1	TS	N	7/2	TS	N	7/3	TS	N	7/4	TS	N	7/5	TS	N	7/6	TS	N	7/7	TS	N	7/8	TS	N	7/9	TS	N	7/10	TS	N	7/11	TS	N	7/12	TS	N	7/13	TS	N	7/14	TS	N	7/15	TS	N	7/16	TS	N	7/17	TS	N	7/18	TS	N	7/19	TS	N	7/20	TS	N	7/21	TS	N	7/22	TS	N	7/23	TS	N	7/24	TS	N	7/25	TS	N	7/26	TS	N	7/27	TS	N	7/28	TS	N	7/29	TS	N	7/30	TS	N	7/31	TS	N	8/1	TS	N	8/2	TS	N	8/3	TS	N	8/4	TS	N	8/5	TS	N	8/6	TS	N	8/7	TS	N	8/8	TS	N	8/9	TS	N	8/10	TS	N	8/11	TS	N	8/12	TS	N	8/13	TS	N	8/14	TS	N	8/15	TS	N	8/16	TS	N	8/17	TS	N	8/18	TS	N	8/19	TS	N	8/20	TS	N	8/21	TS	N	8/22	TS	N	8/23	TS	N	8/24	TS	N	8/25	TS	N	8/26	TS	N	8/27	TS	N	8/28	TS	N	8/29	TS	N	8/30	TS	N	8/31	TS	N	9/1	TS	N	9/2	TS	N	9/3	TS	N	9/4	TS	N	9/5	TS	N	9/6	TS	N	9/7	TS	N	9/8	TS	N	9/9	TS	N	9/10	TS	N	9/11	TS	N	9/12	TS	N	9/13	TS	N	9/14	TS	N	9/15	TS	N	9/16	TS	N	9/17	TS	N	9/18	TS	N	9/19	TS	N	9/20	TS	N	9/21	TS	N	9/22	TS	N	9/23	TS	N	9/24	TS	N	9/25	TS	N	9/26	TS	N	9/27	TS	N	9/28	TS	N	9/29	TS	N	9/30	TS	N	9/31	TS	N	10/1	TS	N	10/2	TS	N	10/3	TS	N	10/4	TS	N	10/5	TS	N	10/6	TS	N	10/7	TS	N	10/8	TS	N	10/9	TS	N	10/10	TS	N	10/11	TS	N	10/12	TS	N	10/13	TS	N	10/14	TS	N	10/15	TS	N	10/16	TS	N	10/17	TS	N	10/18	TS	N	10/19	TS	N	10/20	TS	N	10/21	TS	N	10/22	TS	N	10/23	TS	N	10/24	TS	N	10/25	TS	N	10/26	TS	N	10/27	TS	N	10/28	TS	N	10/29	TS	N	10/30	TS	N	10/31	TS	N	11/1	TS	N	11/2	TS	N	11/3	TS	N	11/4	TS	N	11/5	TS	N	11/6	TS	N	11/7	TS	N	11/8	TS	N	11/9	TS	N	11/10	TS	N	11/11	TS	N	11/12	TS	N	11/13	TS	N	11/14	TS	N	11/15	TS	N	11/16	TS	N	11/17	TS	N	11/18	TS	N	11/19	TS	N	11/20	TS	N	11/21	TS	N	11/22	TS	N	11/23	TS	N	11/24	TS	N	11/25	TS	N	11/26	TS	N	11/27	TS	N	11/28	TS	N	11/29	TS	N	11/30	TS	N	11/31	TS	N	12/1	TS	N	12/2	TS	N	12/3	TS	N	12/4	TS	N	12/5	TS	N	12/6	TS	N	12/7	TS	N	12/8	TS	N	12/9	TS	N	12/10	TS	N	12/11	TS	N	12/12	TS	N	12/13	TS	N	12/14	TS	N	12/15	TS	N	12/16	TS	N	12/17	TS	N	12/18	TS	N	12/19	TS	N	12/20	TS	N	12/21	TS	N	12/22	TS	N	12/23	TS	N	12/24	TS	N	12/25	TS	N	12/26	TS	N	12/27	TS	N	12/28	TS	N	12/29	TS	N	12/30	TS	N	12/31	TS	N	1/1	TS	N	1/2	TS	N	1/3	TS	N	1/4	TS	N	1/5	TS	N	1/6	TS	N	1/7	TS	N	1/8	TS	N	1/9	TS	N	1/10	TS	N	1/11	TS	N	1/12	TS	N	1/13	TS	N	1/14	TS	N	1/15	TS	N	1/16	TS	N	1/17	TS	N	1/18	TS	N	1/19	TS	N	1/20	TS	N	1/21	TS	N	1/22	TS	N	1/23	TS	N	1/24	TS	N	1/25	TS	N	1/26	TS	N	1/27	TS	N	1/28	TS	N	1/29	TS	N	1/30	TS	N	1/31	TS	N	2/1	TS	N	2/2	TS	N	2/3	TS	N	2/4	TS	N	2/5	TS	N	2/6	TS	N	2/7	TS	N	2/8	TS	N	2/9	TS	N	2/10	TS	N	2/11	TS	N	2/12	TS	N	2/13	TS	N	2/14	TS	N	2/15	TS	N	2/16	TS	N	2/17	TS	N	2/18	TS	N	2/19	TS	N	2/20	TS	N	2/21	TS	N	2/22	TS	N	2/23	TS	N	2/24	TS	N	2/25	TS	N	2/26	TS	N	2/27	TS	N	2/28	TS	N	2/29	TS	N	2/30	TS	N	2/31	TS	N	3/1	TS	N	3/2	TS	N	3/3	TS	N	3/4	TS	N	3/5	TS	N	3/6	TS	N	3/7	TS	N	3/8	TS	N	3/9	TS	N	3/10	TS	N	3/11	TS	N	3/12	TS	N	3/13	TS	N	3/14	TS	N	3/15	TS	N	3/16	TS	N	3/17	TS	N	3/18	TS	N	3/19	TS	N	3/20	TS	N	3/21	TS	N	3/22	TS	N	3/23	TS	N	3/24	TS	N	3/25	TS	N	3/26	TS	N	3/27	TS	N	3/28	TS	N	3/29	TS	N	3/30	TS	N	3/31	TS	N	4/1	TS	N	4/2	TS	N	4/3	TS	N	4/4	TS	N	4/5	TS	N	4/6	TS	N	4/7	TS	N	4/8	TS	N	4/9	TS	N	4/10	TS	N	4/11	TS	N	4/12	TS	N	4/13

# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER



CLIENT	SEWMD	PROJECT	US Sugar	JOB NUMBER	0645-030-900	PROJECT MAN.	Bill Gardiner	LABORATORY	Port Gamble, WA BACH 4	PROTOCOL	HYPER 2009 - 10/2009/10/04	SPECIES	<i>Hyalella azteca</i>
--------	-------	---------	----------	------------	--------------	--------------	---------------	------------	------------------------	----------	----------------------------	---------	------------------------

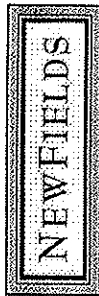
## ENDPOINT DATA & OBSERVATIONS

CLIENT/NEWFIELDS ID	REP	JAR #	DATE	OBSERV.	TECHNICIAN	DATE	OBSERV.	TECHNICIAN	DATE	OBSERV.	TECHNICIAN	DATE	OBSERV.	TECHNICIAN	DATE	OBSERV.	TECHNICIAN	NUMBER REMAINING	WEIGH BOAT NUMBER	TARE WEIGHT (mg)	TOTAL WEIGHT (mg)	ASH FREE DRY WEIGHT (mg)
617MN North unaged /	1	33	8/27	N	TS	8/28	N	TS	8/29	N	TS	8/30	N	TS	8/31	N	TS	9	25	96.32	97.11	97.16
	2	125																9	26	106.44	107.15	107.20
	3	40																10	27	110.55	111.27	111.31
	4	4																10	28	112.58	113.42	113.43
	5	91																10	29	96.50	97.31	97.33
	6	111																10	30	98.55	99.41	99.44
	7	129																9	31	130.43	131.07	131.09
	8	53																10	32	114.05	114.75	114.81
4501JN West aged /	1	46																10	33	135.32	136.27	136.31
	2	55																9	34	227.04	227.80	227.90
	3	106																10	35	230.52	231.39	231.43
	4	8																10	36	232.55	233.28	233.35
	5	157																10	37	218.87	219.41	219.46
	6	34																9	38	205.38	206.10	206.11
	7	132																9	39	213.52	214.17	214.23
	8	109																10	40	238.08	238.73	238.74
4501JN West unaged /	1	11																9	41	241.63	242.48	242.54
	2	20																10	42	232.38	233.24	233.27
	3	87																10	43	215.51	216.20	216.27
	4	17																8	44	208.84	209.47	209.50
	5	94																10	45	217.26	217.95	218.02
	6	175																9	46	181.97	182.76	182.76
	7	92																10	47	168.10	168.75	168.80
	8	114																10	48	179.14	180.64	180.10

① WE TS 9/10/08

(#33) ✓  
(#34) ✓

(#41) ✓  
(#42) ✓



# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER

CLIENT	SPWMD	PROJECT	US Sugar	PROJECT MAN.	Bill Gardiner	LABORATORY	Port Gamble, WA BATH 4	PROTOCOL	1000-1000-1000	SPECIES	Hyalella azteca																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
ENDPOINT DATA & OBSERVATIONS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
CLIENT/NEWFIELDS ID	REP	JAR INITIAL	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	NUMBER REMAINING	WEIGH BOAT NUMBER	TARE WEIGHT (mg)	TOTAL WEIGHT (mg)	ASH FREE DRY WEIGHT (mg)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
4502OP South aged /	1	133	8/27	TS	N	8/28	TS	N	8/29	J	N	8/30	J	N	8/31	J	N	9/1	TS	N	9/2	TS	N	9/3	TS	N	9/4	TS	N	9/5	TS	N	9/6	TS	N	9/7	TS	N	9/8	TS	N	9/9	TS	N	9/10	TS	N	9/11	TS	N	9/12	TS	N	9/13	TS	N	9/14	TS	N	9/15	TS	N	9/16	TS	N	9/17	TS	N	9/18	TS	N	9/19	TS	N	9/20	TS	N	9/21	TS	N	9/22	TS	N	9/23	TS	N	9/24	TS	N	9/25	TS	N	9/26	TS	N	9/27	TS	N	9/28	TS	N	9/29	TS	N	9/30	TS	N	9/31	TS	N	10/1	TS	N	10/2	TS	N	10/3	TS	N	10/4	TS	N	10/5	TS	N	10/6	TS	N	10/7	TS	N	10/8	TS	N	10/9	TS	N	10/10	TS	N	10/11	TS	N	10/12	TS	N	10/13	TS	N	10/14	TS	N	10/15	TS	N	10/16	TS	N	10/17	TS	N	10/18	TS	N	10/19	TS	N	10/20	TS	N	10/21	TS	N	10/22	TS	N	10/23	TS	N	10/24	TS	N	10/25	TS	N	10/26	TS	N	10/27	TS	N	10/28	TS	N	10/29	TS	N	10/30	TS	N	10/31	TS	N	11/1	TS	N	11/2	TS	N	11/3	TS	N	11/4	TS	N	11/5	TS	N	11/6	TS	N	11/7	TS	N	11/8	TS	N	11/9	TS	N	11/10	TS	N	11/11	TS	N	11/12	TS	N	11/13	TS	N	11/14	TS	N	11/15	TS	N	11/16	TS	N	11/17	TS	N	11/18	TS	N	11/19	TS	N	11/20	TS	N	11/21	TS	N	11/22	TS	N	11/23	TS	N	11/24	TS	N	11/25	TS	N	11/26	TS	N	11/27	TS	N	11/28	TS	N	11/29	TS	N	11/30	TS	N	12/1	TS	N	12/2	TS	N	12/3	TS	N	12/4	TS	N	12/5	TS	N	12/6	TS	N	12/7	TS	N	12/8	TS	N	12/9	TS	N	12/10	TS	N	12/11	TS	N	12/12	TS	N	12/13	TS	N	12/14	TS	N	12/15	TS	N	12/16	TS	N	12/17	TS	N	12/18	TS	N	12/19	TS	N	12/20	TS	N	12/21	TS	N	12/22	TS	N	12/23	TS	N	12/24	TS	N	12/25	TS	N	12/26	TS	N	12/27	TS	N	12/28	TS	N	12/29	TS	N	12/30	TS	N	12/31	TS	N	1/1	TS	N	1/2	TS	N	1/3	TS	N	1/4	TS	N	1/5	TS	N	1/6	TS	N	1/7	TS	N	1/8	TS	N	1/9	TS	N	1/10	TS	N	1/11	TS	N	1/12	TS	N	1/13	TS	N	1/14	TS	N	1/15	TS	N	1/16	TS	N	1/17	TS	N	1/18	TS	N	1/19	TS	N	1/20	TS	N	1/21	TS	N	1/22	TS	N	1/23	TS	N	1/24	TS	N	1/25	TS	N	1/26	TS	N	1/27	TS	N	1/28	TS	N	1/29	TS	N	1/30	TS	N	1/31	TS	N	2/1	TS	N	2/2	TS	N	2/3	TS	N	2/4	TS	N	2/5	TS	N	2/6	TS	N	2/7	TS	N	2/8	TS	N	2/9	TS	N	2/10	TS	N	2/11	TS	N	2/12	TS	N	2/13	TS	N	2/14	TS	N	2/15	TS	N	2/16	TS	N	2/17	TS	N	2/18	TS	N	2/19	TS	N	2/20	TS	N	2/21	TS	N	2/22	TS	N	2/23	TS	N	2/24	TS	N	2/25	TS	N	2/26	TS	N	2/27	TS	N	2/28	TS	N	2/29	TS	N	2/30	TS	N	2/31	TS	N	3/1	TS	N	3/2	TS	N	3/3	TS	N	3/4	TS	N	3/5	TS	N	3/6	TS	N	3/7	TS	N	3/8	TS	N	3/9	TS	N	3/10	TS	N	3/11	TS	N	3/12	TS	N	3/13	TS	N	3/14	TS	N	3/15	TS	N	3/16	TS	N	3/17	TS	N	3/18	TS	N	3/19	TS	N	3/20	TS	N	3/21	TS	N	3/22	TS	N	3/23	TS	N	3/24	TS	N	3/25	TS	N	3/26	TS	N	3/27	TS	N	3/28	TS	N	3/29	TS	N	3/30	TS	N	3/31	TS	N	4/1	TS	N	4/2	TS	N	4/3	TS	N	4/4	TS	N	4/5	TS	N	4/6	TS	N	4/7	TS	N	4/8	TS	N	4/9	TS	N	4/10	TS	N	4/11	TS	N	4/12	TS	N	4/13	TS	N	4/14	TS	N	4/15	TS	N	4/16	TS	N	4/17	TS	N	4/18	TS	N	4/19	TS	N	4/20	TS	N	4/21	TS	N	4/22	TS	N	4/23	TS	N	4/24	TS	N	4/25	TS	N	4/26	TS	N	4/27	TS	N	4/28	TS	N	4/29	TS	N	4/30	TS	N	4/31	TS	N	5/1	TS	N	5/2	TS	N	5/3	TS	N	5/4	TS	N	5/5	TS	N	5/6	TS	N	5/7	TS	N	5/8	TS	N	5/9	TS	N	5/10	TS	N	5/11	TS	N	5/12	TS	N	5/13	TS	N	5/14	TS	N	5/15	TS	N	5/16	TS	N	5/17	TS	N	5/18	TS	N	5/19	TS	N	5/20	TS	N	5/21	TS	N	5/22	TS	N	5/23	TS	N	5/24	TS	N	5/25	TS	N	5/26	TS	N	5/27	TS	N	5/28	TS	N	5/29	TS	N	5/30	TS	N	5/31	TS	N	6/1	TS	N	6/2	TS	N	6/3	TS	N	6/4	TS	N	6/5	TS	N	6/6	TS	N	6/7	TS	N	6/8	TS	N	6/9	TS	N	6/10	TS	N	6/11	TS	N	6/12	TS	N	6/13	TS	N	6/14	TS	N	6/15	TS	N	6/16	TS	N	6/17	TS	N	6/18	TS	N	6/19	TS	N	6/20	TS	N	6/21	TS	N	6/22	TS	N	6/23	TS	N	6/24	TS	N	6/25	TS	N	6/26	TS	N	6/27	TS	N	6/28	TS	N	6/29	TS	N	6/30	TS	N	6/31	TS	N	7/1	TS	N	7/2	TS	N	7/3	TS	N	7/4	TS	N	7/5	TS	N	7/6	TS	N	7/7	TS	N	7/8	TS	N	7/9	TS	N	7/10	TS	N	7/11	TS	N	7/12	TS	N	7/13	TS	N	7/14	TS	N	7/15	TS	N	7/16	TS	N	7/17	TS	N	7/18	TS	N	7/19	TS	N	7/20	TS	N	7/21	TS	N	7/22	TS	N	7/23	TS	N	7/24	TS	N	7/25	TS	N	7/26	TS	N	7/27	TS	N	7/28	TS	N	7/29	TS	N	7/30	TS	N	7/31	TS	N	8/1	TS	N	8/2	TS	N	8/3	TS	N	8/4	TS	N	8/5	TS	N	8/6	TS	N	8/7	TS	N	8/8	TS	N	8/9	TS	N	8/10	TS	N	8/11	TS	N	8/12	TS	N	8/13	TS	N	8/14	TS	N	8/15	TS	N	8/16	TS	N	8/17	TS	N	8/18	TS	N	8/19	TS	N	8/20	TS	N	8/21	TS	N	8/22	TS	N	8/23	TS	N	8/24	TS	N	8/25	TS	N	8/26	TS	N	8/27	TS	N	8/28	TS	N	8/29	TS	N	8/30	TS	N	8/31	TS	N	9/1	TS	N	9/2	TS	N	9/3	TS	N	9/4	TS	N	9/5	TS	N	9/6	TS	N	9/7	TS	N	9/8	TS	N	9/9	TS	N	9/10	TS	N	9/11	TS	N	9/12	TS	N	9/13	TS	N	9/14	TS	N	9/15	TS	N	9/16	TS	N	9/17	TS	N	9/18	TS	N	9/19	TS	N	9/20	TS	N	9/21	TS	N	9/22	TS	N	9/23	TS	N	9/24	TS	N	9/25	TS	N	9/26	TS	N	9/27	TS	N	9/28	TS	N	9/29	TS	N	9/30	TS	N	9/31	TS	N	10/1	TS	N	10/2	TS	N	10/3	TS	N	10/4	TS	N	10/5	TS	N	10/6	TS	N	10/7	TS	N	10/8	TS	N	10/9	TS	N	10/10	TS	N	10/11	TS	N	10/12	TS	N	10/13	TS	N	10/14	TS	N	10/15	TS	N	10/16	TS	N	10/17	TS	N	10/18	TS	N	10/19	TS	N	10/20	TS	N	10/21	TS	N	10/22	TS	N	10/23	TS	N	10/24	TS	N	10/25	TS	N	10/26	TS	N	10/27	TS	N	10/28	TS	N	10/29	TS	N	10/30	TS	N	10/31	TS	N	11/1	TS	N	11/2	TS	N	11/3	TS	N	11/4	TS	N	11/5	TS	N	11/6	TS	N	11/7	TS	N	11/8	TS	N	11/9	TS	N	11/10	TS	N	11/11	TS	N	11/12	TS	N	11/13	TS	N	11/14	TS	N	11/15	TS	N	11/16	TS	N	11/17	TS	N	11/18	TS	N	11/19	TS	N	11/20	TS	N	11/21	TS	N	11/22	TS	N	11/23	TS	N	11/24	TS	N	11/25	TS	N	11/26	TS	N	11/27	TS	N	11/28	TS	N	11/29	TS	N	11/30	TS	N	11/31	TS	N	12/1	TS	N	12/2	TS	N	12/3	TS	N	12/4	TS	N	12/5	TS	N	12/6	TS	N	12/7	TS	N	12/8	TS	N	12/9	TS	N	12/10	TS	N	12/11	TS	N	12/12	TS	N	12/13	TS	N	12/14	TS	N	12/15	TS	N	12/16	TS	N	12/17	TS	N	12/18	TS	N	12/19	TS	N	12/20	TS	N	12/21	TS	N	12/22	TS	N	12/23	TS	N	12/24	TS	N	12/25	TS	N	12/26	TS	N	12/27	TS	N	12/28	TS	N	12/29	TS	N	12/30	TS	N	12/31	TS	N	1/1	TS	N	1/2	TS	N	1/3	TS	N	1/4	TS	N	1/5	TS	N	1/6	TS	N	1/7	TS	N	1/8	TS	N	1/9	TS	N	1/10	TS	N	1/11	TS	N	1/12	TS	N	1/13	TS	N	1/14	TS	N	1/15	TS	N	1/16	TS	N	1/17	TS	N	1/18	TS	N	1/19	TS	N	1/20	TS	N	1/21	TS	N	1/22	TS	N	1/23	TS	N	1/24	TS	N	1/25	TS	N	1/26	TS	N	1/27	TS	N	1/28	TS	N	1/29	TS	N	1/30	TS	N	1/31	TS	N	2/1	TS	N	2/2	TS	N	2/3	TS	N	2/4	TS	N	2/5	TS	N	2/6	TS	N	2/7	TS	N	2/8	TS	N	2/9	TS	N	2/10	TS	N	2/11	TS	N	2/12	TS	N	2/13	TS	N	2/14	TS	N	2/15	TS	N	2/16	TS	N	2/17	TS	N	2/18	TS	N	2/19	TS	N	2/20	TS	N	2/21	TS	N	2/22	TS	N	2/23	TS	N	2/24	TS	N	2/25	TS	N	2/26	TS	N	2/27	TS	N	2/28	TS	N	2/29	TS	N	2/30	TS	N	2/31	TS	N	3/1	TS	N	3/2	TS	N	3/3	TS	N	3/4	TS	N	3/5	TS	N	3/6	TS	N	3/7	TS	N	3/8	TS	N	3/9	TS	N	3/10	TS	N	3/11	TS	N	3/12	TS	N	3/13	TS	N	3/14	TS	N	3/15	TS	N	3/16	TS	N	3/17	TS	N	3/18	TS	N	3/19	TS	N	3/20	TS	N	3/21	TS	N	3/22	TS	N	3/23	TS	N	3/24	TS	N	3/25	TS	N	3/26	TS	N	3/27	TS	N	3

# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER



CLIENT	SEWMD	PROJECT	US Sugar	PROJECT MAN.	LABORATORY	PROTOCOL	SPECIES
				Bill Gardiner	Port Gamble, WA BACT 4	USDA 2000 - 1000000-10000	<i>Hyallela azteca</i>

## ENDPOINT DATA & OBSERVATIONS

CLIENT/NEWFIELDS ID	REP	JAR #	INITIAL	DATE		OBSERV.	DATE	OBSERV.	DATE	OBSERV.	DATE	OBSERV.	DATE	OBSERV.	DATE	OBSERV.	NUMBER REMAINING	WEIGH BOAT NUMBER	TARE WEIGHT (mg)	TOTAL WEIGHT (mg)	ASH FREE DRY WEIGHT (mg)
				DATE	TECHNICIAN		DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN					
4501F unaged /	1	79		8/27	TS	N	8/28	TS	N	8/29	TS	N	8/30	TS	N	9/1	10	73	184.39	185.14	185.14
	2	119															10	74	197.46	198.04	198.04
	3	2															10	75	194.59	195.08	195.17
	4	169															10	76	193.61	194.32	194.37
	5	130															10	77	197.47	198.15	198.21
	6	165															10	78	209.88	210.81	210.87
	7	101															9	79	215.01	215.66	216.71
	8	68															8	80	210.24	210.84	210.83
4621AE East /	1	142															10	81	228.95	229.36	229.32
	2	138															10	82	205.33	206.29	206.27
	3	172															9	83	239.32	239.48	239.49
	4	170															10	84	202.09	202.88	202.90
	5	151															9	85	183.92	184.66	184.67
	6	67															10	86	245.74	246.73	246.75
	7	108															8	87	216.50	217.02	217.11
	8	105															10	88	206.56	207.29	207.28
4403DH aged /	1	124															8	89	198.05	200.60	200.58
	2	28															10	90	219.71	220.63	220.61
	3	49															10	91	243.42	244.38	244.38
	4	30															9	92	257.20	257.88	257.88
	5	158															9	93	194.50	195.35	195.35
	6	156															10	94	194.50	195.49	195.48
	7	127															9	95	195.90	196.75	196.77
	8	147															10	96	200.65	201.63	201.56

- ① MR, MMB 9/5/08, Tare wt. = 194.68 mg
- ② Total weight ← Tare weight, MMB 9/8/08



## 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER

CLIENT	PROJECT	JOB NUMBER	PROJECT MAN.	LABORATORY	PROTOCOL	SPECIES
SFWMD	US Sugar	0645-030-900	Bill Gardiner	Port Canbr., WA. DATN 4	1 JUN 1980 - 11/14/80A-37744	<i>Hyallela azteca</i>

## ENDPOINT DATA & OBSERVATIONS

CLIENT/NEWFIELDS ID		REP	JAR #	INITIAL	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	NUMBER REMAINING	WEIGH BOAT NUMBER	TARE WEIGHT (mg)	TOTAL WEIGHT (mg)	ASH FREE DRY WEIGHT (mg)																																										
4403DH unaged /					8/27	TS	2				8/28	TS	2		8/29	TS	2		8/30	TS	2		8/31	TS	2		9/1	TS	2		9/2	TS	2		9/3	TS	2		9/4	TS	2		9/5	TS	2																					
					9/27	TS	2				9/28	TS	2		9/29	TS	2		9/30	TS	2		9/31	TS	2		10/1	TS	2		10/2	TS	2		10/3	TS	2		10/4	TS	2		10/5	TS	2		10/6	TS	2		10/7	TS	2		10/8	TS	2		10/9	TS	2		10/10	TS	2	
					10/27	TS	2				10/28	TS	2		10/29	TS	2		10/30	TS	2		10/31	TS	2		11/1	TS	2		11/2	TS	2		11/3	TS	2		11/4	TS	2		11/5	TS	2		11/6	TS	2		11/7	TS	2		11/8	TS	2		11/9	TS	2		11/10	TS	2	
					11/27	TS	2				11/28	TS	2		11/29	TS	2		11/30	TS	2		12/1	TS	2		12/2	TS	2		12/3	TS	2		12/4	TS	2		12/5	TS	2		12/6	TS	2		12/7	TS	2		12/8	TS	2		12/9	TS	2		12/10	TS	2					
					12/27	TS	2				12/28	TS	2		12/29	TS	2		12/30	TS	2		1/1	TS	2		1/2	TS	2		1/3	TS	2		1/4	TS	2		1/5	TS	2		1/6	TS	2		1/7	TS	2		1/8	TS	2		1/9	TS	2		1/10	TS	2					
					1/27	TS	2				1/28	TS	2		1/29	TS	2		1/30	TS	2		2/1	TS	2		2/2	TS	2		2/3	TS	2		2/4	TS	2		2/5	TS	2		2/6	TS	2		2/7	TS	2		2/8	TS	2		2/9	TS	2		2/10	TS	2					
					2/27	TS	2				2/28	TS	2		2/29	TS	2		2/30	TS	2		3/1	TS	2		3/2	TS	2		3/3	TS	2		3/4	TS	2		3/5	TS	2		3/6	TS	2		3/7	TS	2		3/8	TS	2		3/9	TS	2		3/10	TS	2					
					3/27	TS	2				3/28	TS	2		3/29	TS	2		3/30	TS	2		3/31	TS	2		4/1	TS	2		4/2	TS	2		4/3	TS	2		4/4	TS	2		4/5	TS	2		4/6	TS	2		4/7	TS	2		4/8	TS	2		4/9	TS	2		4/10	TS	2	
001E2-5 /					8/27	TS	2				8/28	TS	2		8/29	TS	2		8/30	TS	2		8/31	TS	2		9/1	TS	2		9/2	TS	2		9/3	TS	2		9/4	TS	2		9/5	TS	2		9/6	TS	2		9/7	TS	2		9/8	TS	2		9/9	TS	2		9/10	TS	2	
					9/27	TS	2				9/28	TS	2		9/29	TS	2		9/30	TS	2		9/31	TS	2		10/1	TS	2		10/2	TS	2		10/3	TS	2		10/4	TS	2		10/5	TS	2		10/6	TS	2		10/7	TS	2		10/8	TS	2		10/9	TS	2		10/10	TS	2	
					10/27	TS	2				10/28	TS	2		10/29	TS	2		10/30	TS	2		10/31	TS	2		11/1	TS	2		11/2	TS	2		11/3	TS	2		11/4	TS	2		11/5	TS	2		11/6	TS	2		11/7	TS	2		11/8	TS	2		11/9	TS	2		11/10	TS	2	
					11/27	TS	2				11/28	TS	2		11/29	TS	2		11/30	TS	2		12/1	TS	2		12/2	TS	2		12/3	TS	2		12/4	TS	2		12/5	TS	2		12/6	TS	2		12/7	TS	2		12/8	TS	2		12/9	TS	2		12/10	TS	2					
					12/27	TS	2				12/28	TS	2		12/29	TS	2		12/30	TS	2		1/1	TS	2		1/2	TS	2		1/3	TS	2		1/4	TS	2		1/5	TS	2		1/6	TS	2		1/7	TS	2		1/8	TS	2		1/9	TS	2		1/10	TS	2					
					1/27	TS	2				1/28	TS	2		1/29	TS	2		1/30	TS	2		2/1	TS	2		2/2	TS	2		2/3	TS	2		2/4	TS	2		2/5	TS	2		2/6	TS	2		2/7	TS	2		2/8	TS	2		2/9	TS	2		2/10	TS	2					
					2/27	TS	2				2/28	TS	2		2/29	TS	2		2/30	TS	2		3/1	TS	2		3/2	TS	2		3/3	TS	2		3/4	TS	2		3/5	TS	2		3/6	TS	2		3/7	TS	2		3/8	TS	2		3/9	TS	2		3/10	TS	2					
					3/27	TS	2				3/28	TS	2		3/29	TS	2		3/30	TS	2		3/31	TS	2		4/1	TS	2		4/2	TS	2		4/3	TS	2		4/4	TS	2		4/5	TS	2		4/6	TS	2		4/7	TS	2		4/8	TS	2		4/9	TS	2		4/10	TS	2	
2324AB-N /					8/27	TS	2				8/28	TS	2		8/29	TS	2		8/30	TS	2		8/31	TS	2		9/1	TS	2		9/2	TS	2		9/3	TS	2		9/4	TS	2		9/5	TS	2		9/6	TS	2		9/7	TS	2		9/8	TS	2		9/9	TS	2		9/10	TS	2	
					9/27	TS	2				9/28	TS	2		9/29	TS	2		9/30	TS	2		9/31	TS	2		10/1	TS	2		10/2	TS	2		10/3	TS	2		10/4	TS	2		10/5	TS	2		10/6	TS	2		10/7	TS	2		10/8	TS	2		10/9	TS	2		10/10	TS	2	
					10/27	TS	2				10/28	TS	2		10/29	TS	2		10/30	TS	2		10/31	TS	2		11/1	TS	2		11/2	TS	2		11/3	TS	2		11/4	TS	2		11/5	TS	2		11/6	TS	2		11/7	TS	2		11/8	TS	2		11/9	TS	2		11/10	TS	2	
					11/27	TS	2				11/28	TS	2		11/29	TS	2		11/30	TS	2		12/1	TS	2		12/2	TS	2		12/3	TS	2		12/4	TS	2		12/5	TS	2		12/6	TS	2		12/7	TS	2		12/8	TS	2		12/9	TS	2		12/10	TS	2					
					12/27	TS	2				12/28	TS	2		12/29	TS	2		12/30	TS	2		1/1	TS	2		1/2	TS	2		1/3	TS	2		1/4	TS	2		1/5	TS	2		1/6	TS	2		1/7	TS	2		1/8	TS	2		1/9	TS	2		1/10	TS	2					
					1/27	TS	2				1/28	TS	2		1/29	TS	2		1/30	TS	2		2/1	TS	2		2/2	TS	2		2/3	TS	2		2/4	TS	2		2/5	TS	2		2/6	TS	2		2/7	TS	2		2/8	TS	2		2/9	TS	2		2/10	TS	2					
					2/27	TS	2				2/28	TS	2		2/29	TS	2		2/30	TS	2		3/1	TS	2		3/2	TS	2		3/3	TS	2		3/4	TS	2		3/5	TS	2		3/6	TS	2		3/7	TS	2		3/8	TS	2		3/9	TS	2		3/10	TS	2					
					3/27	TS	2				3/28	TS	2		3/29	TS	2		3/30	TS	2		3/31	TS	2		4/1	TS	2		4/2	TS	2		4/3	TS	2		4/4	TS	2		4/5	TS	2		4/6	TS	2		4/7	TS	2		4/8	TS	2		4/9	TS	2		4/10	TS	2	

① Total weight significantly > Tare weight, MMB 9/8/08

② We TS 9/10/08



# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER

CLIENT	PROJECT	JOB NUMBER	PROJECT MAN.	LABORATORY	PROTOCOL	SPECIES
SEWMD	US Sugar	0645-030-900	Bill Gardiner	Post Graduate, MS BATH	WFA 2006 - 1700-001-2004	<i>Hyalella azteca</i>

CLIENT/NEWFIELDS ID	REP	JAR #	INITIAL	ENDPOINT DATA & OBSERVATIONS																					
				DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.										
4509CD-S aged /	1	163		8/27	TS	N	8/28	TS	N	8/29	TS	8/30	TS	8/31	TS	9/1	TS	9/2	TS	9/3	TS	9/4	TS	9/5	TS
	2	5																							
	3	95																							
	4	32																							
	5	134																							
	6	98																							
	7	39																							
	8	72																							
4509CD-S unaged /	1	107																							
	2	60																							
	3	16																							
	4	112																							
	5	122																							
	6	117																							
	7	43																							
	8	171																							
3433AE-E /	1	50																							
	2	76																							
	3	15																							
	4	19																							
	5	168																							
	6	178																							
	7	177																							
	8	12																							

CLIENT/NEWFIELDS ID	REP	JAR #	INITIAL	WEIGHT (mg)	TARE WEIGHT (mg)	TOTAL WEIGHT (mg)	ASH FREE DRY WEIGHT (mg)
4509CD-S aged /	1	163		194.86	195.74	145.79	
	2	5		188.93	189.80	189.82	
	3	95		202.99	203.82	203.79	
	4	32		206.40	207.39	207.40	
	5	134		211.56	212.56	212.52	
	6	98		201.41	202.30	202.31	
	7	39		223.79	224.60	224.60	
	8	72		222.82	223.71	223.70	
4509CD-S unaged /	1	107		191.82	192.43	192.50	
	2	60		182.82	183.49	183.47	
	3	16		207.02	207.83	207.86	
	4	112		215.94	216.80	216.88	
	5	122		200.10	200.89	200.94	
	6	117		217.70	218.47	218.51	
	7	43		206.92	207.81	207.78	
	8	171		256.27	257.11	257.24	
3433AE-E /	1	50		252.63	253.19	253.37	
	2	76		240.35	241.11	241.17	
	3	15		249.34	250.01	250.07	
	4	19		213.11	213.89	213.95	
	5	168		199.40	200.19	200.22	
	6	178		215.67	216.30	216.35	
	7	177		205.10	206.08	206.08	
	8	12		190.12	190.69	190.74	

DATE TS 4/10/08



Hyalbula Zero Time Wts. 9/18/08

Page 1 of 1

Weigh boat	Tare wt. (mg)	Bayer H.a.	Boats 1-3: old batch
1	78.02 mg		
2	88.94 mg		
3	<del>63.70 mg</del>	63.77 mg	
<hr/>			
4	59.86 mg		Boats 4-6: new batch
5	81.88 mg	U.S. sugar)	
6	72.51 mg	H.a.	

