0069743

SAF-RC-051
100 & 300 Area Component of the RCBRA - Incremental Soil Sampling
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Jill Thomson	H0-23	___NB 5/16/06 INITIAL/DATE
Jeanette Duncan	H9-02	___NB 5/16/06 INITIAL/DATE

COMMENTS:

SDG _F1207_ SAF-RC-051

Rad only X Chem only Rad & Chem

X Complete Partial

Sediment Phytotoxicity EEDP-04-11 (Pak Choi) Test

Waste Site: U Sediments

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JUN 0 1 2006
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MAY 2006

BIOASSAY REPORT
SEDIMENT BIOASSAYS
Conducted March 2 through April 11, 2006

Prepared for

ELR CONSULTING, INC.
WASHINGTON HANFORD CLOSURE
RICHLAND, WASHINGTON

Prepared by

CH2M HILL
2300 NW Walnut Boulevard
Corvallis, Oregon 97330

May 4, 2006
Lab I.D. B1539 -01 to -18, -30, -31
SDG NUMBER B1539

F1207

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INTRODUCTION

CH2M HILL conducted bioassays using the Pak Choi (*Brassica chinensis*, Li-Ren-Choi variety) plant on sediment samples provided by ELR Consulting for Washington Closure Hanford, Richland, Washington. The tests were conducted from March 2 through April 11, 2006.

METHODS AND MATERIALS

TEST METHODS

The Pak Choi test method was adapted from: *Phytotoxicity of dredged sediment from urban canal as land application*, Chen et. al., Environmental Pollution 117 (2002) 233-241.

Additional guidance was provided by: *The Water-Culture Method for Growing Plants Without Soil*, California Agricultural Experiment Station Circular No. 347, Hoagland and Arnon, (1950).

TEST SEEDS

The Pak Choi seeds were obtained from Snow Seed Organic, Salinas, California.

CONTROL SEDIMENT

The control sediment used in the tests was artificial sediment comprised of 70 grade silica sand (70 percent by weight), kaolin clay (20 percent), and peat moss (10 percent). Calcium carbonate (0.4 percent of total weight) was added to adjust soil pH to 7.0 ± 0.5.

HYDRATION WATERS

The water used to hydrate the control and test sediments was de-ionized water. In accordance with the test methods, supplemental nutrients were supplied to the test chambers by the addition of half-strength Hoagland's solution.

TEST CONCENTRATIONS

The concentrations tested were 100 percent sample (i.e., no dilution of the bulk sediment samples was made) with artificial control sediment as the laboratory control. The Pak Choi test sediments were run in quadruplicate with one plant per replicate.

TEST DESIGN

Test chambers were 13 cm diameter x 13 cm deep cylindrical plastic pots with drainage holes in the bottom. Polyester fiber was used to cover the drain holes and allow moisture transfer. Approximately 1.5 kg of test sediment was placed on top of the fiber of each replicate. Each test container was placed inside an individual 3-liter (18 cm diameter x 14 cm deep) hydration chamber.

SAMPLE COLLECTION

The sediment samples were collected from February 5 through 27, 2006. The samples were stored in the dark at 4°C until test preparation and initiation occurred. Chain of Custody for sample collection is provided in Appendix C.

SAMPLE CROSS-REFERENCE TABLE

Table 1 provides a cross-reference of the client identification (ID) numbers, sampling dates, sampling locations, Pak Choi test sample identification (SDG) numbers, and Analytical SDG numbers.

Table 1
Sample Cross-Reference

Client ID	Sample Date	Sample Location	Pak Choi test SDG	Analytical Lab SDG
J11143	2/5/2006	REF #16	B1539-01	F1162-01
J11146	2/8/2006	U-2	B1539-02	F1187-01
J11144	2/8/2006	300-2	B1539-03	F1187-02
J11145	2/8/2006	U-1	B1539-04	F1187-03
J116N1	2/9/2006	REF 12, SEDIMENT	B1539-05	F1192-01
J116N3	2/9/2006	REF 13, SEDIMENT	B1539-06	F1192-02
J112B7	2/12/2006	Cr 5, SEDIMENT	B1539-07	F1192-03
J116N2	2/9/2006	REF 12, SEDIMENT	B1539-08	F1192-04
J116M4	2/12/2006	Cr 9, SEDIMENT	B1539-09	F1192-05
J116N0	2/9/2006	REF14, SEDIMENT	B1539-10	F1192-06
J11731	2/9/2006	REF11, SEDIMENT FULL QC	B1539-11	F1192-07
J116M5	2/12/2006	Cr10, SEDIMENT	B1539-12	F1192-08
J116M8	2/12/2006	Cr 6, SEDIMENT FULL QC	B1539-13	F1192-09
J11752	2/13/2006	U 5, SEDIMENT	B1539-14	F1207-01
J11745	2/13/2006	U 6, SEDIMENT	B1539-15	F1207-02
J11750	2/13/2006	U 8, SEDIMENT	B1539-16	F1207-03
J11751	2/13/2006	U 3, SEDIMENT	B1539-17	F1207-04
J11753	2/13/2006	U 7, SEDIMENT	B1539-18	F1207-05
J116X2	2/27/2006	Sr 3, SEDIMENT	B1539-30	F1280-01
J116W9	2/27/2006	Sr 1, SEDIMENT FULL QC	B1539-31	F1280-02