Weigh boat	Weights w/ animals (mg)	9/22/08
1	78.92 mg	
2	89.72 mg	
3	64.37 mg	
<hr/>		
4	60.36 mg	60.33 (-2 mg for tare)
5	82.61 mg	82.60 -2 mg for tare)
6	73.08 mg	73.05 -2 mg for tare)
reweighed		



# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT		PROJECT		SPECIES		LABORATORY		PROTOCOL	
SFWMD		US Sugar		Hyalallela azteca		Port Gamble, WA BATH 4		NA	
JOB NUMBER		PROJECT MANAGER		TEST START DATE		TEST END DATE		TIME	
0645-030-900		Bill Gardiner		26Aug08		05Sep08			

WATER QUALITY DATA #1													
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	D.O. (mg/L)		TEMP (°C)		CONDUCTIVITY (µS/cm)		pH	TECHNICIAN	WATER RENEWAL	FEED-ING
				meter	mg/L	meter	°C	meter	µS/cm				
CONTROL /	0	WQ	143	13	8.6	22.2		678		7.6			
CONTROL /	1	WQ	143		5.7	22.1		710		7.4			
CONTROL /	2	WQ	143		5.4	21.5		596		7.3			
CONTROL /	3	WQ	143		5.8	22.8		512		7.7			
CONTROL /	4	WQ	143		5.8	22.7		498		7.9			
CONTROL /	5	WQ	143		6.7	22.4		487		7.8			
CONTROL /	6	WQ	143		7.0	22.4		543		8.0			
CONTROL /	7	WQ	143		6.1	22.3		582		7.7			
CONTROL /	8	WQ	143		7.3	22.5		607		7.8			
CONTROL /	9	WQ	143		6.3	22.7		547		7.7			
CONTROL /	10	WQ	143	23	5.8	22.8		489		7.7			
Port Gamble Spring c /	0	WQ	31	24	8.4	21.8		706		7.4			
Port Gamble Spring c /	1	WQ	31		7.1	22.2		813		7.4			
Port Gamble Spring c /	2	WQ	31		6.5	21.7		633		7.4			
Port Gamble Spring c /	3	WQ	31		6.1	22.6		513		7.6			
Port Gamble Spring c /	4	WQ	31		6.4	22.4		500		7.7			
Port Gamble Spring c /	5	WQ	31		7.2	22.3		484		7.7			
Port Gamble Spring c /	6	WQ	31		7.7	22.1		527		8.0			
Port Gamble Spring c /	7	WQ	31		6.3	22.4		540		7.7			
Port Gamble Spring c /	8	WQ	31		6.8	22.4		594		7.6			
Port Gamble Spring c /	9	WQ	31		5.4	22.6		527		7.7			
Port Gamble Spring c /	10	WQ	31	34	5.5	22.5		489		7.5			



# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT SFWM		PROJECT US Sugar		SPECIES Hyallolella azteca		LABORATORY Port Gamble, WA BATH 4		PROTOCOL WQA-300 - 2006-01-01/04		
JOB NUMBER 0645-030-900		PROJECT MANAGER Bill Gardiner		TEST START DATE 26Aug08		TEST END DATE 05Sep08		TIME		
WATER QUALITY DATA #1										
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	D.O. mg/L	TEMP °C	CONDUCTIVITY µS/cm	pH	TECHNICIAN	WATER RENEWAL AM PM	FEED- ING
4617MN North aged /	0	WQ	144	7.4	22.3	672	7.3			
4617MN North aged /	1	WQ	144	6.8	22.2	688	7.2			
4617MN North aged /	2	WQ	144	6.5	22.2	557	7.3			
4617MN North aged /	3	WQ	144	6.3	22.7	498	7.6			
4617MN North aged /	4	WQ	144	6.0	22.6	483	7.6			
4617MN North aged /	5	WQ	144	6.5	22.5	483	7.6			
4617MN North aged /	6	WQ	144	7.1	22.4	523	8.0			
4617MN North aged /	7	WQ	144	6.9	22.6	555	7.7			
4617MN North aged /	8	WQ	144	6.9	22.5	587	7.7			
4617MN North aged /	9	WQ	144	5.6	22.7	514	7.6			
4617MN North aged /	10	WQ	144	5.4	22.8	476	7.5			
4617MN North unaged /	0	WQ	153	8.2	22.3	656	7.3			
4617MN North unaged /	1	WQ	153	6.5	22.3	660	7.2			
4617MN North unaged /	2	WQ	153	6.4	22.3	562	7.3			
4617MN North unaged /	3	WQ	153	6.3	22.8	494	7.5			
4617MN North unaged /	4	WQ	153	6.4	22.6	483	7.5			
4617MN North unaged /	5	WQ	153	6.6	22.6	478	7.4			
4617MN North unaged /	6	WQ	153	7.2	22.6	524	7.9			
4617MN North unaged /	7	WQ	153	6.3	22.7	563	7.6			
4617MN North unaged /	8	WQ	153	7.4	22.5	565	7.6			
4617MN North unaged /	9	WQ	153	5.7	22.7	516	7.5			
4617MN North unaged /	10	WQ	153	5.5	22.9	479	7.5			





# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT		PROJECT		SPECIES		LABORATORY		PROTOCOL	
SFWMD		US Sugar		Hyalallela azteca		Port Gamble, WA BATH 4		REGA-1000 - 10 DAY SOLID PHASE	
JOB NUMBER		PROJECT MANAGER		TEST START DATE		TEST END DATE		TIME	
0645-030-900		Bill Gardiner		26Aug08		05Sep08			

WATER QUALITY DATA #1											
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	D.O.		TEMP		CONDUCTIVITY		pH	unit
				meter	mg/L	meter	°C	meter	µS/cm		
4501JN West aged /	0	WQ	41		8.0		22.2		664		6.7
4501JN West aged /	1	WQ	41		7.4		22.1		671		7.1
4501JN West aged /	2	WQ	41		7.0		22.3		560		7.1
4501JN West aged /	3	WQ	41		6.3		22.7		476		7.2
4501JN West aged /	4	WQ	41		6.5		22.5		472		7.3
4501JN West aged /	5	WQ	41		7.0		22.5		459		7.3
4501JN West aged /	6	WQ	41		7.5		22.2		500		7.8
4501JN West aged /	7	WQ	41		6.4		22.2		509		7.5
4501JN West aged /	8	WQ	41		7.2		22.4		573		7.5
4501JN West aged /	9	WQ	41		6.0		22.8		508		7.4
4501JN West aged /	10	WQ	41		6.0		22.8		473		7.4
4501JN West unaged /	0	WQ	116		8.3		22.2		649		7.4
4501JN West unaged /	1	WQ	116		7.2		22.0		654		7.3
4501JN West unaged /	2	WQ	116		6.8		22.4		550		7.3
4501JN West unaged /	3	WQ	116		6.7		22.7		475		7.4
4501JN West unaged /	4	WQ	116		6.3		22.4		458		7.5
4501JN West unaged /	5	WQ	116		7.2		22.4		458		7.6
4501JN West unaged /	6	WQ	116		7.6		22.2		516		8.0
4501JN West unaged /	7	WQ	116		6.9		22.5		534		7.6
4501JN West unaged /	8	WQ	116		7.5		22.4		571		7.6
4501JN West unaged /	9	WQ	116		6.4		22.7		510		7.4
4501JN West unaged /	10	WQ	116		5.9		22.9		467		7.6

DILUTION WATER BATCH		TEMP. REC'DR./HOBQ#	
REF005		NA	

WATER RENEWAL	TECHNICIAN	FEED-ING
AM PM		



# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT		PROJECT		SPECIES		LABORATORY		PROTOCOL	
SFWMD		US Sugar		Hyalallela azteca		Port Gamble, WA BATH 4		WQA 2016 - 10 DAY SOLID PHASE	
JOB NUMBER		PROJECT MANAGER		TEST START DATE		TEST END DATE		TIME	
0645-030-900		Bill Gardiner		26Aug08		05Sep08			

WATER QUALITY DATA #1													
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	D.O.		TEMP °C	CONDUCTIVITY		pH	TECHNICIAN	WATER RENEWAL		FEED-ING
				meter	mg/L		meter	µS/cm			AM	PM	
45020P South aged /	0	WQ	47		8.0	22.2		661	6.8				
45020P South aged /	1	WQ	47		7.2	22.1		660	6.9				
45020P South aged /	2	WQ	47		7.1	22.3		532	7.1				
45020P South aged /	3	WQ	47		6.5	22.7		455	7.2				
45020P South aged /	4	WQ	47		6.6	22.5		441	7.2				
45020P South aged /	5	WQ	47		7.2	22.4		443	7.3				
45020P South aged /	6	WQ	47		7.7	22.3		503	7.8				
45020P South aged /	7	WQ	47		6.5	22.4		501	7.4				
45020P South aged /	8	WQ	47		7.4	22.4		579	7.5				
45020P South aged /	9	WQ	47		6.0	22.6		495	7.4				
45020P South aged /	10	WQ	47		6.2	22.7		461	7.4				
45020P South unaged /	0	WQ	61		8.2	22.2		650	6.9				
45020P South unaged /	1	WQ	61		7.2	22.1		646	6.9				
45020P South unaged /	2	WQ	61		6.8	22.3		541	7.0				
45020P South unaged /	3	WQ	61		6.5	22.6		468	7.1				
45020P South unaged /	4	WQ	61		6.5	22.5		450	7.2				
45020P South unaged /	5	WQ	61		7.2	22.4		448	7.3				
45020P South unaged /	6	WQ	61		7.6	22.3		502	7.7				
45020P South unaged /	7	WQ	61		6.6	22.5		529	7.4				
45020P South unaged /	8	WQ	61		7.2	22.5		587	7.5				
45020P South unaged /	9	WQ	61		6.3	22.7		516	7.4				
45020P South unaged /	10	WQ	61		6.0	22.8		466	7.4				





# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT		PROJECT		SPECIES		LABORATORY		PROTOCOL	
SFWMD		US Sugar		Hyalallela azteca		Port Gamble, WA BATH 4		WQA 2004 - 10 day solid phase	
JOB NUMBER		PROJECT MANAGER		TEST START DATE		TEST END DATE		TIME	
0645-030-900		Bill Gardiner		26Aug08		05Sep08			

WATER QUALITY DATA #1											
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	D.O.		TEMP		CONDUCTIVITY		pH	FEED-ING
				meter	mg/L	meter	°C	meter	µS/cm		
4501F aged /	0	WQ	90		8.0		22.2		680	7.0	
4501F aged /	1	WQ	90		7.1		22.2		683	6.8	
4501F aged /	2	WQ	90		6.8		22.4		558	7.0	
4501F aged /	3	WQ	90		6.1		22.7		471	7.1	
4501F aged /	4	WQ	90		6.3		22.6		452	7.2	
4501F aged /	5	WQ	90		7.3		22.3		451	7.3	
4501F aged /	6	WQ	90		7.7		22.4		508	7.7	
4501F aged /	7	WQ	90		6.5		22.6		534	7.4	
4501F aged /	8	WQ	90		7.4		22.5		566	7.5	
4501F aged /	9	WQ	90		6.3		22.7		491	7.4	
4501F aged /	10	WQ	90		6.2		23.0		458	7.4	
4501F unaged /	0	WQ	37		8.4		22.1		655	6.6	
4501F unaged /	1	WQ	37		6.8		22.2		661	7.1	
4501F unaged /	2	WQ	37		6.5		22.3		545	7.2	
4501F unaged /	3	WQ	37		6.6		22.7		472	7.4	
4501F unaged /	4	WQ	37		6.1		22.5		454	7.4	
4501F unaged /	5	WQ	37		6.7		22.4		455	7.5	
4501F unaged /	6	WQ	37		7.4		22.2		513	7.9	
4501F unaged /	7	WQ	37		6.3		22.6		511	7.5	
4501F unaged /	8	WQ	37		7.3		22.4		580	7.6	
4501F unaged /	9	WQ	37		5.6		22.6		510	7.5	
4501F unaged /	10	WQ	37		5.7		22.7		469	7.5	

DILUTION WATER BATCH		TEMP. RECDR./HOB#	
RFW005		NA	



# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT	SFWMD	PROJECT	US Sugar	SPECIES	Hyallolela azteca	LABORATORY	Port Gamble, WA BATH 4	PROTOCOL	WQ 10-day - 10-day - 10-day
JOB NUMBER	0645-030-900	PROJECT MANAGER	Bill Gardiner	TEST START DATE	26Aug08	TIME	05Sep08	TEST END DATE	TIME

WATER QUALITY DATA #1														
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)		TEMP (°C)		CONDUCTIVITY (µS/cm)		pH	DILUTION	WATER BATCH	TEMP. REC'DR./HOBOR#	
				meter	mg/L	meter	°C	meter	µS/cm					unit
4621AE East /	0	WQ	115		8.3		22.2		663	7.5				
4621AE East /	1	WQ	115		7.0		21.9		678	7.3				
4621AE East /	2	WQ	115		6.4		22.4		557	7.5				
4621AE East /	3	WQ	115		6.3		22.7		489	7.7				
4621AE East /	4	WQ	115		6.2		22.4		483	7.7				
4621AE East /	5	WQ	115		6.8		22.4		477	7.7				
4621AE East /	6	WQ	115		7.3		22.5		529	8.1				
4621AE East /	7	WQ	115		6.6		22.5		563	7.7				
4621AE East /	8	WQ	115		7.2		22.5		569	7.7				
4621AE East /	9	WQ	115		5.8		22.6		525	7.7				
4621AE East /	10	WQ	115		5.5		22.9		477	7.7				
4403DH aged /	0	WQ	26		7.6		22.1		711	7.1				
4403DH aged /	1	WQ	26		6.6		22.0		747	7.1				
4403DH aged /	2	WQ	26		5.8		21.3		610	7.2				
4403DH aged /	3	WQ	26		6.1		22.3		535	7.4				
4403DH aged /	4	WQ	26		6.4		22.1		570	7.5				
4403DH aged /	5	WQ	26		7.1		22.1		528	7.4				
4403DH aged /	6	WQ	26		7.8		21.9		548	7.8				
4403DH aged /	7	WQ	26		6.2		22.3		562	7.6				
4403DH aged /	8	WQ	26		7.2		22.2		581	7.5				
4403DH aged /	9	WQ	26		5.9		22.4		541	7.6				
4403DH aged /	10	WQ	26		5.8		21.8		506	7.3				





# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT SFWM		PROJECT US Sugar		SPECIES Hyalallela azteca		LABORATORY Port Gamble, WA BATH 4		PROTOCOL WQA 10-day - Freshwater			
JOB NUMBER 0645-030-900		PROJECT MANAGER Bill Gardiner		TEST START DATE 26Aug08		TEST END DATE 05Sep08		TIME			
WATER QUALITY DATA #1											
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	D.O. mg/L	TEMP °C	CONDUCTIVITY µS/cm	pH	TECHNICIAN	WATER RENEWAL AM PM	FEED- ING	TEMP REC'DR/HOB#
4403DH unaged /	0	WQ	100	7.9	22.1	669	7.1				NA
4403DH unaged /	1	WQ	100	6.8	22.0	691	7.1				
4403DH unaged /	2	WQ	100	6.4	22.4	596	7.3				
4403DH unaged /	3	WQ	100	6.2	22.8	519	7.5				
4403DH unaged /	4	WQ	100	6.2	22.6	508	7.7				
4403DH unaged /	5	WQ	100	6.9	22.4	495	7.6				
4403DH unaged /	6	WQ	100	7.3	22.4	528	8.0				
4403DH unaged /	7	WQ	100	6.5	22.5	563	7.7				
4403DH unaged /	8	WQ	100	7.3	22.3	606	7.8				
4403DH unaged /	9	WQ	100	6.0	22.7	561	7.7				
4403DH unaged /	10	WQ	100	5.5	22.9	503	7.6				
001E2-5 /	0	WQ	99	8.6	22.1	664	7.3				
001E2-5 /	1	WQ	99	7.1	22.0	677	7.0				
001E2-5 /	2	WQ	99	6.3	22.4	585	7.2				
001E2-5 /	3	WQ	99	5.9	22.8	506	7.3				
001E2-5 /	4	WQ	99	6.4	22.6	488	7.5				
001E2-5 /	5	WQ	99	7.0	22.4	481	7.5				
001E2-5 /	6	WQ	99	7.4	22.4	522	7.9				
001E2-5 /	7	WQ	99	6.6	22.5	551	7.6				
001E2-5 /	8	WQ	99	7.5	22.3	601	7.6				
001E2-5 /	9	WQ	99	6.0	22.7	536	7.6				
001E2-5 /	10	WQ	99	5.8	22.9	484	7.5				





# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT	SFWMD	PROJECT	US Sugar	SPECIES	<i>Hyalallela azteca</i>	LABORATORY	Port Gamble, WA BATH 4	PROTOCOL	TECHNICAL
JOB NUMBER	0645-030-900	PROJECT MANAGER	Bill Gardiner	TEST START DATE	26Aug08	TEST END DATE	05Sep08	TIME	

## WATER QUALITY DATA #1

CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)		TEMP (°C)	CONDUCTIVITY		pH	unit	TECHNICIAN	WATER RENEWAL		FEED-ING	TEMP.RECDR./HOB0#
				meter	mg/L		meter	µS/cm				AM	PM		
2324AB-N /	0	WQ	110		8.2	22.2		699		7.4					
2324AB-N /	1	WQ	110		7.0	22.0		732		7.4					
2324AB-N /	2	WQ	110		6.6	22.5		603		7.5					
2324AB-N /	3	WQ	110		6.6	22.7		528		7.7					
2324AB-N /	4	WQ	110		6.2	22.4		513		7.8					
2324AB-N /	5	WQ	110		7.1	22.4		499		7.7					
2324AB-N /	6	WQ	110		7.1	22.4		531		8.0					
2324AB-N /	7	WQ	110		6.3	22.6		564		7.8					
2324AB-N /	8	WQ	110		7.2	22.5		577		7.8					
2324AB-N /	9	WQ	110		5.6	22.7		530		7.8					
2324AB-N /	10	WQ	110		5.4	22.9		490		7.7					
4509CD-S aged /	0	WQ	139		7.7	22.1		702		7.4					
4509CD-S aged /	1	WQ	139		6.4	22.0		721		7.2					
4509CD-S aged /	2	WQ	139		6.0	22.3		681		7.3					
4509CD-S aged /	3	WQ	139		5.4	22.7		566		7.4					
4509CD-S aged /	4	WQ	139		5.5	22.5		513		7.6					
4509CD-S aged /	5	WQ	139		6.5	22.4		496		7.5					
4509CD-S aged /	6	WQ	139		7.0	21.9		540		7.8					
4509CD-S aged /	7	WQ	139		6.5	22.6		572		7.5					
4509CD-S aged /	8	WQ	139		6.8	22.3		588		7.6					
4509CD-S aged /	9	WQ	139		5.0	22.8		530		7.5					
4509CD-S aged /	10	WQ	139		4.9	22.8		488		7.6					



# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT		PROJECT		SPECIES		LABORATORY		PROTOCOL	
SFWMID		US Sugar		Hyalallela azteca		Port Gamble, WA BATH 4		Hyalallela azteca - Freshwater	
JOB NUMBER		PROJECT MANAGER		TEST START DATE		TEST END DATE		TIME	
0645-030-900		Bill Gardiner		26Aug08		05Sep08			

WATER QUALITY DATA #1													
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	D.O.		TEMP °C	CONDUCTIVITY		pH	TECHNICIAN	WATER RENEWAL		FEED-ING
				meter	mg/L		meter	µS/cm			meter	unit	
4509CD-S unaged /	0	WQ	176		8.1	22.4		676	7.4				
4509CD-S unaged /	1	WQ	176		6.9	22.2		701	7.2				
4509CD-S unaged /	2	WQ	176		6.3	22.4		584	7.4				
4509CD-S unaged /	3	WQ	176		6.3	22.8		514	7.6				
4509CD-S unaged /	4	WQ	176		5.7	22.6		487	7.6				
4509CD-S unaged /	5	WQ	176		7.1	22.5		487	7.5				
4509CD-S unaged /	6	WQ	176		7.4	22.6		529	8.0				
4509CD-S unaged /	7	WQ	176		6.8	22.7		560	7.6				
4509CD-S unaged /	8	WQ	176		7.2	22.4		578	7.5				
4509CD-S unaged /	9	WQ	176		5.7	22.7		538	7.7				
4509CD-S unaged /	10	WQ	176		5.7	23.0		488	7.7				
3433AE-E /	0	WQ	102		8.1	22.3		668	7.4				
3433AE-E /	1	WQ	102		6.4	22.1		691	7.2				
3433AE-E /	2	WQ	102		6.4	22.4		576	7.4				
3433AE-E /	3	WQ	102		6.1	22.7		497	7.6				
3433AE-E /	4	WQ	102		6.4	22.7		495	7.7				
3433AE-E /	5	WQ	102		6.8	22.3		480	7.7				
3433AE-E /	6	WQ	102		6.8	22.4		522	8.0				
3433AE-E /	7	WQ	102		6.2	22.7		549	7.7				
3433AE-E /	8	WQ	102		6.9	22.5		589	7.7				
3433AE-E /	9	WQ	102		5.8	22.8		548	7.7				
3433AE-E /	10	WQ	102		5.7	22.9		492	7.6				

# CETIS QC Chart

NewFields

Test Type: Survival-Growth

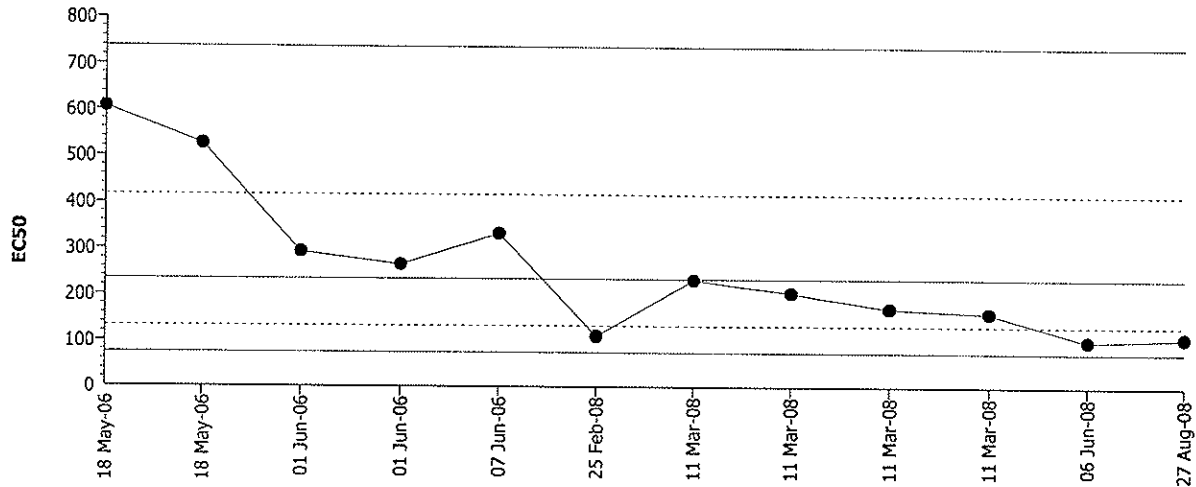
Organism: *Hyalella azteca* (Freshwater Amphip)

Material: Copper sulfate

Protocol: EPA/600/R-99/064 (2000)

Endpoint: Proportion Survived

Source: Reference Toxicant-REF



Mean: 234.807

Count: 11

-1s Warning Limit: 132.435

-2s Action Limit: 74.6951

Sigma:

CV: 77.30%

+1s Warning Limit: 416.315

+2s Action Limit: 738.128

## Quality Control Data

Point	Year	Month	Day	Data	Delta	Sigma	Warning	Action	Test Link	Analysis
1	2006	May	18	606.1130	371.3055	1.65591	(+)		10-8691-4054	17-2821-6835
2			18	525.5638	290.7563	1.40691	(+)		03-0509-8501	09-2798-4941
3		Jun	1	293.2633	58.45588	0.38819			01-7065-7527	01-1302-1323
4			1	264.8690	30.06158	0.21036			11-5942-5120	08-0136-5346
5			7	332.7186	97.91118	0.60860			05-9156-3794	03-7995-6982
6	2008	Feb	25	110.4078	-124.399	-1.31765	(-)		11-4823-6801	10-8672-7110
7		Mar	11	232.4088	-2.39862	-0.01793			14-9506-4118	16-4356-3984
8			11	204.8717	-29.9357	-0.23815			09-0612-4475	14-7751-6654
9			11	170.1897	-64.6177	-0.56201			07-5213-7604	17-7764-7471
10			11	160.6268	-74.1806	-0.66300			15-8627-3791	12-2123-7728
11		Jun	6	101.1112	-133.696	-1.47124	(-)		06-8246-3812	00-7430-5634
12		Aug	27	108.5398	-126.267	-1.34744	(-)		05-7236-6023	04-4539-0076



# CETIS Analysis Detail

Comparisons: Page 1 of 2  
 Report Date: 04 Sep-08 2:40 PM  
 Analysis: 17-7465-3289

## Hyalella 10-d Survival and Growth Sediment Test

NewFields

Endpoint	Analysis Type			Sample Link	Control Link	Date Analyzed	Version	
Proportion Survived	Comparison			05-7236-6023	05-7236-6023	04 Sep-08 2:40 PM	CETISv1.1.2	
Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		62.5	125	1.6	88.3884	24.16%

Group Comparisons							
Control	vs	Conc-µg/L	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		62.5	2.15081	2.35615	0.0721	0.31401	Non-Significant Effect
		125	4.99959	2.35615	0.0003	0.31401	Significant Effect
		250	7.43072	2.35615	0.0000	0.31401	Significant Effect
		500	6.42367	2.35615	0.0000	0.31401	Significant Effect

Test Acceptability				
Attribute	Statistic	TAC Range	Overlap	Decision
Control Response	0.925	0.8 - NL	Yes	Passes acceptability criteria

ANOVA Table						
Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	2.689911	0.6724777	4	18.93	0.00001	Significant Effect
Error	0.5328561	0.0355237	15			
Total	3.222767	0.7080015	19			

ANOVA Assumptions					
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	6.56825	13.27670	0.16054	Equal Variances
Distribution	Shapiro-Wilk W	0.94768		0.33320	Normal Distribution

Data Summary			Original Data				Transformed Data			
Conc-µg/L	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.92500	0.70000	1.00000	0.15000	1.30680	0.99116	1.41202	0.21043
62.5		4	0.72500	0.70000	0.80000	0.05000	1.02015	0.99116	1.10715	0.05800
125		4	0.37500	0.10000	0.70000	0.27538	0.64049	0.32175	0.99116	0.30377
250		4	0.10000	0.00000	0.20000	0.08165	0.31648	0.15878	0.46365	0.12461
500		4	0.20000	0.10000	0.30000	0.11547	0.45070	0.32175	0.57964	0.14889

# CETIS Analysis Detail

Comparisons:

Page 2 of 2

Report Date:

04 Sep-08 2:40 PM

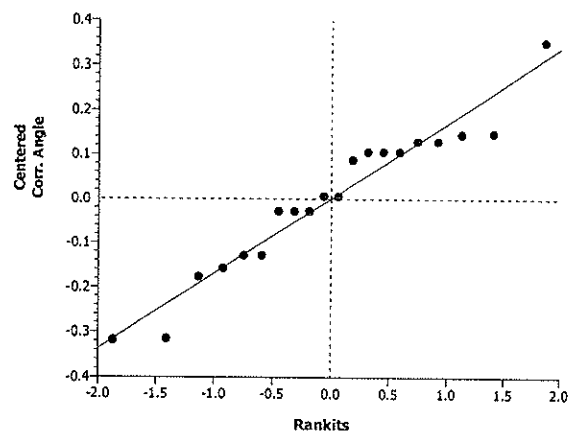
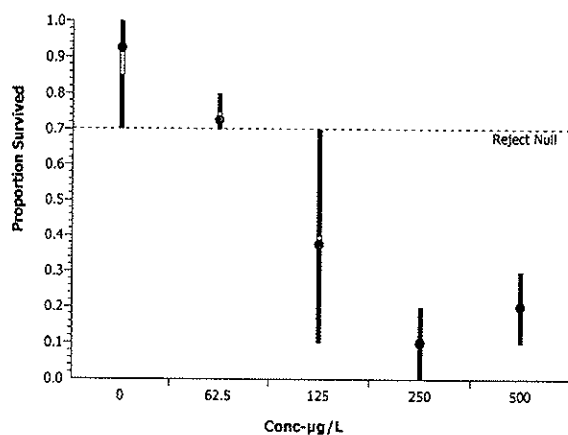
Analysis:

17-7465-3289

## Data Detail

Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	0.70000	1.00000						
62.5		0.70000	0.70000	0.70000	0.80000						
125		0.70000	0.20000	0.10000	0.50000						
250		0.10000	0.20000	0.00000	0.10000						
500		0.30000	0.30000	0.10000	0.10000						

## Graphics



Conc-µg/L	Code	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Tare Weight-mg	Pan Count
0	D	1	3	10	10		0	
0	D	2	15	10	10		0	
0	D	3	12	10	7		0	
0	D	4	6	10	10		0	
62.5		1	13	10	7		0	
62.5		2	23	10	7		0	
62.5		3	21	10	7		0	
62.5		4	17	10	8		0	
125		1	9	10	7		0	
125		2	14	10	2		0	
125		3	19	10	1		0	
125		4	1	10	5		0	
250		1	8	10	1		0	
250		2	7	10	2		0	
250		3	20	10	0		0	
250		4	24	10	1		0	
500		1	2	10	3		0	
500		2	22	10	3		0	
500		3	10	10	1		0	
500		4	18	10	1		0	
1000		1	4	10	0		0	
1000		2	11	10	0		0	
1000		3	16	10	0		0	
1000		4	5	10	0		0	





10 DAY SOLID PHASE - 1ST DATA SHEET 2 - REF TOX WQ - FRESHWATER  
3.932ml Cu in 2000ml 7070730.70

CLIENT	SFWMD	PROJECT	US Sugar
JOB NUMBER	0645-030-900	PROJECT MANAGER	Bill Gardiner

SPECIES	<i>Hyalieila azteca</i>	LABORATORY	Port Gamble, WA BATH 4	PROTOCOL	USEPA 2005 - SW/600/6-30/944
TEST START DATE	27Aug08	TIME	1400	TEST END DATE	31Aug08
				TIME	1430

WATER QUALITY DATA

CLIENT/ NEWFIELDS ID	TEMP (C) 23±2	CON (µS/cm) vary < 50%	DO (mg/L) > 4.5	HARD/ALK vary < 50%	DILTN.WAT.BATCH RFW005	D.O.		TEMP.		CONDUCTIVITY		REFERENCE TOX. MATERIAL Copper Sulfate		REFERENCE TOXICANT Copper		LOT NO.	TECHNICIAN	96-HR LC50
						meter	mg/L	meter	°C	meter	µS/cm	meter	unit	HARNES Techn. mg CaCO3/L Techn. mg CaCO3/L	ALKALINITY			
Ref.Tox.-Copper	0 µg/L			DAY	REP	meter	mg/L	meter	°C	meter	µS/cm	meter	unit					
				0	Stock	4	7.8	4	21.0	1	528	1	7.3				TS	
				2	All													
Ref.Tox.-Copper	62.5 µg/L			DAY	REP	meter	mg/L	meter	°C	meter	µS/cm	meter	unit					
				4	/	4	8.5	4	22.1	1	578	/	7.8				/	
				0	Stock	4	7.8	4	21.2	1	527	1	7.4				TS	
Ref.Tox.-Copper	125 µg/L			DAY	REP	meter	mg/L	meter	°C	meter	µS/cm	meter	unit					
				2	All													
				4	/	4	8.6	4	22.3	1	581	/	8.0				✓	
Ref.Tox.-Copper	250 µg/L			DAY	REP	meter	mg/L	meter	°C	meter	µS/cm	meter	unit					
				0	Stock	4	7.8	4	21.3	1	526	/	7.5				TS	
				2	All													
Ref.Tox.-Copper	500 µg/L			DAY	REP	meter	mg/L	meter	°C	meter	µS/cm	meter	unit					
				4	/	4	8.4	4	22.5	1	571	/	8.1				✓	
				0	Stock	4	7.8	4	21.3	1	527	1	7.5				TS	
Ref.Tox.-Copper	1000 µg/L			DAY	REP	meter	mg/L	meter	°C	meter	µS/cm	meter	unit					
				2	All													
				4	/	4	8.6	4	22.6	1	578	/	8.2				✓	
Ref.Tox.-Copper	500 µg/L			DAY	REP	meter	mg/L	meter	°C	meter	µS/cm	meter	unit					
				0	Stock	4	7.8	4	21.3	1	527	1	7.6				TS	
				2	All													
Ref.Tox.-Copper	1000 µg/L			DAY	REP	meter	mg/L	meter	°C	meter	µS/cm	meter	unit					
				4	/	4	8.6	4	22.6	1	580	1	8.3				✓	
				0	Stock	4	7.8	4	21.2	1	526	1	7.4				TS	
Ref.Tox.-Copper	1000 µg/L			DAY	REP	meter	mg/L	meter	°C	meter	µS/cm	meter	unit					
				2	All													
				4	/	4	-	4	-	1	-	1	-				✓	

CLIENT SFWM	PROJECT US Sugar	JOB NUMBER 0645-030-900	SPECIES <i>Hyalomma azteca</i>	ACCLM.MORT. #REF!
		PROJECT MANAGER Bill Gardiner	LABORATORY Port Gamble, WA BATH 4	PROTOCOL USEPA 2000 - EPA/600/R-

## SURVIVAL &amp; BEHAVIOR DATA

OBSERVATIONS KEY

N = normal  
LOE= loss of equilibrium  
Q = quiescent  
SUR= surfacing

DC = discoloration  
OB = on bottom  
J = jumper  
NB = no body

DATE

8/28

TECHNICIAN

TJ

DATE

8/29

TECHNICIAN

J

DATE

8/30

TECHNICIAN

J

DATE

8/31

TECHNICIAN

J

CLIENT/ NEWFIELDS ID

CONC.

value

units

REP

INITIAL  
NUMBER

#ALIVE

#DEAD

OBS

#ALIVE

#DEAD

OBS

#ALIVE

#DEAD

OBS

#ALIVE

#DEAD

OBS

Ref.Tox.-  
Copper

0 µg/L

1

10

10

0

55

10

0

55

10

0

15

10

0

N

2

10

0

45

10

0

N

10

0

15

10

0

N

3

10

0

95

10

0

65

9

1

35

7

2

N

4

10

0

95

10

0

25

10

0

N

10

0

N

5

6

Ref.Tox.-  
Copper

62.5 µg/L

1

10

0

95

10

0

25

9

1

N

7

2

N

2

10

0

75

9

1

45

8

1

N

7

1

N

3

10

0

45

9

1

45

7

2

15

7

0

N

4

10

0

75

10

0

35

9

1

15

8

1

N

5

6

Ref.Tox.-  
Copper

125 µg/L

1

10

0

65

9

1

55

8

1

45

7

1

15

2

9

1

65

7

2

65

5

2

N

2

3

N

3

10

0

35

9

1

65

7

2

15

1

6

N

4

10

0

65

9

1

55

7

2

N

5

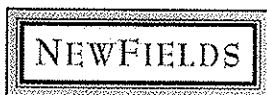
2

N

5

6





# 10 DAY SOLID PHASE TEST DATA SHEET 3 - REF TOX - FW

SPECIES	Hyallela azteca	ACCLM.MORT.	#REF!
PROJECT MANAGER	Bill Gardiner	LABORATORY	Port Gamble, WA BATH 4
JOB NUMBER	0645-030-900	PROTOCOL	USEPA 2000 - EPA/600/R-

CLIENT	SFWMD	PROJECT	US Sugar	JOB NUMBER	0645-030-900
--------	-------	---------	----------	------------	--------------

## SURVIVAL & BEHAVIOR DATA

### OBSERVATIONS KEY

N = normal  
LOE = loss of equilibrium  
Q = quiescent  
SUR = surfacing  
DC = discoloration  
OB = on bottom  
J = jumper  
NB = no body

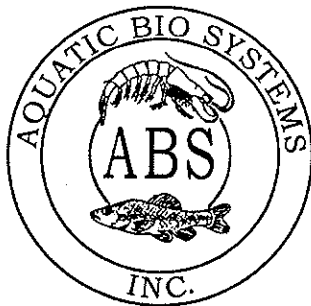
OBSERVATIONS KEY				DATE			DATE			DATE			DATE			
N = normal				8/28			8/29			8/30			8/31			
LOE= loss of equilibrium				TECHNICIAN			TECHNICIAN			TECHNICIAN			TECHNICIAN			
Q = quiescent				TS			J			J			J			
SUR= surfacing				NB = no body												
CLIENT/ NEWFIELDS ID	CONC.		REP	INITIAL NUMBER	#ALIVE : #DEAD : OBS			#ALIVE : #DEAD : OBS			#ALIVE : #DEAD : OBS			#ALIVE : #DEAD : OBS		
	value	units														
Ref.Tox.- Copper	250 µg/L		1	10	10	0	6S	6	4	5S	1	5	5N	1	0	1Q
			2		10	0	5S	7	3	2S	6	1	1S	2	4	2Q
			3		10	0	9S	7	3	5S	4	3	N	0	4	-
			4		10	0	3S	7	3	4S	3	4	N	1	2	1S
			5													
			6													
Ref.Tox.- Copper	500 µg/L		1		10	0	10S	6	4	5S	3	3	5Q	3	0	N
			2		10	0	10S	9	1	1S	6	3	6Q	3	3	N
			3		10	0	9S	8	2	1S	5	3	5Q	1	4	1Q
			4		10	0	10S	7	3	N	3	4	3Q	1	2	1Q
			5													
			6													
Ref.Tox.- Copper	1000 µg/L		1		10	0	10S	0	10	-						
			2		10	0	9S	0	10	-						
			3		10	0	9S	0	10	-						
			4		10	0	6S	0	10	-						
			5													
			6													



## ORGANISM RECEIPT LOG

Date: 8/26/08		Time: 1420		NewFields Batch No. ABS 6318	
Organism: Hyalicell			Source: Aquatic Bio Systems		
Address: On File				Invoice Attached <input checked="" type="radio"/> Yes <input type="radio"/> No	
Phone: —			Contact: —		
No. Ordered: 2000		No. Received: 2200		Source Batch: —	
Condition of Organisms: Good			Approximate Size or Age: 6-8 <del>5-7</del> day		
Shipper: FedEx			B of L (Tracking No.) 6732 07306318		
Condition of Container: Good			Received By: BH		
Confirmation of ID of Organism: Yes <input type="radio"/> No <input checked="" type="radio"/>				Technician (Initials):	
Notes:					
pH (Units)	Temp. (°C)	D.O. (mg/L)	Conductivity or Salinity (Include Units)	Technician (Initials)	
7.4	22.2	8.0	872	BH	
Notes:					

1300 Blue Spruce Drive, Suite C  
Fort Collins, Colorado 80524



Toll Free: 800/331-5916  
Tel: 970/484-5091 Fax: 970/484-2514

### ORGANISM HISTORY

DATE: 8/25/08

SPECIES: *Hyaella azteca*

AGE: 5-7 day

LIFE STAGE: Juvenile

HATCH DATE: Variable

BEGAN FEEDING: Immediately

FOOD: Flake slurry

### Water Chemistry Record:

	Current	Range
TEMPERATURE:	<u>24°C</u>	<u>22-25°C</u>
SALINITY/CONDUCTIVITY:	<u>--</u>	<u>--</u>
TOTAL HARDNESS (as CaCO <sub>3</sub> ):	<u>148 mg/l</u>	<u>86-204 mg/l</u>
TOTAL ALKALINITY (as CaCO <sub>3</sub> ):	<u>60 mg/l</u>	<u>50-155 mg/l</u>
pH:	<u>7.60</u>	<u>7.08-8.21</u>

### Comments:

  
\_\_\_\_\_  
Facility Supervisor

species	Endpoint	Treatment	mean	notrans
Hyaella	Dry Weight per Survivor	001E2-5	0.0798611111	.
Hyaella	Dry Weight per Survivor	2324 AB North	0.0882569444	.
Hyaella	Dry Weight per Survivor	3433AE-E	0.0835625	.
Hyaella	Dry Weight per Survivor	4403 DH Aged	0.0868784722	.
Hyaella	Dry Weight per Survivor	4403 DH Unaged	0.0928333333	.
Hyaella	Dry Weight per Survivor	4501 F Aged	0.0841041667	.
Hyaella	Dry Weight per Survivor	4501 F Unaged	0.0732916667	.
Hyaella	Dry Weight per Survivor	4501 JN West Aged	0.0807361111	.
Hyaella	Dry Weight per Survivor	4501 JN West Unaged	0.0852847222	.
Hyaella	Dry Weight per Survivor	4502 OP South Aged	0.0844756944	.
Hyaella	Dry Weight per Survivor	4502 OP South Unaged	0.081	.
Hyaella	Dry Weight per Survivor	4509CD-S Aged	0.0993784722	.
Hyaella	Dry Weight per Survivor	4509CD-S Unaged	0.0892118056	.
Hyaella	Dry Weight per Survivor	4617 MN North Aged	0.0972152778	.
Hyaella	Dry Weight per Survivor	4617 MN North Un-aged	0.0835694444	.
Hyaella	Dry Weight per Survivor	4621 AE East	0.0942118056	.
Hyaella	Dry Weight per Survivor	Control	0.0607916667	.
Hyaella	Percent Survival	001E2-5	1.4016612724	96.25
Hyaella	Percent Survival	2324 AB North	1.2407859952	91.25
Hyaella	Percent Survival	3433AE-E	1.1844076437	90.00
Hyaella	Percent Survival	4403 DH Aged	1.3212236338	93.75
Hyaella	Percent Survival	4403 DH Unaged	1.3452829209	95.00
Hyaella	Percent Survival	4501 F Aged	1.216726708	90.00
Hyaella	Percent Survival	4501 F Unaged	1.4339803367	96.25
Hyaella	Percent Survival	4501 JN West Aged	1.4016612724	96.25
Hyaella	Percent Survival	4501 JN West Unaged	1.3776019852	95.00
Hyaella	Percent Survival	4502 OP South Aged	1.3212236338	93.75
Hyaella	Percent Survival	4502 OP South Unaged	1.4016612724	96.25
Hyaella	Percent Survival	4509CD-S Aged	1.216726708	90.00
Hyaella	Percent Survival	4509CD-S Unaged	1.2648452823	92.50
Hyaella	Percent Survival	4617 MN North Aged	1.1039700051	87.50
Hyaella	Percent Survival	4617 MN North Un-aged	1.4016612724	96.25
Hyaella	Percent Survival	4621 AE East	1.3776019852	95.00
Hyaella	Percent Survival	Control	1.4016612724	96.25

SFWMD US Sugar Statistical Comparison  
Results of Assumption Checks

09:30 Wednesday, September 24, 2008 2

species	Endpoint	Prob Normal	Prob Homogeneous
Hyaella	Dry Weight per Survivor	.000000005	0.11505
Hyaella	Percent Survival	.000000125	0.52408

----- species=Hyaella Endpoint=Dry Weight per Survivor -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	17	001E2-5 2324 AB North 3433AE-E 4403 DH Aged 4403 DH Unaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509CD-S Aged 4509CD-S Unaged 4617 MN North Aged 4617 MN North Un-aged 4621 AE East Control

Number of Observations Read	136
Number of Observations Used	136

----- species=Hyalella Endpoint=Dry Weight per Survivor -----

The GLM Procedure

Dependent Variable: Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	16	0.01058424	0.00066151	2.41	0.0037
Error	119	0.03270227	0.00027481		
Corrected Total	135	0.04328651			

R-Square	Coeff Var	Root MSE	Result Mean
0.244516	19.50733	0.016577	0.084980

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	16	0.01058424	0.00066151	2.41	0.0037

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	16	0.01058424	0.00066151	2.41	0.0037

----- species=Hyaella Endpoint=Dry Weight per Survivor -----

The GLM Procedure

Tukey's Studentized Range (HSD) Test for Result

NOTE: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	119
Error Mean Square	0.000275
Critical Value of Studentized Range	4.99914
Minimum Significant Difference	0.0293

Means with the same letter are not significantly different.

Tukey Grouping		Mean	N	Treatment
	A	0.099378	8	4509CD-S Aged
	A			
	A	0.097215	8	4617 MN North Aged
	A			
	A	0.094212	8	4621 AE East
	A			
	A	0.092833	8	4403 DH Unaged
	A			
B	A	0.089212	8	4509CD-S Unaged
B	A			
B	A	0.088257	8	2324 AB North
B	A			
B	A	0.086878	8	4403 DH Aged
B	A			
B	A	0.085285	8	4501 JN West Unaged
B	A			
B	A	0.084476	8	4502 OP South Aged
B	A			
B	A	0.084104	8	4501 F Aged
B	A			
B	A	0.083569	8	4617 MN North Un-aged
B	A			
B	A	0.083562	8	3433AE-E
B	A			
B	A	0.081000	8	4502 OP South Unaged
B	A			
B	A	0.080736	8	4501 JN West Aged
B	A			
B	A	0.079861	8	001E2-5
B	A			
B	A	0.073292	8	4501 F Unaged
B				
B		0.060792	8	Control



----- species=Hyaella Endpoint=Percent Survival -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	17	001E2-5 2324 AB North 3433AE-E 4403 DH Aged 4403 DH Unaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509CD-S Aged 4509CD-S Unaged 4617 MN North Aged 4617 MN North Un-aged 4621 AE East Control

Number of Observations Read	136
Number of Observations Used	136

----- species=Hyaella Endpoint=Percent Survival -----

The GLM Procedure

Dependent Variable: Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	16	1.19416424	0.07463527	1.11	0.3507
Error	119	7.97724681	0.06703569		
Corrected Total	135	9.17141106			

R-Square	Coeff Var	Root MSE	Result Mean
0.130205	19.63849	0.258913	1.318393

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	16	1.19416424	0.07463527	1.11	0.3507

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	16	1.19416424	0.07463527	1.11	0.3507

----- species=Hyalabella Endpoint=Percent Survival -----

The GLM Procedure

Tukey's Studentized Range (HSD) Test for Result

NOTE: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	119
Error Mean Square	0.067036
Critical Value of Studentized Range	4.99914
Minimum Significant Difference	0.4576

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	Treatment
A	1.4340	8	4501 F Unaged
A			
A	1.4017	8	4502 OP South Unaged
A			
A	1.4017	8	4501 JN West Aged
A			
A	1.4017	8	001E2-5
A			
A	1.4017	8	Control
A			
A	1.4017	8	4617 MN North Un-aged
A			
A	1.3776	8	4621 AE East
A			
A	1.3776	8	4501 JN West Unaged
A			
A	1.3453	8	4403 DH Unaged
A			
A	1.3212	8	4502 OP South Aged
A			
A	1.3212	8	4403 DH Aged
A			
A	1.2648	8	4509CD-S Unaged
A			
A	1.2408	8	2324 AB North
A			
A	1.2167	8	4509CD-S Aged
A			
A	1.2167	8	4501 F Aged
A			
A	1.1844	8	3433AE-E
A			
A	1.1040	8	4617 MN North Aged

----- species=Hyaella Endpoint=Dry Weight per Survivor -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	17	001E2-5 2324 AB North 3433AE-E 4403 DH Aged 4403 DH Unaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509CD-S Aged 4509CD-S Unaged 4617 MN North Aged 4617 MN North Un-aged 4621 AE East Control

Number of Observations Read	136
Number of Observations Used	136

----- species=Hyalella Endpoint=Dry Weight per Survivor -----

The GLM Procedure

Dependent Variable: rank      Rank for Variable Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	16	51490.9375	3218.1836	2.42	0.0034
Error	119	158093.0625	1328.5131		
Corrected Total	135	209584.0000			

R-Square	Coeff Var	Root MSE	rank Mean
0.245682	53.20989	36.44877	68.50000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	16	51490.93750	3218.18359	2.42	0.0034

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	16	51490.93750	3218.18359	2.42	0.0034

----- species=Hyaella Endpoint=Dry Weight per Survivor -----

The GLM Procedure

Tukey's Studentized Range (HSD) Test for rank

NOTE: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	119
Error Mean Square	1328.513
Critical Value of Studentized Range	4.99914
Minimum Significant Difference	64.422

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	Treatment
A	108.81	8	4509CD-S Aged
A			
B A	87.06	8	4621 AE East
B A			
B A C	84.81	8	4509CD-S Unaged
B A C			
B A C	80.38	8	2324 AB North
B A C			
B A C	79.00	8	4403 DH Aged
B A C			
B A C	78.69	8	4617 MN North Aged
B A C			
B A C	76.06	8	4403 DH Unaged
B A C			
B A C	71.06	8	4502 OP South Aged
B A C			
B A C	69.44	8	4501 JN West Unaged
B A C			
B A C	68.25	8	4501 F Aged
B A C			
B A C	68.06	8	3433AE-E
B A C			
B A C	67.38	8	4617 MN North Un-aged
B A C			
B A C	59.88	8	4501 JN West Aged
B A C			
B A C	56.25	8	4502 OP South Unaged
B A C			
B A C	52.06	8	001E2-5
B A C			
B C	36.06	8	4501 F Unaged
B C			
C	21.25	8	Control

----- species=Hyalabella Endpoint=Percent Survival -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	17	001E2-5 2324 AB North 3433AE-E 4403 DH Aged 4403 DH Unaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509CD-S Aged 4509CD-S Unaged 4617 MN North Aged 4617 MN North Un-aged 4621 AE East Control

Number of Observations Read	136
Number of Observations Used	136

----- species=Hyaella Endpoint=Percent Survival -----

The GLM Procedure

Dependent Variable: rank Rank for Variable Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	16	23784.3750	1486.5234	1.19	0.2897
Error	119	149258.6250	1254.2742		
Corrected Total	135	173043.0000			

R-Square	Coeff Var	Root MSE	rank Mean
0.137448	51.70180	35.41573	68.50000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	16	23784.37500	1486.52344	1.19	0.2897

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	16	23784.37500	1486.52344	1.19	0.2897



----- species=Hyalella Endpoint=Percent Survival -----

The GLM Procedure

Tukey's Studentized Range (HSD) Test for rank

NOTE: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	119
Error Mean Square	1254.274
Critical Value of Studentized Range	4.99914
Minimum Significant Difference	62.596

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	Treatment
A	83.63	8	4501 F Unaged
A			
A	80.56	8	4501 JN West Aged
A			
A	80.56	8	001E2-5
A			
A	80.56	8	Control
A			
A	80.56	8	4502 OP South Unaged
A			
A	80.56	8	4617 MN North Un-aged
A			
A	76.31	8	4621 AE East
A			
A	76.31	8	4501 JN West Unaged
A			
A	73.25	8	4403 DH Unaged
A			
A	69.00	8	4502 OP South Aged
A			
A	69.00	8	4403 DH Aged
A			
A	61.69	8	4509CD-S Unaged
A			
A	57.44	8	2324 AB North
A			
A	53.19	8	4501 F Aged
A			
A	53.19	8	4509CD-S Aged
A			
A	50.13	8	3433AE-E
A			
A	38.56	8	4617 MN North Aged

species	Endpoint	Treatment	mean	notrans
Hyaella	Dry Weight per Survivor	001E2-5	0.0798611111	.
Hyaella	Dry Weight per Survivor	2324 AB North	0.0882569444	.
Hyaella	Dry Weight per Survivor	3433AE-E	0.0835625	.
Hyaella	Dry Weight per Survivor	4403 DH Aged	0.0868784722	.
Hyaella	Dry Weight per Survivor	4403 DH Unaged	0.0928333333	.
Hyaella	Dry Weight per Survivor	4501 F Aged	0.0841041667	.
Hyaella	Dry Weight per Survivor	4501 F Unaged	0.0732916667	.
Hyaella	Dry Weight per Survivor	4501 JN West Aged	0.0807361111	.
Hyaella	Dry Weight per Survivor	4501 JN West Unaged	0.0852847222	.
Hyaella	Dry Weight per Survivor	4502 OP South Aged	0.0844756944	.
Hyaella	Dry Weight per Survivor	4502 OP South Unaged	0.081	.
Hyaella	Dry Weight per Survivor	4509CD-S Aged	0.0993784722	.
Hyaella	Dry Weight per Survivor	4509CD-S Unaged	0.0892118056	.
Hyaella	Dry Weight per Survivor	4617 MN North Aged	0.0972152778	.
Hyaella	Dry Weight per Survivor	4617 MN North Un-aged	0.0835694444	.
Hyaella	Dry Weight per Survivor	4621 AE East	0.0942118056	.
Hyaella	Dry Weight per Survivor	Port Gamble Spring C Control	0.059375	.
Hyaella	Percent Survival	001E2-5	1.4016612724	96.25
Hyaella	Percent Survival	2324 AB North	1.2407859952	91.25
Hyaella	Percent Survival	3433AE-E	1.1844076437	90.00
Hyaella	Percent Survival	4403 DH Aged	1.3212236338	93.75
Hyaella	Percent Survival	4403 DH Unaged	1.3452829209	95.00
Hyaella	Percent Survival	4501 F Aged	1.216726708	90.00
Hyaella	Percent Survival	4501 F Unaged	1.4339803367	96.25
Hyaella	Percent Survival	4501 JN West Aged	1.4016612724	96.25
Hyaella	Percent Survival	4501 JN West Unaged	1.3776019852	95.00
Hyaella	Percent Survival	4502 OP South Aged	1.3212236338	93.75
Hyaella	Percent Survival	4502 OP South Unaged	1.4016612724	96.25
Hyaella	Percent Survival	4509CD-S Aged	1.216726708	90.00
Hyaella	Percent Survival	4509CD-S Unaged	1.2648452823	92.50
Hyaella	Percent Survival	4617 MN North Aged	1.1039700051	87.50
Hyaella	Percent Survival	4617 MN North Un-aged	1.4016612724	96.25
Hyaella	Percent Survival	4621 AE East	1.3776019852	95.00
Hyaella	Percent Survival	Port Gamble Spring C Control	1.2648452823	92.50

SFWMD US Sugar Statistical Comparison  
Results of Assumption Checks

09:30 Wednesday, September 24, 2008 16

species	Endpoint	Prob Normal	Prob Homogeneous
Hyaella	Dry Weight per Survivor	.000000008	0.03866
Hyaella	Percent Survival	.000000400	0.56571

----- species=Hyaella Endpoint=Dry Weight per Survivor -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	17	001E2-5 2324 AB North 3433AE-E 4403 DH Aged 4403 DH Unaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509CD-S Aged 4509CD-S Unaged 4617 MN North Aged 4617 MN North Un-aged 4621 AE East Port Gamble Spring C Control

Number of Observations Read	136
Number of Observations Used	136

----- species=Hyalella Endpoint=Dry Weight per Survivor -----

The GLM Procedure

Dependent Variable: Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	16	0.01114762	0.00069673	2.83	0.0007
Error	119	0.02934319	0.00024658		
Corrected Total	135	0.04049082			

R-Square	Coeff Var	Root MSE	Result Mean
0.275312	18.49646	0.015703	0.084897

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	16	0.01114762	0.00069673	2.83	0.0007

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	16	0.01114762	0.00069673	2.83	0.0007

----- species=Hyalella Endpoint=Dry Weight per Survivor -----

The GLM Procedure

Tukey's Studentized Range (HSD) Test for Result

NOTE: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	119
Error Mean Square	0.000247
Critical Value of Studentized Range	4.99914
Minimum Significant Difference	0.0278

Means with the same letter are not significantly different.

Tukey Grouping		Mean	N	Treatment
	A	0.099378	8	4509CD-S Aged
	A			
	A	0.097215	8	4617 MN North Aged
	A			
	A	0.094212	8	4621 AE East
	A			
	A	0.092833	8	4403 DH Unaged
	A			
	A	0.089212	8	4509CD-S Unaged
	A			
	A	0.088257	8	2324 AB North
	A			
B	A	0.086878	8	4403 DH Aged
B	A			
B	A	0.085285	8	4501 JN West Unaged
B	A			
B	A	0.084476	8	4502 OP South Aged
B	A			
B	A	0.084104	8	4501 F Aged
B	A			
B	A	0.083569	8	4617 MN North Un-aged
B	A			
B	A	0.083562	8	3433AE-E
B	A			
B	A	0.081000	8	4502 OP South Unaged
B	A			
B	A	0.080736	8	4501 JN West Aged
B	A			
B	A	0.079861	8	001E2-5
B	A			
B	A	0.073292	8	4501 F Unaged
B				
B		0.059375	8	Port Gamble Spring C Control

----- species=Hyaella Endpoint=Percent Survival -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	17	001E2-5 2324 AB North 3433AE-E 4403 DH Aged 4403 DH Unaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509CD-S Aged 4509CD-S Unaged 4617 MN North Aged 4617 MN North Un-aged 4621 AE East Port Gamble Spring C Control

Number of Observations Read	136
Number of Observations Used	136

----- species=Hyaella Endpoint=Percent Survival -----

The GLM Procedure

Dependent Variable: Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	16	1.15282579	0.07205161	1.06	0.3991
Error	119	8.07477067	0.06785522		
Corrected Total	135	9.22759646			

R-Square	Coeff Var	Root MSE	Result Mean
0.124932	19.87952	0.260490	1.310345

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	16	1.15282579	0.07205161	1.06	0.3991

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	16	1.15282579	0.07205161	1.06	0.3991



----- species=Hyalella Endpoint=Percent Survival -----

The GLM Procedure

Tukey's Studentized Range (HSD) Test for Result

NOTE: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	119
Error Mean Square	0.067855
Critical Value of Studentized Range	4.99914
Minimum Significant Difference	0.4604

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	Treatment
A	1.4340	8	4501 F Unaged
A			
A	1.4017	8	4502 OP South Unaged
A			
A	1.4017	8	4501 JN West Aged
A			
A	1.4017	8	001E2-5
A			
A	1.4017	8	4617 MN North Un-aged
A			
A	1.3776	8	4621 AE East
A			
A	1.3776	8	4501 JN West Unaged
A			
A	1.3453	8	4403 DH Unaged
A			
A	1.3212	8	4502 OP South Aged
A			
A	1.3212	8	4403 DH Aged
A			
A	1.2648	8	4509CD-S Unaged
A			
A	1.2648	8	Port Gamble Spring C Control
A			
A	1.2408	8	2324 AB North
A			
A	1.2167	8	4509CD-S Aged
A			
A	1.2167	8	4501 F Aged
A			
A	1.1844	8	3433AE-E
A			
A	1.1040	8	4617 MN North Aged

----- species=Hyaella Endpoint=Dry Weight per Survivor -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	17	001E2-5 2324 AB North 3433AE-E 4403 DH Aged 4403 DH Unaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509CD-S Aged 4509CD-S Unaged 4617 MN North Aged 4617 MN North Un-aged 4621 AE East Port Gamble Spring C Control

Number of Observations Read	136
Number of Observations Used	136

----- species=Hyalella Endpoint=Dry Weight per Survivor -----

The GLM Procedure

Dependent Variable: rank Rank for Variable Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	16	63725.1250	3982.8203	3.25	0.0001
Error	119	145858.3750	1225.7006		
Corrected Total	135	209583.5000			

R-Square	Coeff Var	Root MSE	rank Mean
0.304056	51.10950	35.01001	68.50000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	16	63725.12500	3982.82031	3.25	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	16	63725.12500	3982.82031	3.25	0.0001

----- species=Hyalella Endpoint=Dry Weight per Survivor -----

The GLM Procedure

Tukey's Studentized Range (HSD) Test for rank

NOTE: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	119
Error Mean Square	1225.701
Critical Value of Studentized Range	4.99914
Minimum Significant Difference	61.879

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	Treatment
A	109.69	8	4509CD-S Aged
A			
B A	87.94	8	4621 AE East
B A			
B A	85.69	8	4509CD-S Unaged
B A			
B A	81.38	8	2324 AB North
B A			
B A	79.88	8	4403 DH Aged
B A			
B A	79.44	8	4617 MN North Aged
B A			
B A	76.94	8	4403 DH Unaged
B A			
B A	71.94	8	4502 OP South Aged
B A			
B A	70.44	8	4501 JN West Unaged
B A			
B A C	69.19	8	4501 F Aged
B A C			
B A C	68.69	8	3433AE-E
B A C			
B A C	68.38	8	4617 MN North Un-aged
B A C			
B A C	60.50	8	4501 JN West Aged
B A C			
B A C	57.13	8	4502 OP South Unaged
B A C			
B A C	52.44	8	001E2-5
B C			
B C	36.56	8	4501 F Unaged
C			
C	8.31	8	Port Gamble Spring C Control