SAMPLE PREPARATION

Test sediments were homogenized prior to allocation to each replicate. For each replicate, approximately 1.5 kg wet weight of sediment was added to each test chamber. The sediments were initially hydrated with Milli-Q equivalent de-ionized water via subirrigation. In addition, a sub sample of the sediment was added to a surrogate chamber and hydrated for pH measurements.

WATERING SCHEDULE

Test chambers were hydrated with deionized water prior to test initiation and daily thereafter for the first 10 days via subirrigation. Test sediments were hydrated by placing the test chamber into a hydration chamber containing deionized water and allowing the water to percolate into the bottom of the chamber. After a minimum of 15 minutes, the test chambers were lifted, excess water removed from the hydration chamber, and the test chamber placed back into the hydration chamber.

Starting 11 days after planting, test soils were supplemented with nutrients by the addition of 50 ml of half strength Hoagland's solution three days a week (Monday, Wednesday, and Fridays). The half strength Hoagland's solution was applied directly to the sediment surface. Hydration with deionized water via subirrigation was performed on Sunday, Tuesday, Thursday, and Saturdays.

TEST INITIATION

Following sample preparation, four Pak Choi seeds were planted into each test chamber. Seeds were planted at a depth of 1 ½ times the seeds diameter (approx. 1 mm) and covered gently with sediment. A small amount of hydration water (approx. 10 ml) was sprayed onto the sediment surface to ensure seeds received moisture.

TEST MONITORING

Sediment pH was taken at test initiation and termination by placing approximately 30 g of sediment into a specimen cup, adding 100 ml of hydration water, and mixing. The slurry was allowed to settle for one hour and the supernatant pH was determined.

Temperature was monitored in the incubator continuously throughout the testing period.

The Pak Choi tests were monitored on Day 12, Day 18, and Day 22 for germination.

On Day 18, seedlings were transplanted in those test concentrations that had one or more test replicates with no germinated seeds and at least one replicate with more than one germinated seed. Transplant details are noted on the bench sheets included in Appendix A.

On Day 22, test chambers that had more than one seedling growing were thinned to reduce the number of seedlings to one.

TEST TERMINATION

For each test chamber, all of the above ground biomass (i.e. "shoots") from the single plant was collected and placed into tared aluminum tins. The shoots were weighed to determine the wet weight immediately following removal from the test chamber. The shoots were then dried in an oven at 70 °C for a minimum of 48 hours. The shoots were then placed into a desiccator for a minimum of 2 hours and weighed to determine dry weight.

DATA ANALYSIS

For each test chamber, the following endpoints were calculated:

- Average Above Ground Biomass (Wet)
  (Calculated as the total wet weight of the shoots in each replicate test chamber)
- Average Above Ground Biomass (Dry)
  (Calculated as the total dry weight of the shoots in each replicate test chamber)

Statistical analysis for each endpoint listed comprised of entering the data obtained from each replicate chamber of a test sediment and comparing the result to the data from the replicate chambers of the laboratory control. For each endpoint, a single tailed t-test from the CETIS (version 1.1.2, Tidepool software) program was used to determine whether statistically significant reductions were observed in the test sediments when compared with the lab control. The Equal Variance t Two-Sample test was used as the primary default statistical measure. However, when the assumptions of equality of variance or normality necessary for Equal Variance t Two-Sample test was not met, the Unequal Variance t Two-Sample test or Wilcoxon Rank Sum Two Sample test was used.

The endpoint data and the results statistical analysis are summarized in Table 2. The data represents the average value of all replicates within each test sediment.

RESULTS AND DISCUSSION

Table 2 summarizes the results of the Pak Choi tests initiated on March 2, 2006.