----- species=Hyaella Endpoint=Percent Survival -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	17	001E2-5 2324 AB North 3433AE-E 4403 DH Aged 4403 DH Unaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509CD-S Aged 4509CD-S Unaged 4617 MN North Aged 4617 MN North Un-aged 4621 AE East Port Gamble Spring C Control

Number of Observations Read	136
Number of Observations Used	136

----- species=Hyaella Endpoint=Percent Survival -----

The GLM Procedure

Dependent Variable: rank Rank for Variable Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	16	22951.7500	1434.4844	1.13	0.3395
Error	119	151628.2500	1274.1870		
Corrected Total	135	174580.0000			

R-Square	Coeff Var	Root MSE	rank Mean
0.131468	52.11059	35.69576	68.50000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	16	22951.75000	1434.48438	1.13	0.3395

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	16	22951.75000	1434.48438	1.13	0.3395

----- species=Hyalella Endpoint=Percent Survival -----

The GLM Procedure

Tukey's Studentized Range (HSD) Test for rank

NOTE: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	119
Error Mean Square	1274.187
Critical Value of Studentized Range	4.99914
Minimum Significant Difference	63.091

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	Treatment
A	84.63	8	4501 F Unaged
A			
A	81.75	8	4501 JN West Aged
A			
A	81.75	8	001E2-5
A			
A	81.75	8	4502 OP South Unaged
A			
A	81.75	8	4617 MN North Un-aged
A			
A	77.38	8	4621 AE East
A			
A	77.38	8	4501 JN West Unaged
A			
A	74.50	8	4403 DH Unaged
A			
A	70.13	8	4502 OP South Aged
A			
A	70.13	8	4403 DH Aged
A			
A	62.88	8	4509CD-S Unaged
A			
A	62.88	8	Port Gamble Spring C Control
A			
A	58.50	8	2324 AB North
A			
A	54.13	8	4501 F Aged
A			
A	54.13	8	4509CD-S Aged
A			
A	51.25	8	3433AE-E
A			
A	39.63	8	4617 MN North Aged



## Appendix B

### *Chironomus dilutus* 10-day Test

Sample	Replicate	Initial Number	# Larvae Remaining	Mean Survival Larvae	# of Pupae	Total # of Survivors	Mean Survival TOTAL	SD	# of pupae exuvae	# of Adult Flys
Control	1	10	10	93.8%		10	93.8%	7.44		
	2	10	10			10				
	3	10	10			10				
	4	10	10			10				
	5	10	9			9				
	6	10	9			9				
	7	10	8			8				
	8	10	9			9				
Port Gamble Spring "C" Control	1	10	10	93.8%		10	96.3%	5.18		
	2	10	10			10				
	3	10	10			10				
	4	10	9		1	10				
	5	10	9			9				
	6	10	8		1	9				
	7	10	10			10				
	8	10	9			9				
4617 MN North Aged	1	10	10	90.0%		10	90.0%	7.56		
	2	10	8			8				
	3	10	10			10				
	4	10	8			8				
	5	10	9			9				
	6	10	9			9				
	7	10	9			9				
	8	10	9			9				

Sample	Replicate	Initial Number	# Larvae Remaining	Mean Survival Larvae	# of Pupae	Total # of Survivors	Mean Survival TOTAL	SD	# of pupae exuvae	# of Adult Flys
4617 MN North Unaged	1	10	10	93.8%		10	93.8%	14.08		
	2	10	9			9				
	3	10	6			6				
	4	10	10			10				
	5	10	10			10				
	6	10	10			10				
	7	10	10			10				
	8	10	10			10				
4501 JN West Aged	1	10	6	76.5%		6	76.5%	32.97		
	2	10	10			10				
	3	10	5			5				
	4	10	9			9				
	5	10	8			8			1	
	6	10	5			5				
	7	15	14			14				
	8	10	8			8				
4501 JN West Unaged	1	10	5	70.0%		5	70.0%	17.73		
	2	10	9			9				
	3	10	7			7				
	4	10	5			5				
	5	10	8			8				
	6	10	9			9				
	7	10	5			5				
	8	10	8			8				

Sample	Replicate	Initial Number	# Larvae Remaining	Mean Survival Larvae	# of Pupae	Total # of Survivors	Mean Survival TOTAL	SD	# of pupae exuvae	# of Adult Flys
4502 OP South Aged	1	10	9	95.7%		9	95.7%	33.38		
	2	20	19			19				
	3	11	11			11				
	4	10	10			10				
	5	10	9			9				
	6	10	10			10				
	7	10	9			9				
	8	11	11			11				
4502 OP South Unaged	1	10	10	92.5%		10	93.8%	10.61		
	2	10	10			10				
	3	10	9			9				
	4	10	9		1	10				
	5	10	10			10				
	6	10	10			10				
	7	10	9			9				
	8	10	7			7				
4501 F Unaged	1	10	7	72.5%		7	73.8%	11.88		
	2	10	6			6				
	3	10	7			7				
	4	10	8		1	9				
	5	10	7			7				
	6	10	8			8				
	7	10	9			9				
	8	10	6			6			1	

Sample	Replicate	Initial Number	# Larvae Remaining	Mean Survival Larvae	# of Pupae	Total # of Survivors	Mean Survival TOTAL	SD	# of pupae exuvae	# of Adult Flys
4501 F Aged	1	10	9	73.8%		9	73.8%	20.66		
	2	10	5			5				
	3	10	5			5				
	4	10	8			8				
	5	10	9			9				
	6	10	10			10				
	7	10	8			8				
	8	10	5			5				
4621 AE East	1	10	10	100.0%		10	100.0%	35.03		
	2	10	10			10				
	3	10	10			10				
	4	11	11			11				
	5	10	10			10				
	6	20	20			20				
	7	10	10			10				
	8	10	10			10				
4403 DH UNaged	1	10	9	96.3%		9	97.5%	4.63		
	2	10	10			10				
	3	10	10			10				
	4	10	9		1	10				
	5	10	10			10				
	6	10	9			9				
	7	10	10			10				
	8	10	10			10				

Sample	Replicate	Initial Number	# Larvae Remaining	Mean Survival Larvae	# of Pupae	Total # of Survivors	Mean Survival TOTAL	SD	# of pupae exuvae	# of Adult Flys
4403 DH Aged	1	10	10	91.3%		10	91.3%	8.35		
	2	10	9			9				
	3	10	10			10				
	4	10	10			10				
	5	10	9			9				
	6	10	9			9				
	7	10	8			8				
	8	10	8			8			1	
001E2-5	1	10	10	93.8%		10	95.0%	5.35		
	2	10	9			9				
	3	10	9		1	10				
	4	10	10			10				
	5	10	10			10				
	6	10	9			9				
	7	10	9			9				
	8	10	9			9				
4509 CD-S Aged	1	10	8	92.5%		8	93.8%	9.16		
	2	10	9			9				
	3	10	10			10				
	4	10	10			10				
	5	10	9		1	10				
	6	10	10			10				
	7	10	8			8				
	8	10	10			10				

Sample	Replicate	Initial Number	# Larvae Remaining	Mean Survival Larvae	# of Pupae	Total # of Survivors	Mean Survival TOTAL	SD	# of pupae exuvae	# of Adult Flys
4509 CD-S Unaged	1	10	10	96.7%		10	96.7%	29.00		
	2	10	10			10				
	3	10	10			10				
	4	20	18			18				
	5	10	10			10				
	6	10	10			10				
	7	10	9			9				
	8	10	10			10				
3433 AE-E	1	10	10	96.3%		10	97.6%	9.26		
	2	10	9			9				
	3	10	9		1	10				
	4	12	12			12				
	5	10	10			10				
	6	10	10			10				
	7	10	10			10				
	8	10	9			9			1	
Sand + Peat Control	1	10	8	91.6%	1	9	94.0%	12.82		
	2	12	12			12				
	3	10	8			8				
	4	10	9		1	10				
	5	10	9			9				
	6	10	10			10				
	7	10	9			9				
	8	11	11			11				.



Sample	Replicate	Tare Weight (mg)	Total Dry Weight	Total Ashed Weight	AFDW	Dry Weight per Surviving Larvae	Dry Weight per Initial Number	AFDW per Surviving Larvae	AFDW per Initial Number
Control	1	181.15	199.45	186.69	12.76	1.830	1.830	1.276	1.276
	2	225.72	260.15	239.97	20.18	3.443	3.443	2.018	2.018
	3	207.85	232.43	218.22	14.21	2.458	2.458	1.421	1.421
	4	183.63	210.06	194.87	15.19	2.643	2.643	1.519	1.519
	5	198.7	220.31	205.89	14.42	2.401	2.161	1.602	1.442
	6	217.2	242.91	226.96	15.95	2.857	2.571	1.772	1.595
	7	177.63	204.54	188.43	16.11	3.364	2.691	2.014	1.611
	8	157.17	181.66	166.16	15.5	2.721	2.449	1.722	1.550
Port Gamble Spring "C" Control	1	173.66	205.87	186.64	19.23	3.221	3.221	1.923	1.923
	2	175.66	207.25	188.33	18.92	3.159	3.159	1.892	1.892
	3	170.71	202.33	182.92	19.41	3.162	3.162	1.941	1.941
	4	183.28	209.07	192.2	16.87	2.866	2.579	1.874	1.687
	5	195.92	228.82	206.46	22.36	3.656	3.290	2.484	2.236
	6	204.13	222.08	207.33	14.75	2.244	1.795	1.844	1.475
	7	223.97	260.5	240.37	20.13	3.653	3.653	2.013	2.013
	8	179.81	200.62	184.06	16.56	2.312	2.081	1.840	1.656
4617 MN North Aged	1	195.33	216.08	198.97	17.11	2.075	2.075	1.711	1.711
	2	185.32	203.07	189.09	13.98	2.219	1.775	1.748	1.398
	3	189.04	211.91	193.22	18.69	2.287	2.287	1.869	1.869
	4	207.53	222.55	210.08	12.47	1.878	1.502	1.559	1.247
	5	192.35	210.11	195.06	15.05	1.973	1.776	1.672	1.505
	6	207.47	224.03	209.67	14.36	1.840	1.656	1.596	1.436
	7	185.38	201.48	188.3	13.18	1.789	1.610	1.464	1.318
	8	184.67	196.46	187.1	9.36	1.310	1.179	1.040	0.936

Sample	Replicate	Tare Weight (mg)	Total Dry Weight	Total Ashed Weight	AFDW	Dry Weight per Surviving Larvae	Dry Weight per Initial Number	AFDW per Surviving Larvae	AFDW per Initial Number
4617 MN North Unaged	1	177.04	195.43	180.01	15.42	1.839	1.839	1.542	1.542
	2	149.02	163.65	151.32	12.33	1.626	1.463	1.370	1.233
	3	164.26	175.79	166.15	9.64	1.922	1.153	1.607	0.964
	4	184.81	201.17	187.49	13.68	1.636	1.636	1.368	1.368
	5	151	165.47	153	12.47	1.447	1.447	1.247	1.247
	6	218.17	234.15	221.48	12.67	1.598	1.598	1.267	1.267
	7	175.4	198.22	178.75	19.47	2.282	2.282	1.947	1.947
	8	212.08	227.91	214.64	13.27	1.583	1.583	1.327	1.327
4501 JN West Aged	1	204.13	211.79	209.24	2.55	1.277	0.766	0.425	0.255
	2	215.81	224.16	220.56	3.6	0.835	0.835	0.360	0.360
	3	203.73	211.22	207.97	3.25	1.498	0.749	0.650	0.325
	4	216.13	224.19	220.68	3.51	0.896	0.806	0.390	0.351
	5	191.23	198.45	194.71	3.74	0.903	0.722	0.467	0.374
	6	195.53	202.35	199.7	2.65	1.364	0.682	0.530	0.265
	7	184.51	192.6	188.14	4.46	0.578	0.809	0.319	0.446
	8	184.6	191.62	188.45	3.17	0.878	0.702	0.396	0.317
4501 JN West Unaged	1	209.13	215.36	213.02	2.34	1.246	0.623	0.468	0.234
	2	198.31	203.77	200.96	2.81	0.607	0.546	0.312	0.281
	3	186.96	191.51	189.61	1.9	0.650	0.455	0.271	0.190
	4	184.75	188.93	187.32	1.61	0.836	0.418	0.322	0.161
	5	193.48	197.77	194.99	2.78	0.536	0.429	0.348	0.278
	6	220.95	225.87	223.55	2.32	0.547	0.492	0.258	0.232
	7	198.14	202.41	200.56	1.85	0.854	0.427	0.370	0.185
	8	198.53	202.11	200.57	1.54	0.448	0.358	0.193	0.154

Sample	Replicate	Tare Weight (mg)	Total Dry Weight	Total Ashed Weight	AFDW	Dry Weight per Surviving Larvae	Dry Weight per Initial Number	AFDW per Surviving Larvae	AFDW per Initial Number
4502 OP South Aged	1	210.15	235.79	217.04	18.75	2.849	2.564	2.083	1.875
	2	207.98	238.74	215.26	23.48	1.619	3.076	1.236	2.348
	3	175.38	195.92	179.99	15.93	1.867	2.054	1.448	1.593
	4	227.54	252.47	233.61	18.86	2.493	2.493	1.886	1.886
	5	172.86	191.23	176.62	14.61	2.041	1.837	1.623	1.461
	6	224.13	245.7	228.79	16.91	2.157	2.157	1.691	1.691
	7	204.44	221.8	208.85	12.95	1.929	1.736	1.439	1.295
	8	209.93	235.83	215.67	20.16	2.355	2.590	1.833	2.016
4502 OP South Unaged	1	220.09	238.42	224.49	13.93	1.833	1.833	1.393	1.393
	2	158.74	179.13	163.26	15.87	2.039	2.039	1.587	1.587
	3	174.95	193.12	178.99	14.13	2.019	1.817	1.570	1.413
	4	208.04	230.85	213.35	17.5	2.534	2.281	1.944	1.750
	5	175.81	195.92	179.81	16.11	2.011	2.011	1.611	1.611
	6	190.08	216.64	195.63	21.01	2.656	2.656	2.101	2.101
	7	205.22	224.46	209.12	15.34	2.138	1.924	1.704	1.534
	8	195.83	211.45	198.87	12.58	2.231	1.562	1.797	1.258
4501 F Unaged	1	177.55	182.3	179.47	2.83	0.679	0.475	0.404	0.283
	2	174.82	177.69	176.14	1.55	0.478	0.287	0.258	0.155
	3	171.63	176.68	173.54	3.14	0.721	0.505	0.449	0.314
	4	199.27	204.75	200.98	3.77	0.685	0.548	0.471	0.377
	5	201.91	205.15	203.18	1.97	0.463	0.324	0.281	0.197
	6	213.75	219.98	215.45	4.53	0.779	0.623	0.566	0.453
	7	198.61	202.45	199.89	2.56	0.427	0.384	0.284	0.256
	8	210.08	214.38	211.87	2.51	0.717	0.430	0.418	0.251

Sample	Replicate	Tare Weight (mg)	Total Dry Weight	Total Ashed Weight	AFDW	Dry Weight per Surviving Larvae	Dry Weight per Initial Number	AFDW per Surviving Larvae	AFDW per Initial Number
4501 F Aged	1	199.08	203.27	200.31	2.96	0.466	0.419	0.329	0.296
	2	202.5	207.7	204.59	3.11	1.040	0.520	0.622	0.311
	3	192.4	197.38	195.03	2.35	0.996	0.498	0.470	0.235
	4	221.17	225.74	223.46	2.28	0.571	0.457	0.285	0.228
	5	171.47	173.9	172.08	1.82	0.270	0.243	0.202	0.182
	6	190.56	195.77	191.47	4.3	0.521	0.521	0.430	0.430
	7	206	210.34	206.92	3.42	0.543	0.434	0.428	0.342
	8	170.7	175.09	171.47	3.62	0.878	0.439	0.724	0.362
4621 AE East	1	226.01	243.31	228.47	14.84	1.730	1.730	1.484	1.484
	2	185.33	202.12	187.79	14.33	1.679	1.679	1.433	1.433
	3	172.02	185.01	173.62	11.39	1.299	1.299	1.139	1.139
	4	210.04	230.13	212.36	17.77	1.826	2.009	1.615	1.777
	5	161.63	177.78	163.63	14.15	1.615	1.615	1.415	1.415
	6	151.74	174.82	154.64	20.18	1.154	2.308	1.009	2.018
	7	161.75	175.43	163.9	11.53	1.368	1.368	1.153	1.153
	8	169.19	182.74	171.31	11.43	1.355	1.355	1.143	1.143
4403 DH UNaged	1	172.8	192.31	175.65	16.66	2.168	1.951	1.851	1.666
	2	175.81	190.77	178.31	12.46	1.496	1.496	1.246	1.246
	3	187.46	204.99	189.73	15.26	1.753	1.753	1.526	1.526
	4	189.91	204.38	191.91	12.47	1.608	1.447	1.386	1.247
	5	199.16	216.98	202.16	14.82	1.782	1.782	1.482	1.482
	6	231.06	245.29	232.92	12.37	1.581	1.423	1.374	1.237
	7	200.4	216.04	202.49	13.55	1.564	1.564	1.355	1.355
	8	208.39	223.35	210.86	12.49	1.496	1.496	1.249	1.249

Sample	Replicate	Tare Weight (mg)	Total Dry Weight	Total Ashed Weight	AFDW	Dry Weight per Surviving Larvae	Dry Weight per Initial Number	AFDW per Surviving Larvae	AFDW per Initial Number
4403 DH Aged	1	196.08	215.2	198.7	16.5	1.912	1.912	1.650	1.650
	2	194.52	213.38	196.82	16.56	2.096	1.886	1.840	1.656
	3	194.22	209.17	196.47	12.7	1.495	1.495	1.270	1.270
	4	159.79	175.13	162.14	12.99	1.534	1.534	1.299	1.299
	5	178.53	195.45	180.64	14.81	1.880	1.692	1.646	1.481
	6	171.85	189.46	174.92	14.54	1.957	1.761	1.616	1.454
	7	189.92	203.15	192.11	11.04	1.654	1.323	1.380	1.104
	8	185.61	202.66	188.21	14.45	2.131	1.705	1.806	1.445
001E2-5	1	190.92	207.13	193.65	13.48	1.621	1.621	1.348	1.348
	2	194.08	208.55	196.24	12.31	1.608	1.447	1.368	1.231
	3	184.12	200.65	187.35	13.3	1.837	1.653	1.478	1.330
	4	198.5	217.71	201.14	16.57	1.921	1.921	1.657	1.657
	5	175.26	186.14	177.69	8.45	1.088	1.088	0.845	0.845
	6	196.95	212.65	199.18	13.47	1.744	1.570	1.497	1.347
	7	189.88	202.77	192.67	10.1	1.432	1.289	1.122	1.010
	8	183.42	197.08	185.66	11.42	1.518	1.366	1.269	1.142
4509 CD-S Aged	1	199.49	214.71	201.58	13.13	1.903	1.522	1.641	1.313
	2	186.8	204.22	188.79	15.43	1.936	1.742	1.714	1.543
	3	210.58	228.86	212.93	15.93	1.828	1.828	1.593	1.593
	4	195.9	210.9	198.09	12.81	1.500	1.500	1.281	1.281
	5	249.98	262.66	252.01	10.65	1.409	1.268	1.183	1.065
	6	199.34	216.78	201.17	15.61	1.744	1.744	1.561	1.561
	7	170.08	185.42	171.79	13.63	1.918	1.534	1.704	1.363
	8	196.62	215.44	198.36	17.08	1.882	1.882	1.708	1.708

Sample	Replicate	Tare Weight (mg)	Total Dry Weight	Total Ashed Weight	AFDW	Dry Weight per Surviving Larvae	Dry Weight per Initial Number	AFDW per Surviving Larvae	AFDW per Initial Number
4509 CD-S Unaged	1	237.62	258	239.77	18.23	2.038	2.038	1.823	1.823
	2	220.66	237.98	223.16	14.82	1.732	1.732	1.482	1.482
	3	180.39	200.32	182.48	17.84	1.993	1.993	1.784	1.784
	4	230.38	253.24	233.02	20.22	1.270	2.286	1.123	2.022
	5	188.94	207.68	191.82	15.86	1.874	1.874	1.586	1.586
	6	216.71	233.56	219.16	14.4	1.685	1.685	1.440	1.440
	7	165.82	183.24	167.56	15.68	1.936	1.742	1.742	1.568
	8	194.11	211.3	196.48	14.82	1.719	1.719	1.482	1.482
3433 AE-E	1	211.92	233.68	215.63	18.05	2.176	2.176	1.805	1.805
	2	193.22	214.3	196.41	17.89	2.342	2.108	1.988	1.789
	3	192.76	208.2	195.66	12.54	1.716	1.544	1.393	1.254
	4	240.25	256.1	243.73	12.37	1.321	1.585	1.031	1.237
	5	214.64	233.21	217.27	15.94	1.857	1.857	1.594	1.594
	6	253.7	274.91	257.78	17.13	2.121	2.121	1.713	1.713
	7	219.23	238.39	222.28	16.11	1.916	1.916	1.611	1.611
	8	229.73	248.97	232.41	16.56	2.138	1.924	1.840	1.656
Sand + Peat Control	1	192.12	210.94	194.58	16.36	2.353	1.882	2.045	1.636
	2	241.17	258.39	244.7	13.69	1.435	1.722	1.141	1.369
	3	250.61	265.13	253.92	11.21	1.815	1.452	1.401	1.121
	4	207.4	223.98	209.39	14.59	1.842	1.658	1.621	1.459
	5	222.59	242.41	225.62	16.79	2.202	1.982	1.866	1.679
	6	245.24	262.99	248.75	14.24	1.775	1.775	1.424	1.424
	7	203.85	223.15	206.43	16.72	2.144	1.930	1.858	1.672
	8	196.06	211.82	198.38	13.44	1.433	1.576	1.222	1.344

Sample	Replicate	Mean Dry Weight per Surviving Larvae	Mean Dry Weight per Initial Number	Mean AFDW per Survivor	SD	Mean AFDW per Initial Number
Control	1	2.715	2.531	1.668	0.266	1.554
	2					
	3					
	4					
	5					
	6					
	7					
	8					
Port Gamble Spring "C" Control	1	3.034	2.868	1.976	0.213	1.853
	2					
	3					
	4					
	5					
	6					
	7					
	8					
4617 MN North Aged	1	1.921	1.733	1.582	0.252	1.428
	2					
	3					
	4					
	5					
	6					
	7					
	8					



Sample	Replicate	Mean Dry Weight per Surviving Larvae	Mean Dry Weight per Initial Number	Mean AFDW per Survivor	SD	Mean AFDW per Initial Number
4617 MN North Unaged	1	1.742	1.625	1.459	0.234	1.362
	2					
	3					
	4					
	5					
	6					
	7					
	8					
4501 JN West Aged	1	1.028	0.759	0.442	0.106	0.337
	2					
	3					
	4					
	5					
	6					
	7					
	8					
4501 JN West Unaged	1	0.715	0.469	0.318	0.083	0.214
	2					
	3					
	4					
	5					
	6					
	7					
	8					

Sample	Replicate	Mean Dry Weight per Surviving Larvae	Mean Dry Weight per Initial Number	Mean AFDW per Survivor	SD	Mean AFDW per Initial Number
4502 OP South Aged	1	2.164	2.313	1.655	0.277	1.771
	2					
	3					
	4					
	5					
	6					
	7					
	8					
4502 OP South Unaged	1	2.183	2.015	1.714	0.227	1.581
	2					
	3					
	4					
	5					
	6					
	7					
	8					
4501 F Unaged	1	0.619	0.447	0.392	0.108	0.286
	2					
	3					
	4					
	5					
	6					
	7					
	8					

Sample	Replicate	Mean Dry Weight per Surviving Larvae	Mean Dry Weight per Initial Number	Mean AFDW per Survivor	SD	Mean AFDW per Initial Number
4501 F Aged	1	0.661	0.441	0.436	0.172	0.298
	2					
	3					
	4					
	5					
	6					
	7					
	8					
4621 AE East	1	1.503	1.670	1.299	0.214	1.445
	2					
	3					
	4					
	5					
	6					
	7					
	8					
4403 DH UNaged	1	1.681	1.614	1.434	0.195	1.376
	2					
	3					
	4					
	5					
	6					
	7					
	8					

Sample	Replicate	Mean Dry Weight per Surviving Larvae	Mean Dry Weight per Initial Number	Mean AFDW per Survivor	SD	Mean AFDW per Initial Number
4403 DH Aged	1	1.832	1.664	1.563	0.221	1.420
	2					
	3					
	4					
	5					
	6					
	7					
	8					
001E2-5	1	1.596	1.494	1.323	0.251	1.239
	2					
	3					
	4					
	5					
	6					
	7					
	8					
4509 CD-S Aged	1	1.765	1.628	1.548	0.204	1.428
	2					
	3					
	4					
	5					
	6					
	7					
	8					

Sample	Replicate	Mean Dry Weight per Surviving Larvae	Mean Dry Weight per Initial Number	Mean AFDW per Survivor	SD	Mean AFDW per Initial Number
4509 CD-S Unaged	1	1.781	1.884	1.558	0.230	1.648
	2					
	3					
	4					
	5					
	6					
	7					
	8					
3433 AE-E	1	1.948	1.904	1.622	0.299	1.582
	2					
	3					
	4					
	5					
	6					
	7					
	8					
Sand + Peat Control	1	1.875	1.747	1.572	0.328	1.463
	2					
	3					
	4					
	5					
	6					
	7					
	8					

Treatment	AFDW per Survivor	Control	Port Gamble Spring C Control	Sand + Peat Control
		1.67	1.98	1.57
4502 OP South Unaged	1.71			
4502 OP South Aged	1.65		*	
3433 AE-E	1.62		*	
4617 MN North Aged	1.58		*	
4403 DH Aged	1.56		*	
4509 CD-S Unaged	1.56		*	
4509 CD-S Aged	1.55		*	
4617 MN North Unaged	1.46		*	
4403 DH UNaged	1.43		*	
001E2-5	1.32	*	*	
4621 AE East	1.30	*	*	
4501 JN West Aged	0.44	*	*	*
4501 F Aged	0.44	*	*	*
4501 F Unaged	0.39	*	*	*
4501 JN West Unaged	0.32	*	*	*

Distribution normal, variance homogeneous

ANOVA on untransformed data ( $p < 0.001$ ), Dunnett's one-tail test significant (\*)

Treatment	Percent Survival	Control	Port Gamble Spring C Control	Sand + Peat Control
		93.75	93.75	91.25
4621 AE East	100.00			
4509 CD-S Unaged	97.50			
3433 AE-E	96.25			
4403 DH UNaged	96.25			
4502 OP South Aged	95.63			
4617 MN North Unaged	93.75			
001E2-5	93.75			
4502 OP South Unaged	92.50			
4509 CD-S Aged	92.50			
4403 DH Aged	91.25			
4617 MN North Aged	90.00			
4501 JN West Aged	75.42	*	*	
4501 F Aged	73.75	*	*	
4501 F Unaged	72.50	*	*	*
4501 JN West Unaged	70.00	*	*	*

Distribution not normal, variance not homogeneous

ANOVA on ranked data ( $p < 0.001$ ), Dunnett's one-tail test significant (\*)

Treatment	AFDW per Initial Number	Control	Port Gamble Spring C Control	Sand + Peat Control
		1.55	1.85	1.46
4502 OP South Aged	1.77			
4509 CD-S Unaged	1.65			
3433 AE-E	1.58			
4502 OP South Unaged	1.58			
4621 AE East	1.45		*	
4509 CD-S Aged	1.43		*	
4617 MN North Aged	1.43		*	
4403 DH Aged	1.42		*	
4403 DH UNaged	1.38		*	
4617 MN North Unaged	1.36		*	
001E2-5	1.24	*	*	
4501 JN West Aged	0.34	*	*	*
4501 F Aged	0.30	*	*	*
4501 F Unaged	0.29	*	*	*
4501 JN West Unaged	0.21	*	*	*

Distribution not normal, variance not homogeneous

ANOVA on ranked data ( $p < 0.001$ ), Dunnett's one-tail test significant (\*)

# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER



CLIENT	SEWMD	PROJECT	US Sugar	JOB NUMBER	0645-030-900	PROJECT MAN.	Bill Gardiner	LABORATORY	Port Gamble, WA BATH 9	PROTOCOL	TEST 200 - EN/06/13/24	SPECIES	Chironomus dilutus
--------	-------	---------	----------	------------	--------------	--------------	---------------	------------	------------------------	----------	------------------------	---------	--------------------

## ENDPOINT DATA & OBSERVATIONS

CLIENT / NEWFIELDS ID	REP	JAR #	INITIAL	DATE		OBSRVNS.		DATE		OBSRVNS.		DATE		OBSRVNS.		DATE		OBSRVNS.		DATE		OBSRVNS.		LARVAE	PUPAE	EXUVAE	FLIES
				TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE				
CONTROL /	1	174																						10	-	-	-
	2	104																						10	-	-	-
	3	149																						10	-	-	-
	4	127																						10	-	-	-
	5	83																						9	-	-	-
	6	5																						9	-	-	-
	7	113																						9	-	-	-
	8	90																						9	-	-	-
Port Gamble Spring C /	1	34																						10	-	-	-
	2	85																						10	-	-	-
	3	67																						10	-	-	-
	4	156																						10	-	-	-
	5	13																						10	-	-	-
	6	8																						9	-	-	-
	7	15																						9	-	-	-
	8	93																						9	-	-	-
4617MN North aged /	1	118																						10	-	-	-
	2	87																						10	-	-	-
	3	92																						8	-	-	-
	4	141																						10	-	-	-
	5	77																						8	-	-	-
	6	27																						9	-	-	-
	7	148																						9	-	-	-
	8	177																						9	-	-	-

0 Wc 9.12.09 MCL





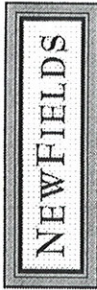
# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER

CLIENT	SFWMD	PROJECT	US Sugar	JOB NUMBER	0645-030-900	PROJECT MAN.	Bill Gardiner	LABORATORY	Post Gamble, WA. BATH 9	PROTOCOL	USEPA 2000 - EPA/600/P-99/04	SPECIES	Chironomus dilutus
--------	-------	---------	----------	------------	--------------	--------------	---------------	------------	-------------------------	----------	------------------------------	---------	--------------------

## ENDPOINT DATA & OBSERVATIONS

G- Growth				OBSERVNS.												LARVAE	PUPAE	EXUVAE	FLIES						
CLIENT/NEWFIELDS ID	REP	JAR #	INITIAL	DATE		TECHNICIAN		OBSERVNS.		DATE		TECHNICIAN		OBSERVNS.						DATE		TECHNICIAN		OBSERVNS.	
				OBSERVNS.	DATE	OBSERVNS.	DATE	OBSERVNS.	DATE	OBSERVNS.	DATE	OBSERVNS.	DATE	OBSERVNS.	DATE					OBSERVNS.	DATE	OBSERVNS.	DATE	OBSERVNS.	
4617MN North unaged /	1	103	.																			11	-		
	2	16	.																			9			
	3	186	.																			6			
	4	162	.																			10	-		
	5	183	.																			11			
	6	187	.																			10			
	7	10	.																			10			
	8	153	.																			10			
4501JN West aged /	1	53	.																			6			
	2	154	.																			10			
	3	20	.																			5			
	4	184	.																			9			
	5	123	.																			8			
	6	37	.																			5			
	7	48	.																			14	primary		
	8	185	.																			8			
4501JN West unaged /	1	125	.																			5			
	2	140	.																			7			
	3	52	.																			5			
	4	119	.																			8			
	5	180	.																			9			
	6	55	.																			5			
	7	151	.																			8			
	8	47	.																			5			





# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER

CLIENT	SFWMD	PROJECT	US Sugar	PROJECT MAN.	LABORATORY	PROTOCOL	SPECIES								
				Bill Gardiner	Post Gamble, MA BATH 5	USA 2000 - EPA/600/3-97/04	Chironomus dilutus								
ENDPOINT DATA & OBSERVATIONS															
CLIENT/NEWFIELDS ID	REP	JAR #	INITIAL	DATE		OBSERVNS.		DATE		OBSERVNS.		LARVAE	PUPAE	EXUVAE	FLIES
				TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE				
45020P South aged	1	28	BH									9			
	2	96										2-19			
	3	43										11			
	4	98										10			
	5	7	BH									9			
	6	102										10			
	7	159										9			
	8	68										11			
45020P South unaged /		152										10			
	2	189	B									10			
	3	126										9			
	4	95										9			
	5	59										10			
	6	84										10			
	7	139										9			
	8	12										10			
4501F aged UNAGED	1	44										9			
	2	132										5 (dead)			
	3	69										8			
	4	45										9			
	5	114										12			
	6	72										8			
	7	176										10			
	8	40										5			



# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER

NEWFIELDS

CLIENT	SEWMD	PROJECT	US Sugar	JOB NUMBER	0645-030-900	PROJECT MAN.	Bill Gardiner Post Gambler, WA BATH 9	LABORATORY	PROTOCOL	SPECIES	Chironomus dilutus
--------	-------	---------	----------	------------	--------------	--------------	---------------------------------------	------------	----------	---------	--------------------

## ENDPOINT DATA & OBSERVATIONS

N = normal  
#E= Emergence (Fungal, Algal, Surface of sediment, or bacterial mats)  
swimming in water  
0= excess food  
columnar floating on  
surface)

CLIENT/NEWFIELDS ID	REP	JAR #	INITIAL	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	LARVAE	PUPAE	EXUVAE	FLIES
4501F unaged / KCP	1	31	.													7	(small)		
	2	89	.													9	(tiny)		
	3	63	.													8	1 (small)		
	4	137	.													7	(small)		
	5	78	.													8	(small)		
	6	131	.													9			
	7	54	.													6		1	
	8	142	.													10			
4621AE East /	1	109	.													10			
	2	91	.													10			
	3	120	.													10			
	4	23	.													11			
	5	108	.													10			
	6	64	.													20			
	7	165	.													10			
	8	116	.													10			
4403DH aged /	1	94	.													9			
	2	35	.													10			
	3	160	.													10			
	4	150	.													9	1		
	5	107	.													10			
	6	76	.													9			
	7	166	.													10			
	8	134	.													10			



# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER



CLIENT	SEWMD	PROJECT	US Sugar	JOB NUMBER	0645-030-900	PROJECT MAN.	Bill Gardiner	LABORATORY	Port Gamble, WA BATH 9	PROTOCOL	USEPA 2000 - EPA/600/R-97/004	SPECIES	Chironomus dilutus
--------	-------	---------	----------	------------	--------------	--------------	---------------	------------	------------------------	----------	-------------------------------	---------	--------------------

## ENDPOINT DATA & OBSERVATIONS

CLIENT/NEWFIELDS ID	REP	JAR #	INITIAL	OBSERVATIONS				OBSERVATIONS				OBSERVATIONS				OBSERVATIONS				LARVAE	PUPAE	EXUVAE	FLIES
				DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN	DATE	TECHNICIAN				
4403DH unaged / aged	1	60																		10			
	2	181																		9			
	3	111																		10			
	4	178																		10			
	5	122																		9			
	6	179																		9			
	7	42																		8			
	8	112																		8			
001E2-5 /	1	133																		10			
	2	66																		9			
	3	3																		9			
	4	33																		9			
	5	128																		9/10/11			
	6	14																		10			
	7	172																		9			
	8	88																		9			
#REF!	1	17																					
	2	167																					
	3	86																					
	4	138																					
	5	129																					
	6	22																					
	7	163																					
	8	115																					

One small  
2 weigh 10 cm's excluded  
small one

## NEWFIELDS

CUSTOMER	PROJECT	JOB NUMBER	PROJECT MAN.	LABORATORY	PROTOCOL	SPECIES
SEWMD	US Sugar	0645-030-900	Bill Gardiner	Port Gueble, WA, BNH 9	USDA 2006 - 124-0000-01/04	<i>Chironomus dilutus</i>

## ENDPOINT DATA & OBSERVATIONS

G- Growth						N = normal																								FLIES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
#P Emergence (Fungal, Algal, Surface of sediment or bacterial mats, swimming water, columnar floating on surface)						EXUVAE																								PUPAE				LARVAE				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.				OBSRVNS.</			



# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER

CLIENT	STWMD	PROJECT	US Sugar	JOB NUMBER	0645-030-900	PROJECT MAN.	Bill Gardiner	LABORATORY	Port Canale, VA BATH 9	PROTOCOL	10/11/2008 - 10/11/2008	SPECIES	Chironomus dilutus
--------	-------	---------	----------	------------	--------------	--------------	---------------	------------	------------------------	----------	-------------------------	---------	--------------------

## ENDPOINT DATA & OBSERVATIONS

N = normal		G= Growth		E= Emergence		F= Fecundity		S= Surface of sediment, or bacterial mats		W= Water column floating on		C= Column floating on		S= Surface	
CLIENT/ NEWFIELDS ID	REP	JAR	INITIAL	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.
Sand + Peat Control /	1	106	.												
	2	80	.												
	3	146	.												
	4	117	.												
	5	18	.												
	6	164	.												
	7	41	.												
	8	182	.												
				LARVAE						PUPAE					
				EXUVAE											
				FLIES											

## NEWFIELDS

One or two



# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER

CLIENT	PROJECT	JOB NUMBER	PROJECT MAN.	LABORATORY	PROTOCOL	SPECIES
SFWMD	US Sugar	0645-030-900	Bill Gardiner	Post Gamble, MA 01801	10 DAY 2000 - FRESHWATER	<i>Chironomus dilutus</i>

## ENDPOINT DATA & OBSERVATIONS

N = Normal		G = Growth		E = Emergence		F = Fungal, Algal		S = Surface of sediment or bacterial mats		W = Water		U = excess food		C = column of floating on		S = surface												
CLIENT/NEWFIELDS ID	REP	JAR #	INITIAL	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	WEIGH BOAT NUMBER	TARE WEIGHT (mg)	TOTAL WEIGHT (mg)	ASH FREE DRY WEIGHT (mg)						
4617MN North unaged /	1	103		9/3	D	2	9/4	D	2	9/5	MMS	2	9/6	T	2	9/7	T	2	9/8	MAIS	9/9	CR	9/10	CR	9/11	D	9/12	T
	2	16																										
	3	186																										
	4	162																										
	5	183																										
	6	187																										
	7	10																										
	8	153																										
4501JN West aged /	1	53																										
	2	154																										
	3	20																										
	4	184																										
	5	123																										
	6	37																										
	7	48																										
	8	185																										
4501JN West unaged /	1	125																										
	2	140																										
	3	52																										
	4	119																										
	5	180																										
	6	55																										
	7	151																										
	8	47																										

TOTAL  
165.47  
234.15  
198.22

\* 4617MN North Unaged  
Ash free dry weight  
Rep 5 153.00  
Rep 6 221.48  
Rep 7 178.75



# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER

NEWFIELDS

CLIENT		PROJECT		JOB NUMBER		PROJECT MAN.		LABORATORY		PROTOCOL		SPECIES			
SEWMD		US Sugar		0645-030-900		Bill Gardiner		Post Graduate, WA BATH 5		DATA 1000 - 02/10/2007-10/10/07		Chironomus dilutus			
ENDPOINT DATA & OBSERVATIONS															
CLIENT/NEWFIELDS ID	REP	JAR #	INITIAL #	DATE		TECHNICIAN		OBSERVNS.		DATE		TECHNICIAN		OBSERVNS.	
				9/13	9/14	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22		
4502OP South aged /	1	28		N	N	N	N	N	N	N	N	N	N	N	N
	2	96													
	3	43													
	4	98													
	5	7													
	6	102													
	7	159													
	8	68													
4502OP South unaged /	1	152													
	2	189													
	3	126													
	4	95													
	5	59													
	6	84													
	7	139													
	8	12													
4501F aged /	1	44													
	2	132													
	3	69													
	4	45													
	5	114													
	6	72													
	7	176													
	8	40													

Switch water 4501F aged

# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER



CLIENT	SFWMD	PROJECT	US Sugar	JOB NUMBER	0645-030-900	PROJECT MAN.	Bill Gardiner	LABORATORY	Port Gamble, WA BOX 9	PROTOCOL	USDA 100 - TRANSFERT-1004	SPECIES	Chironomus dilutus																							
ENDPOINT DATA & OBSERVATIONS																																				
CLIENT/NEWFIELDS ID	REP	JAR #	INITIAL	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	WEIGH BOAT NUMBER	TARE WEIGHT (mg)	TOTAL WEIGHT (mg)	ASH FREE DRY WEIGHT (mg)														
				9/13	TS	OBSRVNS.	9/14	TS	OBSRVNS.	9/15	MMB	OBSRVNS.	9/16	TS	OBSRVNS.	9/17	TS	OBSRVNS.	9/18	MMB	OBSRVNS.	9/19	CR	OBSRVNS.	9/20	CR	OBSRVNS.	9/21	TS	OBSRVNS.						
4501F aged /	1	31		N			N			N			N			N			N			N			N			N			24	199.08	203.27	200.31		
	2	89																														24	202.50	207.70	204.59	
	3	63																															24	192.40	197.38	194.50
	4	137																															24	221.17	225.74	223.46
	5	78																															25	171.47	173.90	172.08
	6	131																															25	190.56	195.77	191.47
	7	54																															25	206.00	210.34	206.92
	8	142																															25	170.70	175.09	171.47
4621AE East /	1	109																															26	226.61	243.31	228.47
	2	91																															26	185.33	202.12	187.79
	3	120																															26	172.02	185.01	173.62
	4	23																															26	210.04	230.13	222.36
	5	108																															27	161.63	177.78	163.63
	6	64																															27	151.74	174.82	154.64
	7	165																															27	161.75	175.43	163.90
	8	116																															27	169.19	182.74	171.31
4403DH aged /	1	94																															28	172.80	192.31	175.65
	2	35																															28	175.81	190.77	178.31
	3	160																															28	187.46	204.99	189.73
	4	150																															28	189.91	204.38	191.91
	5	107																															29	199.16	216.98	202.16
	6	76																															29	231.06	245.29	232.92
	7	166																															29	200.40	216.04	202.49
	8	134																															29	208.39	223.35	210.86

① MC CR 9/18  
correct entry = 195.03



# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER

CLIENT	STWMD	PROJECT	US Sugar	JOB NUMBER	0645-030-900	PROJECT MAN.	Bill Gardiner	LABORATORY	Post Gable, VA 22080-1504	PROTOCOL	SPR 2000 - 4/11/2001-15/04	SPECIES	Chironomus dilutus															
ENDPOINT DATA & OBSERVATIONS																												
CLIENT/NEWFIELDS ID	REP	JAR #	INITIAL	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	WEIGH BOAT NUMBER	TARE WEIGHT (mg)	TOTAL WEIGHT (mg)	ASH FREE DRY WEIGHT (mg)									
				9/13	D	N	9/14	T	N	9/15	N	N	9/16	T	N	9/17	T	N	9/18	MMB	GR	9/19	GR	9/20	CR	9/21	T	TS
4403DH aged /	1	60															30	196.08	215.20	198.70								
	2	181															30	194.52	213.38	196.82								
	3	111															30	194.22	209.17	196.47								
	4	178															30	159.79	175.13	162.14								
	5	122															31	178.53	195.45	182.64								
	6	179															31	171.85	189.46	174.92								
	7	42															31	189.92	203.85	192.11								
	8	112															31	185.61	202.66	188.21								
001E2-5 /	1	133															32	190.92	207.13	193.65								
	2	66															32	194.08	208.55	196.24								
	3	3															32	184.12	200.65	187.35								
	4	33															32	198.50	217.71	201.14								
	5	128															33	175.26	186.14	177.69								
	6	14															33	196.95	212.65	199.18								
	7	172															33	189.88	202.77	192.67								
	8	88															33	183.42	197.08	185.66								
2324AB-N /	1	17															34	193.81										
	2	167															34	186.80										
	3	86															34	224.38										
	4	138															34	217.90										
	5	129															35	183.48										
	6	22															35	192.93										
	7	163															35	213.46										
	8	115															35	204.80										

DMC CR 9/17

# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER



CLIENT	PROJECT	JOB NUMBER	PROJECT MAN.	LABORATORY	PROTOCOL	SPECIES
SEWMD	US Sugar	0645-030-900	Bill Gardiner	Port Gambel, WA BATH 5	10-16-2008/37044	<i>Chironomus dilutus</i>

## ENDPOINT DATA & OBSERVATIONS

N = normal #E= Emergence (Surface of sediment, or bacterial mats) swimming water columnar floating on surface)				G= Growth (Fungal, Algal, Surface of sediment, or bacterial mats) swimming water U= excess food columnar floating on surface)												NUMBER REMAINING	WEIGH BOAT NUMBER	TARE WEIGHT (mg)	TOTAL WEIGHT (mg)	ASH FREE DRY WEIGHT (mg)																
CLIENT/ NEWFIELDS ID	REP	JAR #	INITIAL	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.	DATE	TECHNICIAN	OBSRVNS.						DATE	TECHNICIAN	OBSRVNS.													
4509CD-S aged /	1	39		9/3	TS	N	9/4	TS	N	9/5	MMB	N	9/6	TS	N	9/7	TS	N	9/8	MMB	N	9/9	CR	N	9/10	CR	N	9/11	TS	N	9/12	TS	36 <sub>1</sub>	199.49	214.71	201.58
	2	101																														36 <sub>2</sub>	186.80	204.22	188.79	
	3	73																														36 <sub>3</sub>	210.58	228.86	212.93	
	4	175																														36 <sub>4</sub>	195.90	210.90	198.09	
	5	124																														37 <sub>1</sub>	249.98	262.66	258.01	
	6	30																														37 <sub>2</sub>	199.34	216.78	201.17	
	7	26																														37 <sub>3</sub>	170.08	185.42	171.79	
	8	24																														37 <sub>4</sub>	196.62	215.44	198.36	
4509CD-S unaged /	1	38																														38 <sub>1</sub>	237.62	258.00	239.77	
	2	56																														38 <sub>2</sub>	220.66	237.98	223.16	
	3	21																														38 <sub>3</sub>	180.39	200.32	182.48	
	4	49																														38 <sub>4</sub>	230.38	253.24	233.02	
	5	110																														39 <sub>1</sub>	188.94	207.68	191.82	
	6	1																														39 <sub>2</sub>	246.71	233.56	219.16	
	7	71																														39 <sub>3</sub>	165.82	183.24	167.56	
	8	74																														39 <sub>4</sub>	194.11	211.30	196.48	
3433AE-E /	1	46																														40 <sub>1</sub>	211.92	233.68	215.63	
	2	32																														40 <sub>2</sub>	193.22	214.30	196.41	
	3	157																														40 <sub>3</sub>	192.76	208.20	195.66	
	4	169																														40 <sub>4</sub>	240.25	256.10	243.73	
	5	79																														41 <sub>1</sub>	214.64	233.21	217.27	
	6	144																														41 <sub>2</sub>	263.70	274.91	257.78	
	7	9																														41 <sub>3</sub>	219.23	238.39	222.28	
	8	82																														41 <sub>4</sub>	229.73	248.97	232.41	

## NEWFIELDS

9/2/2008 Chironomid 10-day solid-phase.xls Endpoint



10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT	SEWMD	PROJECT	US Sugar	SPECIES	Chironomus dilutus	LABORATORY	Port Gamble, WA BATH 9	PROTOCOL	USEPA 1000 - EPA/600/R-99/064
JOB NUMBER	0645-030-900	PROJECT MANAGER	Bill Gardiner	TEST START DATE	02Sep08	TEST END DATE	12Sep08	TIME	
WATER QUALITY DATA #1									
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	D.O. mg/L	TEMP (C)	COND. (µS/cm)	PH	DILUTION WATER BATCH	TEMP. RECDR/HOBOW
				> 2.5	23±1	vary < 50%	6-9	REFW011	NA
				meter	meter	meter	meter		
CONTROL /	0	WQ	4	4	22.1	677	7.8	TS	FEED-ING
CONTROL /	1	WQ	4	4	22.2	582	7.6	TS	TS
CONTROL /	2	WQ	4	4	22.3	529	7.6	TS	TS
CONTROL /	3	WQ	4	4	22.0	489	7.3	UR	TS
CONTROL /	4	WQ	4	4	22.4	483	7.4	TS	TS
CONTROL /	5	WQ	4	4	22.6	419	7.6	TS	TS
CONTROL /	6	WQ	4	4	22.2	474	7.3	MMMB	TS
CONTROL /	7	WQ	4	4	22.5	494	7.4	CR	MMMB
CONTROL /	8	WQ	4	4	21.9	475	7.3	TS	TS
CONTROL /	9	WQ	4	4	21.8	460	7.0	TS	TS
CONTROL /	10	WQ	4	4	22.0	470	7.2	TS	TS
Port Gamble Spring C /	0	WQ	81	4	22.4	667	7.9	TS	TS
Port Gamble Spring C /	1	WQ	81	4	22.5	562	7.6	TS	TS
Port Gamble Spring C /	2	WQ	81	4	22.5	496	7.5	TS	TS
Port Gamble Spring C /	3	WQ	81	4	22.5	466	7.3	CR	TS
Port Gamble Spring C /	4	WQ	81	4	22.8	428	7.3	TS	TS
Port Gamble Spring C /	5	WQ	81	4	22.6	396	7.4	TS	TS
Port Gamble Spring C /	6	WQ	81	4	22.5	469	7.2	MMMB	TS
Port Gamble Spring C /	7	WQ	81	4	22.7	499	7.3	CR	MMMB
Port Gamble Spring C /	8	WQ	81	4	22.5	470	7.4	CR	TS
Port Gamble Spring C /	9	WQ	81	4	22.1	459	7.3	TS	TS
Port Gamble Spring C /	10	WQ	81	4	22.3	460	7.3	TS	TS

## NEW FIELDS

9/2/2008 Chironomid 10-day solid-phase.xls WQ 1

## 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT		PROJECT		SPECIES		LABORATORY		PROTOCOL				
SFWMD		US Sugar		Chironomus dilutus		Port Gamble, WA BATH 9		USPA 2000 - ENV/601A-37004				
JOB NUMBER		PROJECT MANAGER		TEST START DATE		TEST END DATE		TIME				
0645-030-900		Bill Gardiner		02Sep08		12Sep08						
WATER QUALITY DATA #1												
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)	TEMP (°C)	COND (µS/cm)	pH	DILUTION WATER BATCH	TECHNICIAN	WATER RENEWAL	FEED-ING	TEMP-RECDR/HOBQ#
				> 2.5	23±1	vary < 50%	6-9	REW011		AM	PM	NA
				meter	meter	meter	meter					
4501JN West aged /	0	WQ	121	4	22.2	1	630		TS	TS	BH	
4501JN West aged /	1	WQ	121	4	22.3	1	555		TS	TS	TS	
4501JN West aged /	2	WQ	121	4	22.5	1	494		✓	TS	TS	
4501JN West aged /	3	WQ	121	4	22.6	1	461		CR	CR	TS	
4501JN West aged /	4	WQ	121	4	22.7	1	422		TS	TS	TS	
4501JN West aged /	5	WQ	121	4	22.5	1	292		TS	TS	TS	
4501JN West aged /	6	WQ	121	4	22.4	1	450		MMB	MMB	✓	
4501JN West aged /	7	WQ	121	4	22.5	1	460		CR	CR	MMB	
4501JN West aged /	8	WQ	121	4	22.6	1	438		CR	TS	TS	
4501JN West aged /	9	WQ	121	4	22.4	1	440		TS	TS	TS	
4501JN West aged /	10	WQ	121	4	22.4	1	435		TS	TS	TS	
4501JN West unaged /	0	WQ	143	4	22.1	1	623		TS	TS	BH	
4501JN West unaged /	1	WQ	143	4	22.5	1	525		TS	TS	TS	
4501JN West unaged /	2	WQ	143	4	22.1	1	478		✓	TS	TS	
4501JN West unaged /	3	WQ	143	4	22.6	1	449		CR	CR	TS	
4501JN West unaged /	4	WQ	143	4	22.9	1	429		TS	TS	TS	
4501JN West unaged /	5	WQ	143	4	22.4	1	383		TS	TS	TS	
4501JN West unaged /	6	WQ	143	4	22.4	1	420		MMB	MMB	✓	
4501JN West unaged /	7	WQ	143	4	22.7	1	435		CR	CR	MMB	
4501JN West unaged /	8	WQ	143	4	22.6	1	437		CR	TS	TS	
4501JN West unaged /	9	WQ	143	4	22.3	1	440		TS	TS	TS	
4501JN West unaged /	10	WQ	143	4	22.4	1	439		TS	TS	TS	



## 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT		PROJECT		SPECIES		LABORATORY		PROTOCOL	
SFWM		US Sugar		Chironomus dilutus		Port Gamble, WA BATH 9		USDA 2000 - EPA/600/3-97/004	
JOB NUMBER		PROJECT MANAGER		TEST START DATE		TEST END DATE		TIME	
0645-030-900		Bill Gardiner		02Sep08		12Sep08			

WATER QUALITY DATA #1																	
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)		TEMP (°C)		COND. (µS/cm)		pH	DILUTION	WATER BATCH	TECHNICIAN	WATER RENEWAL		FEED-ING	TEMP. REC'DR/HOBO#
				meter	mg/L	meter	°C	meter	µS/cm					AM	PM		
45020P South aged /	0	WQ	97	4	8.4	4	22.4	1	629	7.3		REW011	TS		TS	BH	
45020P South aged /	1	WQ	97	4	7.2	4	22.4	1	507	7.4			TS		TS	TS	
45020P South aged /	2	WQ	97	4	5.1	4	22.6	1	460	7.4			J		TS	TS	
45020P South aged /	3	WQ	97	4	3.8	4	22.7	1	429	7.3			CR		CR	MB	TS
45020P South aged /	4	WQ	97	4	4.3	4	22.9	1	404	7.3			TS		TS	→	
45020P South aged /	5	WQ	97	4	4.5	4	22.5	1	369	7.4			TS		→	→	
45020P South aged /	6	WQ	97	4	2.7	4	22.5	1	420	7.1			MMB		MMB	→	
45020P South aged /	7	WQ	97	4	3.7	4	22.8	1	445	7.3			CR		CR	MMB	MMB
45020P South aged /	8	WQ	97	4	3.9	4	22.6	1	428	7.2			CR		TS	TS	
45020P South aged /	9	WQ	97	4	5.5	4	22.2	1	436	7.3			TS		TS	→	
45020P South aged /	10	WQ	97	4	3.4	4	22.3	1	419	7.2			TS		→	→	
45020P South unaged /	0	WQ	155	4	8.4	4	22.3	1	619	7.2			TS		TS	BH	
45020P South unaged /	1	WQ	155	4	7.3	4	22.6	1	511	7.2			TS		TS	TS	
45020P South unaged /	2	WQ	155	4	5.4	4	22.3	1	458	7.2			J		TS	TS	
45020P South unaged /	3	WQ	155	4	4.4	4	22.6	1	437	7.2			CR		CR	MB	TS
45020P South unaged /	4	WQ	155	4	5.1	4	22.9	1	414	7.2			TS		TS	→	
45020P South unaged /	5	WQ	155	4	5.2	4	22.5	1	373	7.4			TS		→	→	
45020P South unaged /	6	WQ	155	4	3.7	4	22.3	1	422	7.0			MMB		MMB	→	
45020P South unaged /	7	WQ	155	4	3.6	4	22.7	1	422	7.0			CR		CR	MMB	MMB
45020P South unaged /	8	WQ	155	4	4.4	4	22.5	1	419	7.2			CR		TS	TS	
45020P South unaged /	9	WQ	155	4	5.5	4	22.3	1	433	7.3			TS		→	→	
45020P South unaged /	10	WQ	155	4	4.1	4	22.3	1	434	7.2			TS		→	→	



# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT	PROJECT		SPECIES		LABORATORY		PROTOCOL
SFWMD	US Sugar		Chironomus dilutus		Port Gamble, WA BATH 9		USEPA 2000 - 624/600/R-33/544
JOB NUMBER	PROJECT MANAGER		TEST START DATE		TEST END DATE		TIME
0645-030-900	Bill Gardiner		02Sep08		12Sep08		

WATER QUALITY DATA #1													
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)		TEMP (°C)	COND. (µS/cm)		pH	DILUTION WATER BATCH		TEMP. RECDR./HOB04	NA
				meter	mg/L		meter	µS/cm		meter	unit		
4501F aged /	0	WQ	75	4	8.4	4	22.3	1	635	7.3	TS	TS	BH
4501F aged /	1	WQ	75	4	7.8	4	22.4	1	522	7.3	TS	TS	TS
4501F aged /	2	WQ	75	4	5.2	4	22.4	1	474	7.3	TS	TS	TS
4501F aged /	3	WQ	75	4	4.5	4	22.5	1	436	7.4	CR	MB	TS
4501F aged /	4	WQ	75	4	5.2	4	22.7	1	413	7.4	TS	TS	TS
4501F aged /	5	WQ	75	4	4.7	4	22.6	1	379	7.4	TS	TS	TS
4501F aged /	6	WQ	75	4	3.7	4	22.3	1	431	7.2	MMMB	TS	TS
4501F aged /	7	WQ	75	4	3.4	4	22.7	1	456	7.4	CR	MMMB	MMMB
4501F aged /	8	WQ	75	4	3.7	4	22.5	1	442	7.3	CR	TS	TS
4501F aged /	9	WQ	75	4	5.6	4	22.2	1	443	7.3	TS	TS	TS
4501F aged /	10	WQ	75	4	3.9	4	22.3	1	437	7.2	TS	TS	TS
4501F unaged /	0	WQ	188	4	8.4	4	22.5	1	632	7.2	TS	TS	BH
4501F unaged /	1	WQ	188	4	7.1	4	22.5	1	408	7.2	TS	TS	TS
4501F unaged /	2	WQ	188	4	5.3	4	22.4	1	478	7.3	TS	TS	TS
4501F unaged /	3	WQ	188	4	4.8	4	22.5	1	440	7.3	CR	MB	TS
4501F unaged /	4	WQ	188	4	5.5	4	22.8	1	428	7.3	TS	TS	TS
4501F unaged /	5	WQ	188	4	5.7	4	22.0	1	391	7.4	TS	TS	TS
4501F unaged /	6	WQ	188	4	4.6	4	22.4	1	449	7.2	MMMB	TS	TS
4501F unaged /	7	WQ	188	4	4.0	4	22.6	1	441	7.2	CR	MMMB	MMMB
4501F unaged /	8	WQ	188	4	4.6	4	22.3	1	439	7.4	CR	TS	TS
4501F unaged /	9	WQ	188	4	6.2	4	22.2	1	443	7.4	TS	TS	TS
4501F unaged /	10	WQ	188	4	4.3	4	22.2	1	400	7.2	TS	TS	TS

## 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT		PROJECT		SPECIES		LABORATORY		PROTOCOL			
SEWMD		US Sugar		Chironomus dilutus		Port Gamble, WA BATH 9		USDA 2000 - EW/600/8-17/04			
JOB NUMBER	0645-030-900	PROJECT MANAGER	Bill Gardiner	TEST START DATE	02Sep08	TEST END DATE	12Sep08	TIME			
WATER QUALITY DATA #1											
CLIENT/NEWFIELDS ID		DAY	REP	JAR #	DO (mg/L)	TEMP (°C)	COND. (µS/cm)	pH	DILUTION WATER BATCH		
					> 2.5	23±1	vary < 50%	6-9	REW011		
					meter	meter	µS/cm	unit	TECHNICIAN		
					D.O.	TEMP	CONDUCTIVITY		WATER RENEWAL		
					mg/L	°C	meter		AM PM		
					meter	meter	meter		FEED-ING		
									NA		
4621AE East	/	0	WQ	62	4	22.3	1	670	TS	TS	BH
4621AE East	/	1	WQ	62	4	22.5	1	538	TS	TS	TS
4621AE East	/	2	WQ	62	4	22.5	1	525	TS	TS	TS
4621AE East	/	3	WQ	62	4	22.5	1	479	CR	CR	TS
4621AE East	/	4	WQ	62	4	22.4	1	439	TS	TS	TS
4621AE East	/	5	WQ	62	4	22.6	1	395	TS	TS	TS
4621AE East	/	6	WQ	62	4	22.5	1	451	MMMB	MMMB	TS
4621AE East	/	7	WQ	62	4	22.7	1	478	CR	CR	MMMB
4621AE East	/	8	WQ	62	4	22.5	1	459	CR	CR	TS
4621AE East	/	9	WQ	62	4	22.4	1	457	TS	TS	TS
4621AE East	/	10	WQ	62	4	22.2	1	457	TS	TS	TS
4403DH aged	/	0	WQ	158	4	22.3	1	686	TS	TS	BH
4403DH aged	/	1	WQ	158	4	22.6	1	586	TS	TS	TS
4403DH aged	/	2	WQ	158	4	22.4	1	532	TS	TS	TS
4403DH aged	/	3	WQ	158	4	22.3	1	494	CR	CR	TS
4403DH aged	/	4	WQ	158	4	22.8	1	452	TS	TS	TS
4403DH aged	/	5	WQ	158	4	22.7	1	414	TS	TS	TS
4403DH aged	/	6	WQ	158	4	22.4	1	476	MMMB	MMMB	TS
4403DH aged	/	7	WQ	158	4	22.7	1	472	CR	CR	MMMB
4403DH aged	/	8	WQ	158	4	22.5	1	468	CR	CR	TS
4403DH aged	/	9	WQ	158	4	22.3	1	471	TS	TS	TS
4403DH aged	/	10	WQ	158	4	22.2	1	470	TS	TS	TS

DWPC 9/15/08

① WE TS 9/11/08



# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
SFWMD	US Sugar	Chironomus dilutus	Port Gamble, WA BATH 9	USEPA 2008 - EPA/600/R-97/044
JOB NUMBER	PROJECT MANAGER	TEST START DATE	TEST END DATE	TIME
0645-030-900	Bill Gardiner	02Sep08	12Sep08	

WATER QUALITY DATA #1															TEMP. REC'D/HOBO#	
CLIENT/NEWFIELDS ID		DAY	REP	JAR #	DO (mg/L)	TEMP (°C)	COND. (µS/cm)	pH	DILUTION WATER BATCH		TEMP. REC'D/HOBO#					
					> 2.5	23±1	vary < 50%	6-9	REW011		NA					
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter	meter	meter	meter								
					meter											

# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT		PROJECT		SPECIES		LABORATORY		PROTOCOL	
SEWMD		US Sugar		Chironomus dilutus		Port Gamble, WA BATH 9		USDA 2000 - 001-60016-77/004	
JOB NUMBER		PROJECT MANAGER		TEST START DATE		TEST END DATE		TIME	
0645-030-900		Bill Gardiner		02Sep08		12Sep08			

WATER QUALITY DATA #1										
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)		TEMP (°C)	COND. (µS/cm)	pH	DILUTION WATER BATCH	TEMP. REC'DR/HOB#
				meter	mg/L					
2324AB-N /	0	WQ	130	4		23.5	676	6.9	REF011	NA
2324AB-N /	1	WQ	130	4		23.5	585	7.4	TS	TS
2324AB-N /	2	WQ	130	4		21.9	539	7.6	TS	TS
2324AB-N /	3	WQ	130	4		22.4	492	7.3	CR	TS
2324AB-N /	4	WQ	130	4		22.8	453	7.3	TS	TS
2324AB-N /	5	WQ	130	4		22.5	420	7.4	TS	TS
2324AB-N /	6	WQ	130	4		22.5	467	7.3	MMB	TS
2324AB-N /	7	WQ	130	4		22.7	471	7.2	CR	MMB
2324AB-N /	8	WQ	130	4		22.6	460	7.3	CR	TS
2324AB-N /	9	WQ	130	4		22.3	455	7.3	TS	TS
2324AB-N /	10	WQ	130	4		22.2	456	7.4	TS	TS
4509CD-S aged /	0	WQ	135	4	0.1	22.4	676	7.7	TS	BH
4509CD-S aged /	1	WQ	135	4	0.7	22.6	585	7.4	TS	TS
4509CD-S aged /	2	WQ	135	4	5.6	21.9	539	7.6	TS	TS
4509CD-S aged /	3	WQ	135	4	4.2	22.4	492	7.3	CR	TS
4509CD-S aged /	4	WQ	135	4	4.1	22.8	453	7.3	TS	TS
4509CD-S aged /	5	WQ	135	4	3.3	22.5	420	7.4	TS	TS
4509CD-S aged /	6	WQ	135	4	3.1	22.5	467	7.3	MMB	TS
4509CD-S aged /	7	WQ	135	4	3.6	22.7	471	7.2	CR	MMB
4509CD-S aged /	8	WQ	135	4	3.7	22.6	460	7.3	CR	TS
4509CD-S aged /	9	WQ	135	4	5.5	22.3	455	7.3	TS	TS
4509CD-S aged /	10	WQ	135	4	3.7	22.2	456	7.4	TS	TS