The results for samples J11143, J11731, J116X2 indicated a statistically significant reduction in both wet weight and dry weight above ground biomass when compared to the laboratory control.

The results for sample J116N3 indicated no statistically significant reduction in wet weight above ground biomass, however a statistically significant reduction in dry weight above ground biomass was observed when compared to the laboratory control.

With the exception of samples J11143, J116N3, J11731, and J116X2 (as listed above), all other sediment samples tested indicated no statistically significant reduction in wet weight or dry weight above ground biomass when compared to the laboratory control.

Table 2:
Pak choi Chronic Test Results for Washington Closure Hanford Initiated on March 2, 2006

E, significantly different from lab control by use of Equal Variance t Two-Sample Test

ns indicates a non statisticaly significant result; [5], indicates significant at alpha (p) = 0.05;

--, indicates no statistical test performed.

Lab ID:	Sample Number:	*Pak choi* Above Ground Biomass (Wet Wt.) Endpoint (g)	Statistically significant difference when compared to Lab Control?	*Pak choi* Above Ground Biomass (Dry Wt.) Endpoint (g)	Statistically significant difference when compared to Lab Control?
Tests initiated on March 2, 2006					
Laboratory Control		5.81	--	0.317	--
B1539-01	J11143	0.43	E [5]	0.025	E [5]
B1539-02	J11146	3.46	ns	0.186	ns
B1539-03	J11144	4.76	ns	0.262	ns
B1539-04	J11145	5.01	ns	0.281	ns
B1539-05	J116N1	8.85	ns	0.425	ns
B1539-06	J116N3	2.58	ns	0.137	E [5]
B1539-07	J112B7	9.32	ns	0.455	ns
B1539-08	J116N2	8.81	ns	0.423	ns
B1539-09	J116M4	3.37	ns	0.172	ns
B1539-10	J116N0	4.71	ns	0.236	ns
B1539-11	J11731	2.07	E [5]	0.115	E [5]
B1539-12	J116M5	4.55	ns	0.219	ns
B1539-13	J116M8	6.51	ns	0.326	ns
B1539-14	J11752	6.73	ns	0.339	ns
B1539-15	J11745	4.72	ns	0.227	ns
B1539-16	J11750	8.54	ns	0.408	ns
B1539-17	J11751	6.89	ns	0.338	ns
B1539-18	J11753	5.60	ns	0.328	ns
B1539-30	J116X2	1.25	E [5]	0.090	E [5]
B1539-31	J116W9	3.68	ns	0.191	ns

CERTIFICATION STATEMENT

I certify that this data package is in compliance with the Statement of Work, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature:

APPENDIX A
RAW DATA SHEETS

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date 3/2/2006

Day 0 Initials Bm Day 12 Initials Bm Day 18 Initials Bm/MS Day 22 Initials Bm

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day 22

CONC.	REP.	Seeds germinated ? (Y / N) DAY 12	DAY 18	DAY 22	pH DAY 0	DAY 40
Control	A	Y	Y	Y	6.6	7.2
	B	Y	Y	Y		
	C	Y	Y	Y		
	D	Y	Y	Y		
B1539-01 100 %	A	N	~~Q~~N	N	6.7	6.9
	B	N	N	N		
	C	N	N	N		
	D	N	Y (1)	Y		
B1539-02 100 %	A	Y	Y	Y	6.5	6.8
	B	Y	Y	Y		
	C	Y	Y	Y		
	D	N	N	N		
B1539-03 100 %	A	N	N	Y	6.4	6.6
	B	Y	Y	Y		
	C	N	N	Y		
	D	Y	Y	Y		
B1539-04 100 %	A	Y	Y	Y	6.3	7.1
	B	N	N	Y		
	C	N	N	Y		
	D	Y	Y	Y		
B1539-05 100 %	A	Y	Y	Y	6.5	7.0
	B	Y	Y	Y		
	C	Y	Y	Y		
	D	Y	Y	Y		