① WQ, TS 9/17/08 ; On 9/18/08, Temp. (°C) = 22.4

NEW FIELDS

9/2/2008 Chironomid 10-day solid-phase.xls WQ 1



# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT		PROJECT		SPECIES		LABORATORY		PROTOCOL					
SEWMD		US Sugar		Chironomus dilutus		Port Gamble, WA BATH 9		USEPA 2000 - 027/001/R-99/004					
JOB NUMBER		PROJECT MANAGER		TEST START DATE		TEST END DATE		TIME					
0645-030-900		Bill Gardiner		02Sep08		12Sep08							
WATER QUALITY DATA #1													
CLIENT/NEWFIELDS ID		DAY	REP	JAR #	DO (mg/L)	TEMP (°C)	COND. (µS/cm)	pH	DILUTION WATER BATCH	TECHNICIAN	WATER RENEWAL	FEED-ING	TEMP. RECDR./HOBOW
					> 2.5	23±1	vary < 50%	6-9	REW011		AM	PM	N/A
Sand + Peat Control /		0	WQ	57	4	22.3	1	642	1	7.7	TS	TS	BH
Sand + Peat Control /		1	WQ	57	4	22.3	1	549	1	7.5	TS	TS	TS
Sand + Peat Control /		2	WQ	57	4	22.4	1	521	1	7.5	TS	TS	TS
Sand + Peat Control /		3	WQ	57	4	22.4	1	482	1	7.4	CR	MB	TS
Sand + Peat Control /		4	WQ	57	4	22.6	1	442	1	7.5	TS	TS	TS
Sand + Peat Control /		5	WQ	57	4	22.7	1	403	1	7.5	TS	TS	TS
Sand + Peat Control /		6	WQ	57	4	22.4	1	467	1	7.4	MMB	TS	TS
Sand + Peat Control /		7	WQ	57	4	22.5	1	489	1	7.2	CR	MMB	MMB
Sand + Peat Control /		8	WQ	57	4	22.4	1	469	1	7.4	CR	TS	TS
Sand + Peat Control /		9	WQ	57	4	22.2	1	461	1	7.2	TS	TS	TS
Sand + Peat Control /		10	WQ	57	4	22.2	1	464	1	7.4	TS	TS	TS



# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT	PROJECT	LABORATORY	PROTOCOL
SEWIND	US Sugar	Port Gamble, WA BATH 9	102N 200 - 10N 400-70/104
JOB NUMBER	PROJECT MANAGER	TEST START DATE	TIME
0645-030-900	Bill Gardiner	02Sep08	12Sep08

WATER QUALITY DATA #2																
CLIENT/NEWFIELDS ID	DAY	SAMPLE	JAR #	TEMP		PW COND		PW SALINITY		PW pH		OV. NH3		PW. NH3	HARDNESS	ALKALINITY
				meters	°C	meters	µS/cm	meters	ppt	meters	unit	Techn.	mg/L			
CONTROL /	0	Composite Surrogate	4												CR 160 CR 192	
Port Gamble Spring C /	0	Composite Surrogate	81												CR 166 CR 179	
4617MN North aged /	0	Composite Surrogate	145												CR 170 CR 149.85	
4617MN North unaged /	0	Composite Surrogate	147												CR 166 CR 122	
4501JN West aged /	0	Composite Surrogate	121												CR 126 CR 67	
4501JN West unaged /	0	Composite Surrogate	143												CR 120 CR 87	
45020P South aged /	0	Composite Surrogate	97												CR 114 CR 57	
45020P South unaged /	0	Composite Surrogate	155												CR 114 CR 71	
4501F aged /	0	Composite Surrogate	75													75
4501F unaged /	0	Composite Surrogate	188													81
4621AE East /	0	Composite Surrogate	62													139
4403DH aged /	0	Composite Surrogate	158													166

① IE CR 9/4



NEW FIELDS

NEW FIELDS



# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT	PROJECT	LABORATORY	PROTOCOL
SEWMD	US Sugar	Port Gamble, WA BATH 9	SEPA 200 - DM4520-9/2/04
JOB NUMBER	PROJECT MANAGER	TEST END DATE	TIME
0645-030-900	Bill Gardiner	02Sep08	12Sep08

WATER QUALITY DATA #2																			
CLIENT/ NEWFIELDS ID	DAY	SAMPLE	JAR #	TEMP		PW COND		PW SALINITY		PW pH		OV. NH3		PW. NH3		HARDNESS		ALKALINITY	
				meter	°C	meter	µS/cm	meter	ppt	meter	unit	Techn.	mg/L	Techn.	mg/L	Techn.	mg CaCO <sub>3</sub> /L	Techn.	mg CaCO <sub>3</sub> /L
CONTROL /	10	Composite Surrogate	4								CR 6.6	CR 1.81		CR 3.79			138		124
Port Gamble Spring C /	10	Composite Surrogate	81								CR 7.1	CR <0.5		CR 6.08		CR 156	CR 90		
4617MN North aged /	10	Composite Surrogate	145								CR 6.9	CR <0.5		CR <0.5					
4617MN North unaged /	10	Composite Surrogate	147								CR 6.9	CR <0.5		CR 0.621		CR 154	CR 93		
4501JN West aged /	10	Composite Surrogate	121								CR 6.8	CR 1.03		CR 1.48		CR 132	CR 81		
4501JN West unaged /	10	Composite Surrogate	143								CR 6.6	CR 2.01		CR 1.82		CR 126	CR 82		
4502OP South aged /	10	Composite Surrogate	97								CR 6.6	CR 1.60		CR 2.72		CR 122	CR 69		
4502OP South unaged /	10	Composite Surrogate	155								CR 6.6	CR 1.04		CR 1.56		CR 120	CR 83		
4501F aged /	10	Composite Surrogate	75								CR 6.6	CR 1.36		CR 1.81		CR 130	CR 85		
4501F unaged /	10	Composite Surrogate	188								CR 6.5	CR 1.38		CR 1.23		CR 122	CR 81		
4621AE East /	10	Composite Surrogate	62								CR 6.7	CR 0.536		CR <0.5		CR 158	CR 100		
4403DH aged /	10	Composite Surrogate	158								CR 7.0	CR 1.55		CR 0.749		CR 178	CR 122		

DIE CR 9/15



10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT	SEWMD	PROJECT	US Sugar	SPECIES	Chironomus dilutus	LABORATORY	Port Gamble, WA BATH 9	PROTOCOL	USEN INE - EN/652A-12/24
JOB NUMBER	0645-030-900	PROJECT MANAGER	Bill Gardiner	TEST START DATE	02Sep08	TEST END DATE	12Sep08	TIME	

WATER QUALITY DATA #2																			
CLIENT/NEWFIELDS ID	DAY	SAMPLE	JAR #	TEMP		PW COND		PW SALINITY		PW pH		OV. NH3		PW. NH3		HARDNESS		ALKALINITY	
				meter	°C	meter	µS/cm	meter	ppt	meter	unit	Techn.	mg/L	Techn.	mg/L	Techn.	mg CaCO3/L	Techn.	mg CaCO3/L
4403DH unaged /	10	Composite Surrogate	36							CR 7.1		CR 1.45		CR <0.5		CR 182		CR 118	
001E2-5 /	10	Composite Surrogate	170							CR 7.1		CR 0.821		CR <0.5		CR 150		CR 108	
4509CD-S aged /	10	Composite Surrogate	135							CR 7.2		CR 0.902		CR <0.5		CR 156		CR 112	
4509CD-S unaged /	10	Composite Surrogate	58							CR 7.2		CR <0.5		CR <0.5		CR 162		CR 105	
3433AE-E /	10	Composite Surrogate	99							CR 7.1		CR <0.5		CR 0.878		CR 158		CR 109	
Sand + Peat Control /	10	Composite Surrogate	57							CR 7.2		CR 3.37		CR <0.5		CR 164		CR 119	

# NEWFIELDS

## Ammonia Analysis Total Ammonia (mg/L)

Client/Project: SFWMD / US Sugar	Organism: Chironomid	NewFields Test ID:	Test Duration (days):
-------------------------------------	-------------------------	--------------------	-----------------------

PRETEST / INITIAL / FINAL / OTHER (circle one)      DAY of TEST: 1  
 OVERLYING (OV) / POREWATER (PW) (circle one)

Calibration Standards Temperature		Sample temperature should be within $\pm 1^{\circ}\text{C}$ of standards temperature at time and date of analysis.
Date:	Temperature:	
9/4/08	20.0	

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp $^{\circ}\text{C}$	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
Control		9/4/08 L	1.15	20.0	9/4/08 L	N	8.3		
Port Gamble Spring C			0.0				7.1		
4617 MN N Aged			0.272				6.8		
4617 MN N unaged			0.729				6.9		
4501 SN W aged			0.166				6.4		
4501 SN W unaged			0.733				6.6		
4501 SN W aged			0.233				6.3		
4501 SN W aged			1.28				6.0		
4501 F unaged			0.848				5.8		
4501 F unaged			0.432				6.3		
4621 AE			0.187				6.5		
4403 DH aged			0.232				6.9		
4403 DH unaged			0.232 0.733				6.7		
00182-S			2.64				6.4		
4509 CD-S aged			0.0				6.6		
4509 CD-S unaged			1.14				6.9		

[illegible]

**NEWFIELDS**

## Ammonia Analysis

### Total Ammonia (mg/L)

<b>Client/Project:</b> SFWMD/US Sugar	<b>Organism:</b> Lumichromous	<b>NewFields Test ID:</b>	<b>Test Duration (days):</b>
--	----------------------------------	---------------------------	------------------------------

PRETEST / INITIAL / FINAL / OTHER (circle one)      DAY of TEST: \_\_\_\_\_

OVERLYING (OV) / POREWATER (PW) (circle one)

Calibration Standards Temperature		Sample temperature should be within $\pm 1^{\circ}\text{C}$ of standards temperature at time and date of analysis.
Date:	Temperature:	
9/3/08	19.0	

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp $^{\circ}\text{C}$	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
Sand Control	Surr	9/3/08 CR	0.745	19.85	9/3/08 CR	N			
Sand + Peat Control			0.668						
Port Gamble Spring C			<0.5						
4501F Accclimated			<0.5						
4501F Unacc.			<0.5						
4617 MN Acc.			<0.5						
4617 MN Unacc.			<0.5						
4501JN Acc.			<0.5						
4501JN Unacc.			<0.5						
4509 CD Acc.			<0.5						
4509 CD Unacc.			<0.5						
4403 Acc.			<0.5						
4403 Unacc.			<0.5						
4502 Acc.			<0.5						
4502 Unacc.			<0.5						
001E2-S			1.99						

[illegible]

# CETIS Analysis Detail

Comparisons: Page 1 of 2  
 Report Date: 29 Sep-08 3:36 PM  
 Analysis: 04-6868-9868

Chironomus 10-d Survival and Growth Sediment Test										NewFields
Endpoint			Analysis Type		Sample Link	Control Link	Date Analyzed		Version	
Proportion Survived			Comparison		01-8134-6872	01-8134-6872	29 Sep-08 3:36 PM		CETISv1.1.2	
Method			Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison			C > T	Angular (Corrected)		500	1000	0.2	707.107	26.02%
Group Comparisons										
Control	vs	Conc-µg/L	Statistic	Critical	P-Value	MSD	Decision(0.05)			
Dilution Water		250	1.22446	2.40711	0.3273	0.35667	Non-Significant Effect			
		500	1.40175	2.40711	0.2609	0.35667	Non-Significant Effect			
		1000	4.39655	2.40711	0.0008	0.35667	Significant Effect			
		2000	4.84403	2.40711	0.0003	0.35667	Significant Effect			
		4000	5.52085	2.40711	0.0001	0.35667	Significant Effect			
Test Acceptability										
Attribute			Statistic	TAC Range	Overlap	Decision				
Control Response			0.975	0.7 - NL	Yes	Passes acceptability criteria				
ANOVA Table										
Source	Sum of Squares		Mean Square	DF	F Statistic	P-Value	Decision(0.05)			
Between	2.314062		0.4628125	5	10.54	0.00008	Significant Effect			
Error	0.7903848		0.0439103	18						
Total	3.10444713		0.5067227	23						
ANOVA Assumptions										
Attribute	Test		Statistic	Critical	P-Value	Decision(0.01)				
Variances	Bartlett		3.71981	15.08627	0.59042	Equal Variances				
Distribution	Shapiro-Wilk W		0.92342		0.06953	Normal Distribution				
Data Summary										
			Original Data				Transformed Data			
Conc-µg/L	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
250		4	0.85000	0.70000	1.00000	0.12910	1.18984	0.99116	1.41202	0.18182
500		4	0.82500	0.60000	1.00000	0.17078	1.16357	0.88608	1.41202	0.22302
1000		4	0.45000	0.10000	0.60000	0.23805	0.71983	0.32175	0.88608	0.26959
2000		4	0.37500	0.20000	0.60000	0.17078	0.65352	0.46365	0.88608	0.17941
4000		4	0.30000	0.00000	0.40000	0.20000	0.55323	0.15878	0.68472	0.26297



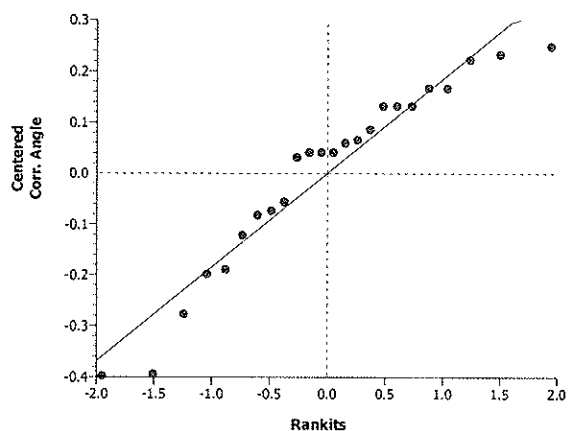
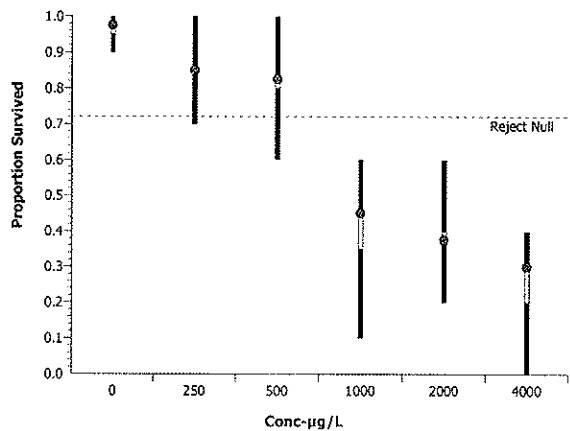
# CETIS Analysis Detail

Comparisons: Page 2 of 2  
 Report Date: 29 Sep-08 3:36 PM  
 Analysis: 04-6868-9868

## Data Detail

Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	0.90000						
250		0.80000	1.00000	0.90000	0.70000						
500		0.90000	0.80000	1.00000	0.60000						
1000		0.60000	0.50000	0.60000	0.10000						
2000		0.40000	0.60000	0.30000	0.20000						
4000		0.40000	0.40000	0.00000	0.40000						

## Graphics



# CETIS Analysis Detail

Spearman-Kärber: Page 1 of 1  
 Report Date: 29 Sep-08 3:37 PM  
 Analysis: 02-0529-3010

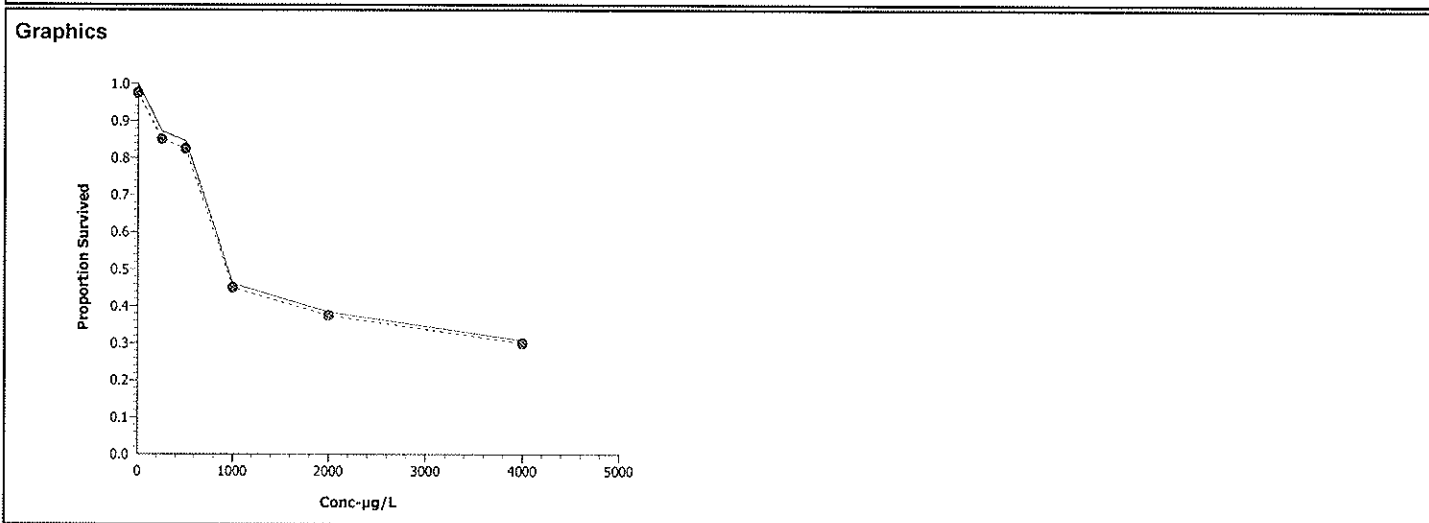
Chironomus 10-d Survival and Growth Sediment Test					NewFields
---	--	--	--	--	-----------

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Trimmed Spearman-Kärber	01-8134-6872	01-8134-6872	29 Sep-08 3:37 PM	CETISv1.1.2

Spearman-Kärber Options					Point Estimates		
Threshold Option	Lower Threshold	Trim	Mu	Sigma	EC50/LC50	95% LCL	95% UCL
Control Threshold	0.025	30.77%	3.066226	0.08789952	1164.73400	777.01170	1745.92500

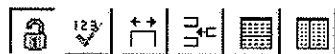
Test Acceptability				
Attribute	Statistic	TAC Range	Overlap	Decision
Control Response	0.975	0.7 - NL	Yes	Passes acceptability criteria

Data Summary		Calculated Variate(A/B)							
Conc-µg/L	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
250		4	0.85000	0.70000	1.00000	0.02635	0.12910	34	40
500		4	0.82500	0.60000	1.00000	0.03486	0.17078	33	40
1000		4	0.45000	0.10000	0.60000	0.04859	0.23805	18	40
2000		4	0.37500	0.20000	0.60000	0.03486	0.17078	15	40
4000		4	0.30000	0.00000	0.40000	0.04082	0.20000	12	40



control limits: 281 - 2,500 µg/L

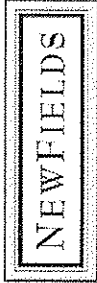
Conc-µg/L	Code	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Ashed Weight-mg
0	D	1	12	10	10		
0	D	2	2	10	10		
0	D	3	22	10	10		
0	D	4	3	10	9		
250		1	10	10	8		
250		2	6	10	10		
250		3	16	10	9		
250		4	14	10	7		
500		1	1	10	9		
500		2	18	10	8		
500		3	24	10	10		
500		4	7	10	6		
1000		1	15	10	6		
1000		2	8	10	5		
1000		3	13	10	6		
1000		4	5	10	1		
2000		1	4	10	4		
2000		2	21	10	6		
2000		3	11	10	3		
2000		4	9	10	2		
4000		1	23	10	4		
4000		2	17	10	4		
4000		3	19	10	0		
4000		4	20	10	4		





# 10 DAY SOLID PHASE TEST DATA SHEET 2 - REF TOX WQ - FRESHWATER

P070930.79



CLIENT SEWMD	PROJECT US Sugar	SPECIES Chironomus dilutus	LABORATORY Port Gamble, WA BATH 9	PROTOCOL USEN 200 - 10MAGS/A-55/04
JOB NUMBER 0645-030-900	PROJECT MANAGER Bill Gardiner	TEST START DATE 03Sep08	TEST END DATE 07Sep08	TIME 1630

## WATER QUALITY DATA

CLIENT/ NEWFIELDS ID		TEMP (C) 23±2	CON.(µS/cm) vary < 50%	DO (mg/L) > 4.5	HARD./ALK. vary < 50%	DILTN.WAT.BATCH RFW011		TEMP. REC# NA		REFERENCE TOX. MATERIAL Copper Sulfate			REFERENCE TOXICANT Copper	LOT NO.	TECHNICIAN	FEEDING	
		CONCENTRATION value		units	DAY	REP	meter	mg/L	meter	°C	meter	µS/cm	pH meter	unit	DATE		
Ref. Tox. -Copper		0 µg/L			0	Stock	4	9.2	4	22.0	1	443	1	8.0	9/8/08	J	BH
					1	1	4	3.2	4	22.9	1	449	1	7.4	9/9/08	CR	
					2	2	4	5.2	4	22.4	1	458	1	7.2	9/10/08	J	TS
					3	3	4	2.4	4	23.5	1	475	1	7.2	9/11	TS	
					4	4	4	2.5	4	23.2	1	470	1	7.2	9/12	CR	
Ref. Tox. -Copper		250 µg/L			0	Stock	4	9.2	4	21.9	1	441	1	8.1	9/8/08	J	BH
					1	1	4	6.7	4	23.2	1	445	1	7.8	9/9/08	CR	
					2	2	4	4.8	4	22.9	1	453	1	7.3	9/10/08	J	TS
					3	3	4	2.7	4	23.4	1	470	1	7.3	9/11	TS	
					4	4	4	2.8	4	23.2	1	472	1	7.3	9/12	CR	
Ref. Tox. -Copper		500 µg/L			0	Stock	4	9.2	4	21.9	1	441	1	8.1	9/8/08	J	BH
					1	1	4	5.4	4	23.0	1	448	1	7.7	9/9/08	CR	
					2	2	4	6.3	4	22.9	1	449	1	7.5	9/10/08	J	TS
					3	3	4	3.1	4	23.7	1	461	1	7.3	9/11	TS	
					4	4	4	4.0	4	23.5	1	469	1	7.4	9/12	CR	
Ref. Tox. -Copper		1000 µg/L			0	Stock	4	9.2	4	21.8	1	441	1	8.1	9/8/08	J	BH
					1	1	4	6.4	4	23.4	1	443	1	7.7	9/9/08	CR	
					2	2	4	6.0	4	22.9	1	451	1	7.5	9/10/08	J	TS
					3	3	4	3.3	4	23.3	1	457	1	7.3	9/11	TS	
					4	4	4	3.5	4	23.4	1	470	1	7.5	9/12	CR	

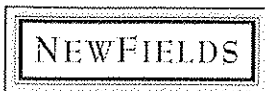


10 DAY SOLID PHASE TEST DATA SHEET 2 - REF TOX WQ - FRESHWATER

CLIENT	SEWMD	PROJECT	US Sugar	SPECIES	Chironomus dilutus	LABORATORY	Port Gamble, WA BATH 9	PROTOCOL	USEPA 2005 - 824A452/N-24644
JOB NUMBER	0645-030-900	PROJECT MANAGER	Bill Gardiner	TEST START DATE	03Sep08	TIME	1630	TEST END DATE	07Sep08

WATER QUALITY DATA

TEMP (C) 23±2		CON.(µS/cm) vary < 50%	DO (mg/L) > 4.5	HARD/ALK. vary < 50%	DILT.N.WAT.BATCH RFW011		TEMP REC# NA		REFERENCE TOX. MATERIAL Copper Sulfate		REFERENCE TOXICANT Copper	LOT NO.	96-HR LC50			
CLIENT/ NEWFIELDS ID		CONCENTRATION value units		DAY	REP	D.O. meter mg/L	TEMP. °C		CONDUCTIVITY meter µS/cm		pH meter unit		DATE	TECHNICIAN	FEEDING	
Ref.Tox.-Copper		2000 µg/L		0	Stock	4	9.2	4	22.0	1	441	1	8.0	9/8/08	J	B/H
				1	1	4	7.5	4	23.3	1	442	1	7.8	9/9/08	CR	
				2	2	4	5.2	4	23.0	1	447	1	7.5	9/10/08	J	TS
				3	3	4	4.6	4	23.9	1	461	1	7.4	9/11	TS	
				4	4	4	5.5	4	23.3	1	468	1	7.6	9/12	CR	
Ref.Tox.-Copper		4000 µg/L		0	Stock	4	9.2	4	21.8	1	441	1	7.9	9/8/08	J	B/H
				1	1	4	7.9	4	23.4	1	443	1	7.9	9/9/08	CR	
				2	2	4	6.7	4	22.9	1	449	1	7.6	9/10/08	J	TS
				3	3	4	5.2	4	23.9	1	457	1	7.4	9/11	TS	
				4	4	4	5.4	4	23.6	1	460	1	7.6	9/12	CR	



# 10 DAY SOLID PHASE TEST DATA SHEET 3 - REF TOX - FW

CLIENT SFWMD		PROJECT US Sugar	JOB NUMBER 0645-030-900	SPECIES <i>Chironomus dilutus</i>	PROJECT MANAGER Bill Gardiner	LABORATORY Port Gamble, WA BATH 9	ACCLM.MORT. #REF!
							PROTOCOL USEPA 2000 - EPA/600/R-

## SURVIVAL & BEHAVIOR DATA

OBSERVATIONS KEY				DATE			DATE			DATE			DATE			
N = normal LOE= loss of equilibrium Q = quiescent SUR= surfacing				DC = discoloration OB = on bottom J = jumper NB = no body												
CLIENT/ NEWFIELDS ID	CONC.		REP	INITIAL NUMBER	TECHNICIAN			TECHNICIAN			TECHNICIAN			TECHNICIAN		
	value	units			#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
Ref.Tox.- Copper	0 µg/L	1											10	0	N	
		2											10	0		
		3											10	0		
		4											9	1		
Ref.Tox.- Copper	250 µg/L	1											8	2		
		2											10	0		
		3											9	1		
		4											7	1	2NB	
Ref.Tox.- Copper	500 µg/L	1											9	0	1NB	
		2											8	0	2NB	
		3											10	0	N	
		4											6	1	3NB	
Ref.Tox.- Copper	1000 µg/L	1											6	0	4NB	
		2											5	4	1NB	
		3											6	4	N	
		4											1	9		
Ref.Tox.- Copper	2000 µg/L	1											4	6		
		2											6	4		
		3											3	7		
		4											2	8		
Ref.Tox.- Copper	4000 µg/L	1											4	6		
		2											4	6		
		3											0	10		
		4											4	6		

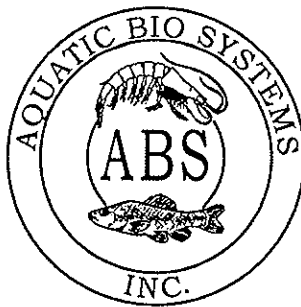


## ORGANISM RECEIPT LOG

Date: 8/30/08		Time: 1500		NewFields Batch No. ABS 702Z	
Organism: Chironomus			Source: Aquatic Bio Systems		
Address: On File				Invoice Attached Yes <input type="radio"/> No <input checked="" type="radio"/>	
Phone: On File			Contact: On File		
No. Ordered: 2100		No. Received: 2100+		Source Batch: 8/21 deposit	
Condition of Organisms: Good			Approximate Size or Age: 1-2 instar		
Shipper: FedEx			B of L (Tracking No.) 6732 0730 702Z		
Condition of Container: Good			Received By: BH		
Confirmation of ID of Organism: <input checked="" type="radio"/> Yes <input type="radio"/> No				Technician (Initials):	
Notes:					
pH (Units)	Temp. (°C)	D.O. (mg/L)	Conductivity or Salinity (Include Units)	Technician (Initials)	
6.7	22.2	0.6	377	BH	
Notes:					



1300 Blue Spruce Drive, Suite C  
Fort Collins, Colorado 80524



Toll Free: 800/331-5916  
Tel: 970/484-5091 Fax: 970/484-2514

### ORGANISM HISTORY

DATE: 8/29/08

SPECIES: Chironomus tentans

AGE: Deposited on 8/21/08

LIFE STAGE: Second Instar 9/1/08

HATCH DATE: Emergent date 9/14/08

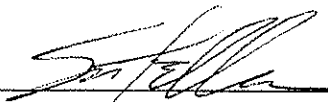
BEGAN FEEDING: Immediately

FOOD: Selenastrum sp., Flake slurry

### Water Chemistry Record:

	Current	Range
TEMPERATURE:	<u>24°C</u>	<u>22-26°C</u>
SALINITY/CONDUCTIVITY:	<u>--</u>	<u>--</u>
TOTAL HARDNESS (as CaCO <sub>3</sub> ):	<u>128 mg/l</u>	<u>76-178 mg/l</u>
TOTAL ALKALINITY (as CaCO <sub>3</sub> ):	<u>105 mg/l</u>	<u>65-140 mg/l</u>
pH:	<u>8.25</u>	<u>7.21-8.47</u>

Comments:

  
\_\_\_\_\_  
Facility Supervisor

species	Endpoint	Treatment	mean	notrans
Chironomus	AFDW per Survivor	001E2-5	1.322916666667	.
Chironomus	AFDW per Survivor	3433 AE-E	1.621868055556	.
Chironomus	AFDW per Survivor	4403 DH Aged	1.563295138889	.
Chironomus	AFDW per Survivor	4403 DH UNaged	1.433638888889	.
Chironomus	AFDW per Survivor	4501 F Aged	0.436201388889	.
Chironomus	AFDW per Survivor	4501 F Unaged	0.391612103175	.
Chironomus	AFDW per Survivor	4501 JN West Aged	0.442165178571	.
Chironomus	AFDW per Survivor	4501 JN West Unaged	0.317678571429	.
Chironomus	AFDW per Survivor	4502 OP South Aged	1.654906765019	.
Chironomus	AFDW per Survivor	4502 OP South Unaged	1.713503968254	.
Chironomus	AFDW per Survivor	4509 CD-S Aged	1.548222222222	.
Chironomus	AFDW per Survivor	4509 CD-S Unaged	1.557819444444	.
Chironomus	AFDW per Survivor	4617 MN North Aged	1.582309027778	.
Chironomus	AFDW per Survivor	4617 MN North Unaged	1.459333333333	.
Chironomus	AFDW per Survivor	4621 AE East	1.298931818182	.
Chironomus	AFDW per Survivor	Control	1.668052083333	.
Chironomus	Percent Survival	001E2-5	1.288904569422	93.750
Chironomus	Percent Survival	3433 AE-E	1.401661272371	96.250
Chironomus	Percent Survival	4403 DH Aged	1.240785995173	91.250
Chironomus	Percent Survival	4403 DH UNaged	1.401661272371	96.250
Chironomus	Percent Survival	4501 F Aged	0.904465264949	73.750
Chironomus	Percent Survival	4501 F Unaged	0.823444332303	72.500
Chironomus	Percent Survival	4501 JN West Aged	0.929930405503	75.417
Chironomus	Percent Survival	4501 JN West Unaged	0.805040411176	70.000
Chironomus	Percent Survival	4502 OP South Aged	1.36196621871	95.625
Chironomus	Percent Survival	4502 OP South Unaged	1.302236418598	92.500
Chironomus	Percent Survival	4509 CD-S Aged	1.297164346648	92.500
Chironomus	Percent Survival	4509 CD-S Unaged	1.458039623846	97.500
Chironomus	Percent Survival	4617 MN North Aged	1.184407643698	90.000
Chironomus	Percent Survival	4617 MN North Unaged	1.39850607307	93.750
Chironomus	Percent Survival	4621 AE East	1.570796326795	100.000
Chironomus	Percent Survival	Control	1.321223633772	93.750

SFWMD US Sugar Statistical Comparison  
Results of Assumption Checks

15:45 Tuesday, September 23, 2008 2

species	Endpoint	Prob Normal	Prob Homogeneous
Chironomus	AFDW per Survivor	0.76521	0.27070
Chironomus	Percent Survival	0.00214	0.00098

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	16	001E2-5 3433 AE-E 4403 DH Aged 4403 DH UNaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509 CD-S Aged 4509 CD-S Unaged 4617 MN North Aged 4617 MN North Unaged 4621 AE East Control

Number of Observations Read	128
Number of Observations Used	128

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Dependent Variable: Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	32.72219768	2.18147985	46.16	<.0001
Error	112	5.29354050	0.04726375		
Corrected Total	127	38.01573818			

R-Square	Coeff Var	Root MSE	Result Mean
0.860754	17.38136	0.217402	1.250778

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	15	32.72219768	2.18147985	46.16	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	15	32.72219768	2.18147985	46.16	<.0001

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Dunnett's One-tailed t Tests for Result

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	112
Error Mean Square	0.047264
Critical Value of Dunnett's t	2.60088
Minimum Significant Difference	0.2827

Comparisons significant at the 0.05 level are indicated by \*\*\*.

Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
4502 OP South Unaged - Control	0.0455	-Infinity 0.3282	
4502 OP South Aged - Control	-0.0131	-Infinity 0.2696	
3433 AE-E - Control	-0.0462	-Infinity 0.2365	
4617 MN North Aged - Control	-0.0857	-Infinity 0.1970	
4403 DH Aged - Control	-0.1048	-Infinity 0.1780	
4509 CD-S Unaged - Control	-0.1102	-Infinity 0.1725	
4509 CD-S Aged - Control	-0.1198	-Infinity 0.1629	
4617 MN North Unaged - Control	-0.2087	-Infinity 0.0740	
4403 DH UNaged - Control	-0.2344	-Infinity 0.0483	
001E2-5 - Control	-0.3451	-Infinity -0.0624	***
4621 AE East - Control	-0.3691	-Infinity -0.0864	***
4501 JN West Aged - Control	-1.2259	-Infinity -0.9432	***
4501 F Aged - Control	-1.2319	-Infinity -0.9491	***
4501 F Unaged - Control	-1.2764	-Infinity -0.9937	***
4501 JN West Unaged - Control	-1.3504	-Infinity -1.0677	***

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	16	001E2-5 3433 AE-E 4403 DH Aged 4403 DH UNaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509 CD-S Aged 4509 CD-S Unaged 4617 MN North Aged 4617 MN North Unaged 4621 AE East Control

Number of Observations Read	128
Number of Observations Used	128

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Dependent Variable: Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	6.70792531	0.44719502	6.23	<.0001
Error	112	8.03466359	0.07173807		
Corrected Total	127	14.74258890			

R-Square	Coeff Var	Root MSE	Result Mean
0.455003	21.76426	0.267840	1.230640

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	15	6.70792531	0.44719502	6.23	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	15	6.70792531	0.44719502	6.23	<.0001



----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Dunnett's One-tailed t Tests for Result

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	112
Error Mean Square	0.071738
Critical Value of Dunnett's t	2.60088
Minimum Significant Difference	0.3483

Comparisons significant at the 0.05 level are indicated by \*\*\*.

Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
4621 AE East - Control	0.2496	-Infinity 0.5979	
4509 CD-S Unaged - Control	0.1368	-Infinity 0.4851	
3433 AE-E - Control	0.0804	-Infinity 0.4287	
4403 DH UNaged - Control	0.0804	-Infinity 0.4287	
4617 MN North Unaged - Control	0.0773	-Infinity 0.4256	
4502 OP South Aged - Control	0.0407	-Infinity 0.3891	
4502 OP South Unaged - Control	-0.0190	-Infinity 0.3293	
4509 CD-S Aged - Control	-0.0241	-Infinity 0.3243	
001E2-5 - Control	-0.0323	-Infinity 0.3160	
4403 DH Aged - Control	-0.0804	-Infinity 0.2679	
4617 MN North Aged - Control	-0.1368	-Infinity 0.2115	
4501 JN West Aged - Control	-0.3913	-Infinity -0.0430	***
4501 F Aged - Control	-0.4168	-Infinity -0.0684	***
4501 F Unaged - Control	-0.4978	-Infinity -0.1495	***
4501 JN West Unaged - Control	-0.5162	-Infinity -0.1679	***

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	16	001E2-5 3433 AE-E 4403 DH Aged 4403 DH UNaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509 CD-S Aged 4509 CD-S Unaged 4617 MN North Aged 4617 MN North Unaged 4621 AE East Control

Number of Observations Read	128
Number of Observations Used	128

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Dependent Variable: rank Rank for Variable Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	116249.5000	7749.9667	14.84	<.0001
Error	112	58501.0000	522.3304		
Corrected Total	127	174750.5000			

R-Square	Coeff Var	Root MSE	rank Mean
0.665231	35.43341	22.85455	64.50000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	15	116249.5000	7749.9667	14.84	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	15	116249.5000	7749.9667	14.84	<.0001

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Dunnett's One-tailed t Tests for rank

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	112
Error Mean Square	522.3304
Critical Value of Dunnett's t	2.60088
Minimum Significant Difference	29.721

Comparisons significant at the 0.05 level are indicated by \*\*\*.

Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
4502 OP South Unaged - Control	4.31	-Infinity 34.03	
4502 OP South Aged - Control	-1.38	-Infinity 28.35	
3433 AE-E - Control	-1.75	-Infinity 27.97	
4617 MN North Aged - Control	-5.38	-Infinity 24.35	
4403 DH Aged - Control	-8.69	-Infinity 21.03	
4509 CD-S Unaged - Control	-9.81	-Infinity 19.91	
4509 CD-S Aged - Control	-10.50	-Infinity 19.22	
4617 MN North Unaged - Control	-24.63	-Infinity 5.10	
4403 DH UNaged - Control	-26.69	-Infinity 3.03	
001E2-5 - Control	-34.38	-Infinity -4.65	***
4621 AE East - Control	-37.13	-Infinity -7.40	***
4501 JN West Aged - Control	-73.50	-Infinity -43.78	***
4501 F Aged - Control	-74.38	-Infinity -44.65	***
4501 F Unaged - Control	-76.88	-Infinity -47.15	***
4501 JN West Unaged - Control	-83.25	-Infinity -53.53	***

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	16	001E2-5 3433 AE-E 4403 DH Aged 4403 DH UNaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509 CD-S Aged 4509 CD-S Unaged 4617 MN North Aged 4617 MN North Unaged 4621 AE East Control

Number of Observations Read	128
Number of Observations Used	128

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Dependent Variable: rank Rank for Variable Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	69160.0625	4610.6708	6.00	<.0001
Error	112	86055.4375	768.3521		
Corrected Total	127	155215.5000			

R-Square	Coeff Var	Root MSE	rank Mean
0.445574	42.97545	27.71917	64.50000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	15	69160.06250	4610.67083	6.00	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	15	69160.06250	4610.67083	6.00	<.0001

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Dunnett's One-tailed t Tests for rank

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	112
Error Mean Square	768.3521
Critical Value of Dunnett's t	2.60088
Minimum Significant Difference	36.047

Comparisons significant at the 0.05 level are indicated by \*\*\*.

Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
4621 AE East - Control	27.81	-Infinity 63.86	
4509 CD-S Unaged - Control	15.56	-Infinity 51.61	
4617 MN North Unaged - Control	10.44	-Infinity 46.48	
3433 AE-E - Control	9.44	-Infinity 45.48	
4403 DH UNaged - Control	9.44	-Infinity 45.48	
4502 OP South Aged - Control	5.88	-Infinity 41.92	
4502 OP South Unaged - Control	-1.25	-Infinity 34.80	
001E2-5 - Control	-2.81	-Infinity 33.23	
4509 CD-S Aged - Control	-3.31	-Infinity 32.73	
4403 DH Aged - Control	-9.44	-Infinity 26.61	
4617 MN North Aged - Control	-15.56	-Infinity 20.48	
4501 JN West Aged - Control	-36.13	-Infinity -0.08	***
4501 F Aged - Control	-39.31	-Infinity -3.27	***
4501 JN West Unaged - Control	-50.00	-Infinity -13.95	***
4501 F Unaged - Control	-51.75	-Infinity -15.70	***

species	Endpoint	Treatment	mean	notrans
Chironomus	AFDW per Survivor	001E2-5	1.322916666667	.
Chironomus	AFDW per Survivor	3433 AE-E	1.621868055556	.
Chironomus	AFDW per Survivor	4403 DH Aged	1.563295138889	.
Chironomus	AFDW per Survivor	4403 DH UNaged	1.433638888889	.
Chironomus	AFDW per Survivor	4501 F Aged	0.436201388889	.
Chironomus	AFDW per Survivor	4501 F Unaged	0.391612103175	.
Chironomus	AFDW per Survivor	4501 JN West Aged	0.442165178571	.
Chironomus	AFDW per Survivor	4501 JN West Unaged	0.317678571429	.
Chironomus	AFDW per Survivor	4502 OP South Aged	1.654906765019	.
Chironomus	AFDW per Survivor	4502 OP South Unaged	1.713503968254	.
Chironomus	AFDW per Survivor	4509 CD-S Aged	1.548222222222	.
Chironomus	AFDW per Survivor	4509 CD-S Unaged	1.557819444444	.
Chironomus	AFDW per Survivor	4617 MN North Aged	1.582309027778	.
Chironomus	AFDW per Survivor	4617 MN North Unaged	1.459333333333	.
Chironomus	AFDW per Survivor	4621 AE East	1.298931818182	.
Chironomus	AFDW per Survivor	Port Gamble Spring C Control	1.976454861111	.
Chironomus	Percent Survival	001E2-5	1.288904569422	93.750
Chironomus	Percent Survival	3433 AE-E	1.401661272371	96.250
Chironomus	Percent Survival	4403 DH Aged	1.240785995173	91.250
Chironomus	Percent Survival	4403 DH UNaged	1.401661272371	96.250
Chironomus	Percent Survival	4501 F Aged	0.904465264949	73.750
Chironomus	Percent Survival	4501 F Unaged	0.823444332303	72.500
Chironomus	Percent Survival	4501 JN West Aged	0.929930405503	75.417
Chironomus	Percent Survival	4501 JN West Unaged	0.805040411176	70.000
Chironomus	Percent Survival	4502 OP South Aged	1.36196621871	95.625
Chironomus	Percent Survival	4502 OP South Unaged	1.302236418598	92.500
Chironomus	Percent Survival	4509 CD-S Aged	1.297164346648	92.500
Chironomus	Percent Survival	4509 CD-S Unaged	1.458039623846	97.500
Chironomus	Percent Survival	4617 MN North Aged	1.184407643698	90.000
Chironomus	Percent Survival	4617 MN North Unaged	1.39850607307	93.750
Chironomus	Percent Survival	4621 AE East	1.570796326795	100.000
Chironomus	Percent Survival	Port Gamble Spring C Control	1.321223633772	93.750



species	Endpoint	Prob Normal	Prob Homogeneous
Chironomus	AFDW per Survivor	0.52345	0.36491
Chironomus	Percent Survival	0.00214	0.00098

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	16	001E2-5 3433 AE-E 4403 DH Aged 4403 DH UNaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509 CD-S Aged 4509 CD-S Unaged 4617 MN North Aged 4617 MN North Unaged 4621 AE East Port Gamble Spring C Control

Number of Observations Read	128
Number of Observations Used	128

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Dependent Variable: Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	35.49455346	2.36630356	51.83	<.0001
Error	112	5.11376711	0.04565863		
Corrected Total	127	40.60832057			

R-Square	Coeff Var	Root MSE	Result Mean
0.874071	16.82439	0.213679	1.270054

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	15	35.49455346	2.36630356	51.83	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	15	35.49455346	2.36630356	51.83	<.0001

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Dunnett's One-tailed t Tests for Result

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	112
Error Mean Square	0.045659
Critical Value of Dunnett's t	2.60088
Minimum Significant Difference	0.2779

Comparisons significant at the 0.05 level are indicated by \*\*\*.

	Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
4502 OP South Unaged	- Port Gamble Spring C Control	-0.2630	-Infinity 0.0149	
4502 OP South Aged	- Port Gamble Spring C Control	-0.3215	-Infinity -0.0437	***
3433 AE-E	- Port Gamble Spring C Control	-0.3546	-Infinity -0.0767	***
4617 MN North Aged	- Port Gamble Spring C Control	-0.3941	-Infinity -0.1163	***
4403 DH Aged	- Port Gamble Spring C Control	-0.4132	-Infinity -0.1353	***
4509 CD-S Unaged	- Port Gamble Spring C Control	-0.4186	-Infinity -0.1408	***
4509 CD-S Aged	- Port Gamble Spring C Control	-0.4282	-Infinity -0.1504	***
4617 MN North Unaged	- Port Gamble Spring C Control	-0.5171	-Infinity -0.2392	***
4403 DH UNaged	- Port Gamble Spring C Control	-0.5428	-Infinity -0.2649	***
001E2-5	- Port Gamble Spring C Control	-0.6535	-Infinity -0.3757	***
4621 AE East	- Port Gamble Spring C Control	-0.6775	-Infinity -0.3996	***
4501 JN West Aged	- Port Gamble Spring C Control	-1.5343	-Infinity -1.2564	***
4501 F Aged	- Port Gamble Spring C Control	-1.5403	-Infinity -1.2624	***
4501 F Unaged	- Port Gamble Spring C Control	-1.5848	-Infinity -1.3070	***
4501 JN West Unaged	- Port Gamble Spring C Control	-1.6588	-Infinity -1.3809	***

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	16	001E2-5 3433 AE-E 4403 DH Aged 4403 DH UNaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509 CD-S Aged 4509 CD-S Unaged 4617 MN North Aged 4617 MN North Unaged 4621 AE East Port Gamble Spring C Control

Number of Observations Read	128
Number of Observations Used	128

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Dependent Variable: Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	6.70792531	0.44719502	6.23	<.0001
Error	112	8.03466359	0.07173807		
Corrected Total	127	14.74258890			

R-Square	Coeff Var	Root MSE	Result Mean
0.455003	21.76426	0.267840	1.230640

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	15	6.70792531	0.44719502	6.23	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	15	6.70792531	0.44719502	6.23	<.0001

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Dunnett's One-tailed t Tests for Result

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	112
Error Mean Square	0.071738
Critical Value of Dunnett's t	2.60088
Minimum Significant Difference	0.3483

Comparisons significant at the 0.05 level are indicated by \*\*\*.

	Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
4621 AE East	- Port Gamble Spring C Control	0.2496	-Infinity 0.5979	
4509 CD-S Unaged	- Port Gamble Spring C Control	0.1368	-Infinity 0.4851	
3433 AE-E	- Port Gamble Spring C Control	0.0804	-Infinity 0.4287	
4403 DH UNaged	- Port Gamble Spring C Control	0.0804	-Infinity 0.4287	
4617 MN North Unaged	- Port Gamble Spring C Control	0.0773	-Infinity 0.4256	
4502 OP South Aged	- Port Gamble Spring C Control	0.0407	-Infinity 0.3891	
4502 OP South Unaged	- Port Gamble Spring C Control	-0.0190	-Infinity 0.3293	
4509 CD-S Aged	- Port Gamble Spring C Control	-0.0241	-Infinity 0.3243	
001E2-5	- Port Gamble Spring C Control	-0.0323	-Infinity 0.3160	
4403 DH Aged	- Port Gamble Spring C Control	-0.0804	-Infinity 0.2679	
4617 MN North Aged	- Port Gamble Spring C Control	-0.1368	-Infinity 0.2115	
4501 JN West Aged	- Port Gamble Spring C Control	-0.3913	-Infinity -0.0430	***
4501 F Aged	- Port Gamble Spring C Control	-0.4168	-Infinity -0.0684	***
4501 F Unaged	- Port Gamble Spring C Control	-0.4978	-Infinity -0.1495	***
4501 JN West Unaged	- Port Gamble Spring C Control	-0.5162	-Infinity -0.1679	***

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	16	001E2-5 3433 AE-E 4403 DH Aged 4403 DH UNaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509 CD-S Aged 4509 CD-S Unaged 4617 MN North Aged 4617 MN North Unaged 4621 AE East Port Gamble Spring C Control

Number of Observations Read	128
Number of Observations Used	128



----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Dependent Variable: rank Rank for Variable Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	126357.5000	8423.8333	19.50	<.0001
Error	112	48391.5000	432.0670		
Corrected Total	127	174749.0000			

R-Square	Coeff Var	Root MSE	rank Mean
0.723080	32.22670	20.78622	64.50000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	15	126357.5000	8423.8333	19.50	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	15	126357.5000	8423.8333	19.50	<.0001

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Dunnett's One-tailed t Tests for rank

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	112
Error Mean Square	432.067
Critical Value of Dunnett's t	2.60088
Minimum Significant Difference	27.031

Comparisons significant at the 0.05 level are indicated by \*\*\*.

	Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
4502 OP South Unaged	- Port Gamble Spring C Control	-24.44	-Infinity 2.59	
4502 OP South Aged	- Port Gamble Spring C Control	-30.13	-Infinity -3.09	***
3433 AE-E	- Port Gamble Spring C Control	-30.69	-Infinity -3.66	***
4617 MN North Aged	- Port Gamble Spring C Control	-34.50	-Infinity -7.47	***
4403 DH Aged	- Port Gamble Spring C Control	-37.88	-Infinity -10.84	***
4509 CD-S Unaged	- Port Gamble Spring C Control	-39.06	-Infinity -12.03	***
4509 CD-S Aged	- Port Gamble Spring C Control	-39.38	-Infinity -12.34	***
4617 MN North Unaged	- Port Gamble Spring C Control	-51.88	-Infinity -24.84	***
4403 DH UNaged	- Port Gamble Spring C Control	-54.19	-Infinity -27.16	***
001E2-5	- Port Gamble Spring C Control	-61.63	-Infinity -34.59	***
4621 AE East	- Port Gamble Spring C Control	-64.25	-Infinity -37.22	***
4501 JN West Aged	- Port Gamble Spring C Control	-99.50	-Infinity -72.47	***
4501 F Aged	- Port Gamble Spring C Control	-100.38	-Infinity -73.34	***
4501 F Unaged	- Port Gamble Spring C Control	-102.88	-Infinity -75.84	***
4501 JN West Unaged	- Port Gamble Spring C Control	-109.25	-Infinity -82.22	***

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	16	001E2-5 3433 AE-E 4403 DH Aged 4403 DH UNaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509 CD-S Aged 4509 CD-S Unaged 4617 MN North Aged 4617 MN North Unaged 4621 AE East Port Gamble Spring C Control

Number of Observations Read	128
Number of Observations Used	128

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Dependent Variable: rank Rank for Variable Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	69160.0625	4610.6708	6.00	<.0001
Error	112	86055.4375	768.3521		
Corrected Total	127	155215.5000			

R-Square	Coeff Var	Root MSE	rank Mean
0.445574	42.97545	27.71917	64.50000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	15	69160.06250	4610.67083	6.00	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	15	69160.06250	4610.67083	6.00	<.0001

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Dunnett's One-tailed t Tests for rank

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	112
Error Mean Square	768.3521
Critical Value of Dunnett's t	2.60088
Minimum Significant Difference	36.047

Comparisons significant at the 0.05 level are indicated by \*\*\*.

	Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
4621 AE East	- Port Gamble Spring C Control	27.81	-Infinity 63.86	
4509 CD-S Unaged	- Port Gamble Spring C Control	15.56	-Infinity 51.61	
4617 MN North Unaged	- Port Gamble Spring C Control	10.44	-Infinity 46.48	
3433 AE-E	- Port Gamble Spring C Control	9.44	-Infinity 45.48	
4403 DH UNaged	- Port Gamble Spring C Control	9.44	-Infinity 45.48	
4502 OP South Aged	- Port Gamble Spring C Control	5.88	-Infinity 41.92	
4502 OP South Unaged	- Port Gamble Spring C Control	-1.25	-Infinity 34.80	
001E2-5	- Port Gamble Spring C Control	-2.81	-Infinity 33.23	
4509 CD-S Aged	- Port Gamble Spring C Control	-3.31	-Infinity 32.73	
4403 DH Aged	- Port Gamble Spring C Control	-9.44	-Infinity 26.61	
4617 MN North Aged	- Port Gamble Spring C Control	-15.56	-Infinity 20.48	
4501 JN West Aged	- Port Gamble Spring C Control	-36.13	-Infinity -0.08	***
4501 F Aged	- Port Gamble Spring C Control	-39.31	-Infinity -3.27	***
4501 JN West Unaged	- Port Gamble Spring C Control	-50.00	-Infinity -13.95	***
4501 F Unaged	- Port Gamble Spring C Control	-51.75	-Infinity -15.70	***

species	Endpoint	Treatment	mean	notrans
Chironomus	AFDW per Survivor	001E2-5	1.322916666667	.
Chironomus	AFDW per Survivor	3433 AE-E	1.621868055556	.
Chironomus	AFDW per Survivor	4403 DH Aged	1.563295138889	.
Chironomus	AFDW per Survivor	4403 DH UNaged	1.433638888889	.
Chironomus	AFDW per Survivor	4501 F Aged	0.436201388889	.
Chironomus	AFDW per Survivor	4501 F Unaged	0.391612103175	.
Chironomus	AFDW per Survivor	4501 JN West Aged	0.442165178571	.
Chironomus	AFDW per Survivor	4501 JN West Unaged	0.317678571429	.
Chironomus	AFDW per Survivor	4502 OP South Aged	1.654906765019	.
Chironomus	AFDW per Survivor	4502 OP South Unaged	1.713503968254	.
Chironomus	AFDW per Survivor	4509 CD-S Aged	1.548222222222	.
Chironomus	AFDW per Survivor	4509 CD-S Unaged	1.557819444444	.
Chironomus	AFDW per Survivor	4617 MN North Aged	1.582309027778	.
Chironomus	AFDW per Survivor	4617 MN North Unaged	1.459333333333	.
Chironomus	AFDW per Survivor	4621 AE East	1.298931818182	.
Chironomus	AFDW per Survivor	Sand + Peat Control	1.572168244949	.
Chironomus	Percent Survival	001E2-5	1.288904569422	93.750
Chironomus	Percent Survival	3433 AE-E	1.401661272371	96.250
Chironomus	Percent Survival	4403 DH Aged	1.240785995173	91.250
Chironomus	Percent Survival	4403 DH UNaged	1.401661272371	96.250
Chironomus	Percent Survival	4501 F Aged	0.904465264949	73.750
Chironomus	Percent Survival	4501 F Unaged	0.823444332303	72.500
Chironomus	Percent Survival	4501 JN West Aged	0.929930405503	75.417
Chironomus	Percent Survival	4501 JN West Unaged	0.805040411176	70.000
Chironomus	Percent Survival	4502 OP South Aged	1.36196621871	95.625
Chironomus	Percent Survival	4502 OP South Unaged	1.302236418598	92.500
Chironomus	Percent Survival	4509 CD-S Aged	1.297164346648	92.500
Chironomus	Percent Survival	4509 CD-S Unaged	1.458039623846	97.500
Chironomus	Percent Survival	4617 MN North Aged	1.184407643698	90.000
Chironomus	Percent Survival	4617 MN North Unaged	1.39850607307	93.750
Chironomus	Percent Survival	4621 AE East	1.570796326795	100.000
Chironomus	Percent Survival	Sand + Peat Control	1.240785995173	91.250

species	Endpoint	Prob Normal	Prob Homogeneous
Chironomus	AFDW per Survivor	0.75972	0.099265
Chironomus	Percent Survival	0.00450	0.001390

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	16	001E2-5 3433 AE-E 4403 DH Aged 4403 DH UNaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509 CD-S Aged 4509 CD-S Unaged 4617 MN North Aged 4617 MN North Unaged 4621 AE East Sand + Peat Control

Number of Observations Read	128
Number of Observations Used	128



----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Dependent Variable: Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	32.15099370	2.14339958	43.25	<.0001
Error	112	5.55007046	0.04955420		
Corrected Total	127	37.70106416			

R-Square	Coeff Var	Root MSE	Result Mean
0.852787	17.88322	0.222608	1.244786

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	15	32.15099370	2.14339958	43.25	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	15	32.15099370	2.14339958	43.25	<.0001

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Dunnett's One-tailed t Tests for Result

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	112
Error Mean Square	0.049554
Critical Value of Dunnett's t	2.60088
Minimum Significant Difference	0.2895

Comparisons significant at the 0.05 level are indicated by \*\*\*.

Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
4502 OP South Unaged - Sand + Peat Control	0.1413	-Infinity 0.4308	
4502 OP South Aged - Sand + Peat Control	0.0827	-Infinity 0.3722	
3433 AE-E - Sand + Peat Control	0.0497	-Infinity 0.3392	
4617 MN North Aged - Sand + Peat Control	0.0101	-Infinity 0.2996	
4403 DH Aged - Sand + Peat Control	-0.0089	-Infinity 0.2806	
4509 CD-S Unaged - Sand + Peat Control	-0.0143	-Infinity 0.2751	
4509 CD-S Aged - Sand + Peat Control	-0.0239	-Infinity 0.2655	
4617 MN North Unaged - Sand + Peat Control	-0.1128	-Infinity 0.1767	
4403 DH UNaged - Sand + Peat Control	-0.1385	-Infinity 0.1510	
001E2-5 - Sand + Peat Control	-0.2493	-Infinity 0.0402	
4621 AE East - Sand + Peat Control	-0.2732	-Infinity 0.0163	
4501 JN West Aged - Sand + Peat Control	-1.1300	-Infinity -0.8405	***
4501 F Aged - Sand + Peat Control	-1.1360	-Infinity -0.8465	***
4501 F Unaged - Sand + Peat Control	-1.1806	-Infinity -0.8911	***
4501 JN West Unaged - Sand + Peat Control	-1.2545	-Infinity -0.9650	***

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	16	001E2-5 3433 AE-E 4403 DH Aged 4403 DH UNaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509 CD-S Aged 4509 CD-S Unaged 4617 MN North Aged 4617 MN North Unaged 4621 AE East Sand + Peat Control

Number of Observations Read	128
Number of Observations Used	128

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Dependent Variable: Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	6.63987007	0.44265800	6.14	<.0001
Error	112	8.07579495	0.07210531		
Corrected Total	127	14.71566503			

R-Square	Coeff Var	Root MSE	Result Mean
0.451211	21.90940	0.268524	1.225612

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	15	6.63987007	0.44265800	6.14	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	15	6.63987007	0.44265800	6.14	<.0001

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Dunnett's One-tailed t Tests for Result

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	112
Error Mean Square	0.072105
Critical Value of Dunnett's t	2.60088
Minimum Significant Difference	0.3492

Comparisons significant at the 0.05 level are indicated by \*\*\*.

Treatment Comparison		Difference Between Means	Simultaneous 95% Confidence Limits	
4621 AE East	- Sand + Peat Control	0.3300	-Infinity 0.6792	
4509 CD-S Unaged	- Sand + Peat Control	0.2173	-Infinity 0.5665	
3433 AE-E	- Sand + Peat Control	0.1609	-Infinity 0.5101	
4403 DH UNaged	- Sand + Peat Control	0.1609	-Infinity 0.5101	
4617 MN North Unaged	- Sand + Peat Control	0.1577	-Infinity 0.5069	
4502 OP South Aged	- Sand + Peat Control	0.1212	-Infinity 0.4704	
4502 OP South Unaged	- Sand + Peat Control	0.0615	-Infinity 0.4107	
4509 CD-S Aged	- Sand + Peat Control	0.0564	-Infinity 0.4056	
001E2-5	- Sand + Peat Control	0.0481	-Infinity 0.3973	
4403 DH Aged	- Sand + Peat Control	0.0000	-Infinity 0.3492	
4617 MN North Aged	- Sand + Peat Control	-0.0564	-Infinity 0.2928	
4501 JN West Aged	- Sand + Peat Control	-0.3109	-Infinity 0.0383	
4501 F Aged	- Sand + Peat Control	-0.3363	-Infinity 0.0129	
4501 F Unaged	- Sand + Peat Control	-0.4173	-Infinity -0.0681	***
4501 JN West Unaged	- Sand + Peat Control	-0.4357	-Infinity -0.0865	***

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	16	001E2-5 3433 AE-E 4403 DH Aged 4403 DH UNaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509 CD-S Aged 4509 CD-S Unaged 4617 MN North Aged 4617 MN North Unaged 4621 AE East Sand + Peat Control

Number of Observations Read	128
Number of Observations Used	128

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Dependent Variable: rank Rank for Variable Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	114442.0000	7629.4667	14.17	<.0001
Error	112	60308.5000	538.4688		
Corrected Total	127	174750.5000			

R-Square	Coeff Var	Root MSE	rank Mean
0.654888	35.97663	23.20493	64.50000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	15	114442.0000	7629.4667	14.17	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	15	114442.0000	7629.4667	14.17	<.0001

----- species=Chironomus Endpoint=AFDW per Survivor -----

The GLM Procedure

Dunnett's One-tailed t Tests for rank

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	112
Error Mean Square	538.4688
Critical Value of Dunnett's t	2.60088
Minimum Significant Difference	30.177

Comparisons significant at the 0.05 level are indicated by \*\*\*.

Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
4502 OP South Unaged - Sand + Peat Control	13.94	-Infinity 44.11	
4502 OP South Aged - Sand + Peat Control	8.75	-Infinity 38.93	
3433 AE-E - Sand + Peat Control	7.63	-Infinity 37.80	
4617 MN North Aged - Sand + Peat Control	4.63	-Infinity 34.80	
4403 DH Aged - Sand + Peat Control	0.94	-Infinity 31.11	
4509 CD-S Unaged - Sand + Peat Control	-0.06	-Infinity 30.11	
4509 CD-S Aged - Sand + Peat Control	-0.38	-Infinity 29.80	
4617 MN North Unaged - Sand + Peat Control	-14.38	-Infinity 15.80	
4403 DH UNaged - Sand + Peat Control	-16.44	-Infinity 13.74	
001E2-5 - Sand + Peat Control	-24.13	-Infinity 6.05	
4621 AE East - Sand + Peat Control	-27.00	-Infinity 3.18	
4501 JN West Aged - Sand + Peat Control	-64.38	-Infinity -34.20	***
4501 F Aged - Sand + Peat Control	-65.25	-Infinity -35.07	***
4501 F Unaged - Sand + Peat Control	-67.75	-Infinity -37.57	***
4501 JN West Unaged - Sand + Peat Control	-74.13	-Infinity -43.95	***



----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	16	001E2-5 3433 AE-E 4403 DH Aged 4403 DH UNaged 4501 F Aged 4501 F Unaged 4501 JN West Aged 4501 JN West Unaged 4502 OP South Aged 4502 OP South Unaged 4509 CD-S Aged 4509 CD-S Unaged 4617 MN North Aged 4617 MN North Unaged 4621 AE East Sand + Peat Control

Number of Observations Read	128
Number of Observations Used	128

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Dependent Variable: rank      Rank for Variable Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	69148.1875	4609.8792	5.95	<.0001
Error	112	86777.3125	774.7974		
Corrected Total	127	155925.5000			

R-Square	Coeff Var	Root MSE	rank Mean
0.443469	43.15532	27.83518	64.50000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	15	69148.18750	4609.87917	5.95	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	15	69148.18750	4609.87917	5.95	<.0001

----- species=Chironomus Endpoint=Percent Survival -----

The GLM Procedure

Dunnett's One-tailed t Tests for rank

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	112
Error Mean Square	774.7974
Critical Value of Dunnett's t	2.60088
Minimum Significant Difference	36.198

Comparisons significant at the 0.05 level are indicated by \*\*\*.

Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
4621 AE East - Sand + Peat Control	37.06	-Infinity 73.26	
4509 CD-S Unaged - Sand + Peat Control	24.94	-Infinity 61.14	
4617 MN North Unaged - Sand + Peat Control	19.69	-Infinity 55.89	
3433 AE-E - Sand + Peat Control	18.88	-Infinity 55.07	
4403 DH UNaged - Sand + Peat Control	18.88	-Infinity 55.07	
4502 OP South Aged - Sand + Peat Control	15.38	-Infinity 51.57	
4502 OP South Unaged - Sand + Peat Control	8.13	-Infinity 44.32	
001E2-5 - Sand + Peat Control	6.75	-Infinity 42.95	
4509 CD-S Aged - Sand + Peat Control	6.06	-Infinity 42.26	
4403 DH Aged - Sand + Peat Control	0.00	-Infinity 36.20	
4617 MN North Aged - Sand + Peat Control	-6.06	-Infinity 30.14	
4501 JN West Aged - Sand + Peat Control	-26.94	-Infinity 9.26	
4501 F Aged - Sand + Peat Control	-30.13	-Infinity 6.07	
4501 JN West Unaged - Sand + Peat Control	-40.88	-Infinity -4.68	***
4501 F Unaged - Sand + Peat Control	-42.75	-Infinity -6.55	***

## Test Batch 2

Sample	Replicate	Initial Number	# Larvae Remaining	Mean Survival Larvae	# of Pupae	Total # of Survivors	Mean Survival TOTAL	SD	# of pupae exuvae	# of Adult Flys
Control	1	10	9	81.3%	0	9	88.8%	8.35	1	1
	2	10	9		0	9			1	1
	3	10	9		0	9			2	2
	4	10	10		0	10				
	5	10	6		1	7				
	6	10	9		0	9				
	7	10	7		2	9			1	1
	8	10	6		3	9				
Port Gamble Spring "C" Control	1	10	6	75.0%	1	7	85.0%	13.09	1	1
	2	10	6		1	7			1	1
	3	10	8		1	9			1	1
	4	10	8		1	9			1	1
	5	10	8		2	10				
	6	10	9		1	10				
	7	10	6		1	7				
	8	10	9		0	9				
2324 AB-N	1	10	7	77.5%	0	7	78.8%	12.46		
	2	10	7		0	7				
	3	10	8		1	9				
	4	10	6		0	6				
	5	10	10		0	10				
	6	10	8		0	8				
	7	10	8		0	8				
	8	10	8		0	8				1

Sample	Replicate	Tare Weight (mg)	Total Dry Weight	Total Ashed Weight	AFDW	Dry Weight per Surviving Larvae	Dry Weight per Initial Number	AFDW per Surviving Larvae	AFDW per Initial Number
Control	1	181	200.47	183.63	16.84	2.163	1.947	1.871	1.684
	2	186.36	204.98	189.39	15.59	2.069	1.862	1.732	1.559
	3	186.95	203.9	190.01	13.89	1.883	1.695	1.543	1.389
	4	189.04	208.28	193.9	14.38	1.924	1.924	1.438	1.438
	5	177.6	192.14	179.82	12.32	2.423	1.454	2.053	1.232
	6	185.2	208.66	189.87	18.79	2.607	2.346	2.088	1.879
	7	185.24	200.29	187.18	13.11	2.150	1.505	1.873	1.311
	8	181.45	195.16	184.15	11.01	2.285	1.371	1.835	1.101
Port Gamble Spring "C" Control	1	182.61	202.8	188.96	13.84	3.365	2.019	2.307	1.384
	2	182.67	202.98	188.81	14.17	3.385	2.031	2.362	1.417
	3	197.45	222.21	204.21	18	3.095	2.476	2.250	1.800
	4	209.02	233.18	215.46	17.72	3.020	2.416	2.215	1.772
	5	201.78	219.65	206.28	13.37	2.234	1.787	1.671	1.337
	6	207.49	228.11	211.81	16.3	2.291	2.062	1.811	1.630
	7	201.66	221.44	206.02	15.42	3.297	1.978	2.570	1.542
	8	213.87	241.42	223.75	17.67	3.061	2.755	1.963	1.767
2324 AB-N	1	206.91	226.1	209.81	16.29	2.741	1.919	2.327	1.629
	2	192.29	209.32	194.98	14.34	2.433	1.703	2.049	1.434
	3	200.08	218.62	202.85	15.77	2.318	1.854	1.971	1.577
	4	194.48	210.36	197.07	13.29	2.647	1.588	2.215	1.329
	5	200.69	221.15	203.98	17.17	2.046	2.046	1.717	1.717
	6	195.79	210.43	198.57	11.86	1.830	1.464	1.483	1.186
	7	187.95	205.8	190.64	15.16	2.231	1.785	1.895	1.516
	8	187.07	205.38	189.61	15.77	2.289	1.831	1.971	1.577

Sample	Replicate	Mean Dry Weight per Surviving Larvae	Mean Dry Weight per Initial Number	Mean AFDW per Survivor	SD	Mean AFDW per Initial Number
Control	1	2.188	1.763	1.804	0.227	1.449
	2					
	3					
	4					
	5					
	6					
	7					
	8					
Port Gamble Spring "C" Control	1	2.968	2.191	2.144	0.302	1.581
	2					
	3					
	4					
	5					
	6					
	7					
	8					
2324 AB-N	1	2.317	1.774	1.953	0.267	1.496
	2					
	3					
	4					
	5					
	6					
	7					
	8					

# 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER

NEWFIELDS

CLIENT	PROJECT	JOB NUMBER	PROJECT MAN.	LABORATORY	PROTOCOL	SPECIES
SEWMD	U.S. Sugar	0645-030-900	Bill Gardiner	Port Gamble, WA Batch 9	USEPA 1600 - (P) (M) (S) (N)	Chironomus dilutus

## ENDPOINT DATA & OBSERVATIONS

CLIENT/NEWFIELDS ID	REP	JAR #	INITIAL	DATE		OBSERV.	TECHNICIAN	DATE		OBSERV.	TECHNICIAN	DATE		OBSERV.	TECHNICIAN	NUMBER REMAINING	WEIGH BOAT NUMBER	TARE WEIGHT (mg)	TOTAL WEIGHT (mg)	ASH FREE DRY WEIGHT (mg)
				DATE	TECHNICIAN			DATE	TECHNICIAN			DATE	TECHNICIAN							
Sand Control /	1	10		10/11	NMB	N		10/12	CR	N		10/13	CR	N		9	1	181.00	200.47	
	2	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		9	2	186.36	204.98	
	3	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		9	3	186.95	203.90	
	4	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		10	4	189.04	208.28	
	5	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		64, 1P	5	177.60	192.14	
	6	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		9	6	185.20	208.66	
	7	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		74, 2P	7	185.24	200.29	
	8	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		64, 3P	8	181.45	195.16	
Port Gamble Control /	1	10		10/11	NMB	N		10/12	CR	N		10/13	CR	N		64, 1P	9	192.61	202.80	
	2	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		64, 1P	10	182.67	202.98	
	3	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		84, 1P	11	197.45	222.21	
	4	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		84, 1P	12	204.02	233.15	
	5	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		84, 2P	13	201.78	219.65	
	6	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		94, 1P	14	207.49	228.11	
	7	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		64, 1P	15	201.66	221.44	
	8	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		9	16	213.87	241.42	
2324 AB-N (Unacc) /	1	10		10/11	NMB	N		10/12	CR	N		10/13	CR	N		7	17	206.91	226.10	
	2	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		7	18	192.29	209.32	
	3	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		84, 1P	19	200.08	218.62	
	4	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		6	20	194.49	210.36	
	5	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		10	21	200.69	221.15	
	6	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		8	22	195.79	210.43	
	7	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		8	23	187.95	205.80	
	8	10		10/12	CR	N		10/13	CR	N		10/14	NMB	N		8	24	187.07	205.38	

10/11 - all Normal TS



NEW FIELDS

## 10 DAY SOLID PHASE TEST DATA SHEET 3 - FRESHWATER

[illegible]

10/11 - all Normal TS



# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
SEWMD	U.S. Sugar	Chironomid dilutus	Port Gamble, WA Bath 9	USEPA 1603 - EPA 821-A-93-004
JOB NUMBER	PROJECT MANAGER	TEST START DATE	TIME	TEST END DATE
0645-030-900	Bill Gardiner	01Oct08	1630	11Oct08

WATER QUALITY DATA #1														DILUTION WATER BATCH				TEMP. RECORD/HOBOR			
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)		TEMP (°C)	COND. (µS/cm)		pH	SALINITY		TECHNICIAN	WATER RENEWAL	FEEDING	pH	unit	pH	pH	pH	pH	pH
				meter	mg/L		meter	µS/cm		meter	ppt										
Sand Control /	0	WQ	18	4	8.7	4	21.6	1	388	1	8.2	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Sand Control /	1	WQ	18	4	4.0	4	22.0	1	462	1	7.6	CR	TS	TS	TS	TS	TS	TS	TS	TS	TS
Sand Control /	2	WQ	18	4	3.4	4	22.7	1	463	1	7.6	CR	TS	TS	TS	TS	TS	TS	TS	TS	TS
Sand Control /	3	WQ	18	4	2.7	4	22.6	1	457	1	7.6	NMB	NMB	NMB	NMB	NMB	NMB	NMB	NMB	NMB	NMB
Sand Control /	4	WQ	18	4	3.8	4	22.3	1	470	1	7.3	NMB	NMB	NMB	NMB	NMB	NMB	NMB	NMB	NMB	NMB
Sand Control /	5	WQ	18	4	4.6	4	22.0	1	459	1	7.7	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR
Sand Control /	6	WQ	18	4	3.4	4	21.7	1	462	1	6.9	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Sand Control /	7	WQ	18	4	4.1	4	21.5	1	455	1	7.2	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Sand Control /	8	WQ	18	4	4.6	4	21.9	1	471	1	7.0	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Sand Control /	9	WQ	18	4	4.3	4	22.5	1	455	1	7.4	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Sand Control /	10	WQ	18	4	3.6	4	21.9	1	460	1	7.4	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Port Gamble Control /	0	WQ	25	4	8.2	4	22.0	1	339	1	8.2	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Port Gamble Control /	1	WQ	25	4	4.0	4	22.3	1	451	1	7.6	CR	TS	TS	TS	TS	TS	TS	TS	TS	TS
Port Gamble Control /	2	WQ	25	4	3.6	4	22.7	1	446	1	7.6	CR	TS	TS	TS	TS	TS	TS	TS	TS	TS
Port Gamble Control /	3	WQ	25	4	3.2	4	22.6	1	448	1	7.6	NMB	NMB	NMB	NMB	NMB	NMB	NMB	NMB	NMB	NMB
Port Gamble Control /	4	WQ	25	4	3.7	4	22.5	1	469	1	7.4	NMB	NMB	NMB	NMB	NMB	NMB	NMB	NMB	NMB	NMB
Port Gamble Control /	5	WQ	25	4	3.4	4	22.1	1	453	1	7.6	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR
Port Gamble Control /	6	WQ	25	4	2.7	4	21.8	1	447	1	7.1	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Port Gamble Control /	7	WQ	25	4	3.3	4	21.8	1	462	1	7.3	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Port Gamble Control /	8	WQ	25	4	3.4	4	22.2	1	457	1	7.1	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Port Gamble Control /	9	WQ	25	4	3.5	4	22.0	1	450	1	7.4	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Port Gamble Control /	10	WQ	25	4	2.6	4	20.4	1	453	1	7.4	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS



# 10 DAY SOLID PHASE TEST DATA SHEET 2 - FRESHWATER

CLIENT	SFWMD	PROJECT	U.S. Sugar	SPECIES	Chironomus dilutus	LABORATORY	Port Gamble, WA Bath 9	PROTOCOL	DATA 2000 - EW-0201-10/14
JOB NUMBER	0645-030-900	PROJECT MANAGER	Bill Gardiner	TEST START DATE	01Oct08	TIME	1630	TEST END DATE	11Oct08

WATER QUALITY DATA #1										
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)		TEMP (°C)	COND (µS/cm)		pH	Salinity
				meter	mg/L		meter	µS/cm		
2324 AB-N (Unacc.) /	0	WQ	17	4	8.0	4	22.2	1	423	meter
2324 AB-N (Unacc.) /	1	WQ	17	4	4.3	4	22.5	1	493	ppt
2324 AB-N (Unacc.) /	2	WQ	17	4	4.0	4	22.8	1	476	meter
2324 AB-N (Unacc.) /	3	WQ	17	4	3.6	4	22.6	1	474	meter
2324 AB-N (Unacc.) /	4	WQ	17	4	4.3	4	22.0	1	481	meter
2324 AB-N (Unacc.) /	5	WQ	17	4	4.2	4	22.3	1	473	meter
2324 AB-N (Unacc.) /	6	WQ	17	4	3.2	4	21.7	1	465	meter
2324 AB-N (Unacc.) /	7	WQ	17	4	4.3	4	22.9	1	471	meter
2324 AB-N (Unacc.) /	8	WQ	17	4	4.0	4	22.4	1	480	meter
2324 AB-N (Unacc.) /	9	WQ	17	4	4.4	4	22.3	1	484	meter
2324 AB-N (Unacc.) /	10	WQ	17	4	4.1	4	22.6	1	476	meter

DILUTION WATER BATCH	REW033	TECHNICIAN	pH	unit	TEMP-REC'DR/HOB04	FEED-ING
1	8.1	TS	CR	TS	CR	TS
1	7.6	CR	TS	TS	TS	TS
1	7.6	CR	TS	TS	TS	TS
1	7.6	MMB	TS	MMB	TS	MMB
1	7.1	MMB	TS	MMB	TS	MMB
1	7.5	CR	TS	CR	TS	CR
1	7.1	TS	TS	TS	TS	TS
1	7.4	TS	TS	TS	TS	TS
1	7.1	TS	TS	TS	TS	TS
1	7.2	TS	TS	TS	TS	TS
1	7.5	TS	TS	TS	TS	TS

species	Endpoint	Treatment	mean	notrans
Chironomus	AFDW per Initial Number	2324 AB-N	1.495625	.
Chironomus	AFDW per Initial Number	Control	1.449125	.
Chironomus	AFDW per Surviving Larvae	2324 AB-N	1.9534642857	.
Chironomus	AFDW per Surviving Larvae	Control	1.8042043651	.

species	Endpoint	Prob Normal	Prob Homogeneous
Chironomus	AFDW per Initial Number	0.98826	0.34613
Chironomus	AFDW per Surviving Larvae	0.61557	0.82856

----- species=Chironomus Endpoint=AFDW per Initial Number -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	2	2324 AB-N Control
Number of Observations Read		16
Number of Observations Used		16

----- species=Chironomus Endpoint=AFDW per Initial Number -----

The GLM Procedure

Dependent Variable: Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	0.00864900	0.00864900	0.19	0.6728
Error	14	0.65106675	0.04650477		
Corrected Total	15	0.65971575			

R-Square	Coeff Var	Root MSE	Result Mean
0.013110	14.64638	0.215650	1.472375

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	1	0.00864900	0.00864900	0.19	0.6728

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	1	0.00864900	0.00864900	0.19	0.6728

----- species=Chironomus Endpoint=AFDW per Initial Number -----

The GLM Procedure

Dunnett's One-tailed t Tests for Result

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	14
Error Mean Square	0.046505
Critical Value of Dunnett's t	1.76131
Minimum Significant Difference	0.1899

Comparisons significant at the 0.05 level are indicated by \*\*\*.

Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits
2324 AB-N - Control	0.04650	-Infinity 0.23641



----- species=Chironomus Endpoint=AFDW per Surviving Larvae -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	2	2324 AB-N Control
Number of Observations Read		16
Number of Observations Used		16

----- species=Chironomus Endpoint=AFDW per Surviving Larvae -----

The GLM Procedure

Dependent Variable: Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	0.08911410	0.08911410	1.45	0.2481
Error	14	0.85881340	0.06134381		
Corrected Total	15	0.94792749			

R-Square	Coeff Var	Root MSE	Result Mean
0.094009	13.18247	0.247677	1.878834

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	1	0.08911410	0.08911410	1.45	0.2481

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	1	0.08911410	0.08911410	1.45	0.2481

----- species=Chironomus Endpoint=AFDW per Surviving Larvae -----

The GLM Procedure

Dunnett's One-tailed t Tests for Result

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	14
Error Mean Square	0.061344
Critical Value of Dunnett's t	1.76131
Minimum Significant Difference	0.2181

Comparisons significant at the 0.05 level are indicated by \*\*\*.

Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits
2324 AB-N - Control	0.1493	-Infinity 0.3674

species	Endpoint	Treatment	mean	notrans
Chironomus	AFDW per Initial Number	2324 AB-N	1.495625	.
Chironomus	AFDW per Initial Number	Port Gamble Spring C Control	1.581125	.
Chironomus	AFDW per Surviving Larvae	2324 AB-N	1.9534642857	.
Chironomus	AFDW per Surviving Larvae	Port Gamble Spring C Control	2.1436284722	.

SFWMD US Sugar Statistical Comparison  
Results of Assumption Checks

10:56 Wednesday, October 15, 2008 10

species	Endpoint	Prob Normal	Prob Homogeneous
Chironomus	AFDW per Initial Number	0.26591	0.54565
Chironomus	AFDW per Surviving Larvae	0.56993	0.50457

----- species=Chironomus Endpoint=AFDW per Initial Number -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	2	2324 AB-N Port Gamble Spring C Control
Number of Observations Read		16
Number of Observations Used		16

----- species=Chironomus Endpoint=AFDW per Initial Number -----

The GLM Procedure

Dependent Variable: Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	0.02924100	0.02924100	0.90	0.3595
Error	14	0.45608475	0.03257748		
Corrected Total	15	0.48532575			

R-Square	Coeff Var	Root MSE	Result Mean
0.060250	11.73266	0.180492	1.538375

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	1	0.02924100	0.02924100	0.90	0.3595

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	1	0.02924100	0.02924100	0.90	0.3595

----- species=Chironomus Endpoint=AFDW per Initial Number -----

The GLM Procedure

Dunnett's One-tailed t Tests for Result

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	14
Error Mean Square	0.032577
Critical Value of Dunnett's t	1.76131
Minimum Significant Difference	0.159

Comparisons significant at the 0.05 level are indicated by \*\*\*.

	Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits
2324 AB-N	- Port Gamble Spring C Control	-0.08550	-Infinity 0.07345



----- species=Chironomus Endpoint=AFDW per Surviving Larvae -----

The GLM Procedure

Class Level Information

Class	Levels	Values
Treatment	2	2324 AB-N Port Gamble Spring C Control
	Number of Observations Read	16
	Number of Observations Used	16

----- species=Chironomus Endpoint=AFDW per Surviving Larvae -----

The GLM Procedure

Dependent Variable: Result

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	0.14464967	0.14464967	1.78	0.2034
Error	14	1.13739456	0.08124247		
Corrected Total	15	1.28204423			

R-Square	Coeff Var	Root MSE	Result Mean
0.112827	13.91380	0.285031	2.048546

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	1	0.14464967	0.14464967	1.78	0.2034

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	1	0.14464967	0.14464967	1.78	0.2034

----- species=Chironomus Endpoint=AFDW per Surviving Larvae -----

The GLM Procedure

Dunnett's One-tailed t Tests for Result

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	14
Error Mean Square	0.081242
Critical Value of Dunnett's t	1.76131
Minimum Significant Difference	0.251

Comparisons significant at the 0.05 level are indicated by \*\*\*.

	Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits
2324 AB-N	- Port Gamble Spring C Control	-0.1902	-Infinity 0.0609

## Appendix C

### Chain of Custody Forms



NewFields Northwest, LLC.  
Shipping: 4729 NE View Dr.  
Mailing: P.O. Box 216  
Port Gamble, WA. 98364

Tel: (360) 297-6040, Fax: (360) 297-7268

CHAIN OF CUSTODY  
13289

Destination Lab:		Sample Originator: <b>PSI, INC.</b>		Report Results To: <b>PSI</b>		Phone:			
Destination Contact:		Contact Name: <b>BARRY WESTMARK</b>		Contact Name: <b>Steve Long / Barry Westmark</b>		Fax:			
Date:		Address: <b>185 S Hwy 27 South</b>		Address: <b>185 US Hwy 27 South</b>		Email: <b>bwestmark@ectinc.com</b>			
Turn-Around-Time		Address: <b>South Bay, FL 33493</b>		Address: <b>South Bay, FL 33493</b>		Email: <b>cpimpe1@wrscompass.com</b>			
Project Name: <b>SFWMD-US Sugar Agues.</b>		Phone: <b>561-946-4666</b>		Invoicing To:		Email: <b>stevlong@pslusa.com</b>			
Proj #: <b>683-88001</b>		Fax: <b>561-946-4668</b>		Comments or Special Instructions:		Email: <b>syelverstone@wrscompass.com</b>			
Contract/PO:		E-mail:							
No.	Sample ID	Matrix	No. & Type of Container	Date & Time	Analysis	Preservation	Sample Temp Upon Receipt	LAB ID	
1	4631LP-E-BID	SS	2 BAGS	8/11/08/1120	Bore Water	Ice	20°C		
2					X Bivacumulation				
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
Relinquished by:		Received by:		Relinquished by:		Received by:		Matrix Codes	
Print Name: <b>Brad Beckman</b>		Print Name: <b>BRYAN HESTER</b>		Print Name:		Print Name:		FW = Fresh Water	
Signature: <b>Brad Beckman</b>		Signature: <b>[Signature]</b>		Signature:		Signature:		WW = Waste Water	
Affiliation: <b>PSI</b>		Affiliation: <b>NewFields</b>		Affiliation:		Affiliation:		SB = Soil & Brackish Water	
Date/Time: <b>8.11.08 / 1500</b>		Date/Time: <b>8/11/08 1700</b>		Date/Time:		Date/Time:		SS = Soil & Sediment	
								TS = plant & Animal Tissue	
								OT = Other	



NewFields Northwest, LLC.  
Shipping: 4729 NE View Dr.  
Mailing: P.O. Box 216  
Port Gamble, WA. 98364

CHAIN OF CUSTODY  
13290

Tel: (360) 297-6040, Fax: (360) 297-7268

Destination Lab:		Sample Originator: <b>PSI, Inc.</b>		Report Results To: <b>B. Westmark</b>		Phone:			
Destination Contact:		Contact Name: <b>Brian Westmark</b>		Contact Name: <b>Steve Long</b>		Fax:			
Date:		Address: <b>185 US Hwy 27 South</b>		Address: <b>bwestmark@ectinc.com</b>		Email:			
Turn-Around-Time		South Bay, FL 33493		steve.long@psi-usa.com					
Project Name: <b>SFWMD - US Super Acquisition</b>		Phone: <b>(561) 996-4666</b>		Invoicing To:					
Project No: <b>683-66001</b>		Fax: <b>(561) 996-4668</b>		Comments or Special Instructions:					
Contract/PO:		E-mail:							
No.	Sample ID	Matrix	No. & Type of Container	Date & Time	Analysis	Preservation	Sample Temp Upon Receipt	LAB ID	
1	4501IM-W-BIO	SS	1 Bag	8/11/08 @ 1350	Pore Water	ICE	4°C		
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
Relinquished by:		Received by:		Relinquished by:		Received by:		Matrix Codes	
Print Name: <b>Graham Hayes</b>		Print Name: <b>BRIAN HESTER</b>		Print Name:		Print Name:		FW = Fresh Water	
Signature: <i>Graham Hayes</i>		Signature: <i>[Signature]</i>		Signature:		Signature:		WW = Waste Water	
Affiliation: <b>URS</b>		Affiliation: <b>NewFields</b>		Affiliation:		Affiliation:		SB = Salt & Brackish Water	
Date/Time: <b>8/11/08 @ 1500</b>		Date/Time: <b>8/12/08 1700</b>		Date/Time:		Date/Time:		SS = Soil & Sediment	
								TS = plant & Animal Tissue	
								OT = Other	



NewFields Northwest, LLC.  
Shipping: 4729 NE View Dr.  
Mailing: P.O. Box 216  
Port Gamble, WA. 98364  
Tel: (360) 297-6040, Fax: (360) 297-7268

CHAIN OF CUSTODY  
13287

Destination Lab:		Sample Originator:		Report Results To:		Phone:		
Designation Contact:		Contact Name:		Contact Name:		Fax:		
Date:		Address:		Address:		Email:		
Turn-Around Time:		Phone:		Invoicing To:				
Project Name:		Fax:		Comments or Special Instructions:				
Contract/PO:		E-mail:						
No.	Sample ID	Matrix	No. & Type of Container	Date & Time	Analysis	Preservation	Sample Temp Upon Receipt	LAB ID
1	4617MN-N-Bio	SS	1 bag	8/12 12:45	Accumulation	Ice	6°C	
2	4501JN-W-Bio	SS	1 bag	8/12 18:30				
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Relinquished by:					Received by:			
Print Name: Lance Scoggin					Print Name:			
Signature: Lance Scoggin					Signature:			
Affiliation: PSI					Affiliation:			
Date/Time: 8/12 18:00					Date/Time:			
Relinquished by:					Received by:			
Print Name: Mary Bacon					Print Name:			
Signature: Mary Bacon					Signature:			
Affiliation: NewFields					Affiliation:			
Date/Time: 8/13/08 1330					Date/Time:			
Matrix Codes					Matrix Codes			
FW = Fresh Water					FW = Fresh Water			
WW = Waste Water					WW = Waste Water			
SB = Salt & Brackish Water					SB = Salt & Brackish Water			
SS = Soil & Sediment					SS = Soil & Sediment			
TS = Plant & Animal Tissue					TS = Plant & Animal Tissue			
OT = Other					OT = Other			









Page 1 of 1.

PROJECT:

SAMPLE(S)

Tom Petty/Lance Seegins

303

U

→

1

RECEIVED BY

laboratory shall produce Electronic Data Deliverables (EDDs) in ADaPT compliant format utilize SFWMD ADaPT Library Ver. 5.0 for all deliverables.

laboratory shall e-mail electronic Sample Receipt and a PDF copy of the COC within 24 hours of receipt of samples.

laboratory shall provide ADaPT EDD, with Error Log, and PDF copy of lab report in the same e-mail transmission.

All laboratory deliverables shall be delivered within designated sample turnaround timeframe.

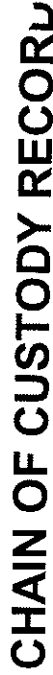
<input type="checkbox"/>	Accutes
<input type="checkbox"/>	CAS
<input type="checkbox"/>	ELAB
<input checked="" type="checkbox"/>	Other:

## NEW FIELDS

COC 7-28-08





Tel 561-996-4666 ♦ Fax 561-996-4668 ♦ [www.psiusa.com](http://www.psiusa.com)

**CLIENT NAME:**

**CLIENT NAME:** \_\_\_\_\_

**PROJECT:**

Professional Service Industries, Inc.

SFVMD-US Sugar Acquisition  
Project No. 683-8G001

E-MAIL REPORTS  
TO:  
[bwestmark@ectinc.com](mailto:bwestmark@ectinc.com)  
[cpampel@wrscmpass.com](mailto:cpampel@wrscmpass.com)  
[steve.long@psiusa.com](mailto:steve.long@psiusa.com)  
[svelverton@wrscmpass.com](mailto:svelverton@wrscmpass.com)

SAMPLER(S)

Sri Krishnaprasad/Lensen Esneault

DATE SAMPLED	TIME
10/10/2010	10:00
10/10/2010	10:05
10/10/2010	10:10
10/10/2010	10:15
10/10/2010	10:20
10/10/2010	10:25
10/10/2010	10:30
10/10/2010	10:35
10/10/2010	10:40
10/10/2010	10:45
10/10/2010	10:50
10/10/2010	10:55
10/10/2010	11:00
10/10/2010	11:05
10/10/2010	11:10
10/10/2010	11:15
10/10/2010	11:20
10/10/2010	11:25
10/10/2010	11:30
10/10/2010	11:35
10/10/2010	11:40
10/10/2010	11:45
10/10/2010	11:50
10/10/2010	11:55
10/10/2010	12:00
10/10/2010	12:05
10/10/2010	12:10
10/10/2010	12:15
10/10/2010	12:20
10/10/2010	12:25
10/10/2010	12:30
10/10/2010	12:35
10/10/2010	12:40
10/10/2010	12:45
10/10/2010	12:50
10/10/2010	12:55
10/10/2010	13:00
10/10/2010	13:05
10/10/2010	13:10
10/10/2010	13:15
10/10/2010	13:20
10/10/2010	13:25
10/10/2010	13:30
10/10/2010	13:35
10/10/2010	13:40
10/10/2010	13:45
10/10/2010	13:50
10/10/2010	13:55
10/10/2010	14:00
10/10/2010	14:05
10/10/2010	14:10
10/10/2010	14:15
10/10/2010	14:20
10/10/2010	14:25
10/10/2010	14:30
10/10/2010	14:35
10/10/2010	14:40
10/10/2010	14:45
10/10/2010	14:50
10/10/2010	14:55
10/10/2010	15:00
10/10/2010	15:05
10/10/2010	15:10
10/10/2010	15:15
10/10/2010	15:20
10/10/2010	15:25
10/10/2010	15:30
10/10/2010	15:35
10/10/2010	15:40
10/10/2010	15:45
10/10/2010	15:50
10/10/2010	15:55
10/10/2010	16:00
10/10/2010	16:05
10/10/2010	16:10
10/10/2010	16:15
10/10/2010	16:20
10/10/2010	16:25
10/10/2010	16:30
10/10/2010	16:35
10/10/2010	16:40
10/10/2010	16:45
10/10/2010	16:50
10/10/2010	16:55
10/10/2010	17:00
10/10/2010	17:05
10/10/2010	17:10
10/10/2010	17:15
10/10/2010	17:20
10/10/2010	17:25
10/10/2010	17:30
10/10/2010	17:35
10/10/2010	17:40
10/10/2010	17:45
10/10/2010	17:50
10/10/2010	17:55
10/10/2010	18:00
10/10/2010	18:05
10/10/2010	18:10
10/10/2010	18:15
10/10/2010	18:20
10/10/2010	18:25
10/10/2010	18:30
10/10/2010	18:35
10/10/2010	18:40
10/10/2010	18:45
10/10/2010	18:50
10/10/2010	18:55
10/10/2010	19:00
10/10/2010	19:05
10/10/2010	19:10
10/10/2010	19:15
10/10/2010	19:20
10/10/2010	19:25
10/10/2010	19:30
10/10/2010	19:35
10/10/2010	19:40
10/10/2010	19:45
10/10/2010	19:50
10/10/	

## AMPLE

SAMPLE IDENTIFICATION/SITE LOCATION

三

8/17/2008

16:15

U

243247E BIO

[illegible]

RELINQUISHED BY  
Sri Krishnaprasad

DATE / TIME

RECEIVED BY

**RELINQUISHED BY**

DATE / TIME

RECEIVED BY

**RELINQUISHED BY**

DATE / TIME

RECEIVED BY

**NOTES:**

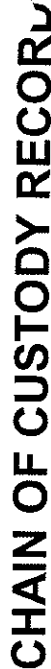
Laboratory shall produce Electronic Data Deliverables (EDDs) in AdAPT compliant format utilize SFWMD AdAPT Library Ver. 5.0 for all deliverables. Laboratory shall e-mail electronic Sample Receipt and a PDF copy of the COC within 24 hours of receipt of samples. Laboratory shall provide AdAPT EDD, with Error Log, and PDF copy of lab report in the same e-mail transmission. All laboratory deliverables shall be delivered within designated sample turnaround timeframe.

RECEIVING LAB: (Check One)

☐ Accutest  
☐ CAS  
☐ ELAB  
☒ Other:

## NEW FIELDS

COC 7-28-08

Page 1 of 1.

**PROJECT:**

SFWMD-US Sugar Acquisition  
Project No. 683-8G001

E-MAIL REPORTS TO:  
 bwestmark@ectinc.com  
 cpampel@wrscmpass.com  
 steve.long@psiusa.com  
 svelverton@wrscmpass.com

SAMPLER(S)
Sri Krishnanarasad/lensen Esneault

Sri Krishnaprasad/Jensen Esneault

SAMPLE IDENTIFICATION/SITE LOCATION

4509CD-S-BIO

[illegible][illegible][illegible]

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99

\_\_\_\_\_

---



---

---

[illegible]

RECEIVED BY

---

RECEIVED BY

RECEIVED BY

---

RECEIVED BY

4

ADAPT conditions found in Africa

ADAPT compliant format utilize SF WML ADE

copy of the COC within 24 hours of receipt of sa-

copy of lab report in the same e-mail transmits:

ample turnaround timeframe.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99

8