Day 40 1 plant just sprouting

Initials [illegible] Date 3-31-06	Initials MS Date 4-11-06	Initials [illegible] Date 4-13-06
Tare Weight (g)	Total Wet Weight (g)	Total Dry Weight (g)
3.80825	11.16570	4.22156
3.83486	7.36134	4.05215
3.83167	7.07674	4.00236
3.81356	12.94072	4.28210
3.83243	4.03801	3.84548
3.82970	3.87465	3.83153
3.82816	No plant	NO PLANT
3.83589	4.87463	3.89699
3.89000	7.62857	4.07967
3.78938	5.64807	3.89342
3.75440	8.53004	4.01787
3.77055	No Plant	NO PLANT
3.76635	8.09082	4.00790
3.76189	8.81041	4.02268
3.76560	6.98899	3.96468
3.79941	10.23545	4.14668
3.83582	11.35976	4.27188
3.82796	7.68739	4.02406
3.81085	8.27324	4.04450
3.82881	8.03181	4.08621
3.81186	12.05970	4.21499
3.79979	12.60790	4.20307
3.78951	13.15001	4.25364
4.00516	12.99363	4.43617

Comments: Day 18 BM/MS - Transplanted 1 from -03 B to A, 1 from -03 B to C
-04: 1 plant from D to B, 1 from D to C - rep C also had 1 plant just sprouting

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date 3/2/2006

Day 0 Initials Bm Day 12 Initials Bm Day 18 Initials Bm/MS Day 22 Initials Bm

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day 22

CONC.	REP.	Seeds germinated ? (Y / N) DAY 12 (3-14-06)	DAY 18	DAY 22	pH DAY 0	DAY 40
B1539-06 100 %	A	Y	Y	Y	6.6	7.0
	B	N	Y	Y		
	C	Y	Y	Y		
	D	Y	Y	Y		
B1539-07 100 %	A	Y	Y	Y	6.6	7.1
	B	Y	Y	Y		
	C	Y	Y	Y		
	D	Y	Y	Y		
B1539-08 100 %	A	Y	Y	Y	6.5	6.9
	B	Y	Y	Y		
	C	Y	Y	Y		
	D	Y	Y	Y		
B1539-09 100 %	A	Y	Y	Y	6.7	7.4
	B	Y	Y	Y		
	C	N	N	Y		
	D	Y	Y	Y		
B1539-10 100 %	A	Y	Y	Y	6.6	6.7
	B	Y	Y	Y		
	C	Y	Y	Y		
	D	Y	Y	Y		
B1539-11 100 %	A	Y	Y	Y	6.3	7.1
	B	N	N	Y		
	C	N	Y	Y		
	D	N	N	Y		

Initials [illegible] Date 3-31-06	Initials Bm/MS Date 4-11-06	Initials NJ Date 4-19-06
Tare Weight (g)	Total Wet Weight (g)	Total Dry Weight (g)
3.80011	6.52813	3.92978
3.81481	4.25781	3.84206
3.82185	8.39032	4.07631
3.82797	6.39948	3.96541
3.81212	13.94406	4.30478
3.81767	13.87888	4.31360
3.83148	15.18302	4.38835
3.83998	9.58856	4.11534
3.83502	13.36019	4.29128
3.81135	11.49645	4.19226
3.79878	14.77086	4.31553
3.81021	10.86518	~~4.14~~ 4.15 001
3.81703	7.32146	3.99321
3.81287	5.68931	3.91583
3.81586	7.13022	3.98919
3.84209	8.60826	4.07645
3.78606	10.65026	4.13272
3.80274	7.45848	3.98875
3.80613	7.29634	NJ ~~3.99~~ 3.99182
3.80602	8.61858	4.03023
3.82302	6.10828	3.95395
3.80976	7.48417	3.99813
3.83009	4.48955	3.87745
3.74590	5.40205	3.83860

Comments: -06 B: One plant w/ 3 leaves - obviously not Pakchoi germinated Day 12
-09: 2 from B to C
-11: 1 plant from A to B, 1 plant from A to D

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date 3/2/2006

Day 0 Initials Bm Day 12 Initials Bm Day 18 Initials Bm/ms Day 22 Initials Bm

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day 22

CONC.	REP.	Seeds germinated ? (Y / N) DAY 12	DAY 14	DAY 22	pH DAY 0	DAY 40	Initials [illegible] Date 3-31-06 Tare Weight (g)	Initials Bm/ms Date 4-11-06 Total Wet Weight (g)	Initials [illegible] Date 4-17-06 Total Dry Weight (g)
B1539-12 100 %	A	Y	Y	Y	6.7	6.8	3.78304	7.48637	3.95136
	B	N	Y	Y			3.76281	5.37300	3.83832
	C	Y	Y	Y			3.76475	10.31660	4.07492
	D	Y	Y	Y			3.75680	10.07572	4.07831
B1539-13 100 %	A	N	N	N	6.6	6.9	3.75145	No Plant	—
	B	Y	Y	Y			3.76189	9.99373	4.07760
	C	Y	Y	Y			3.74675	7.71655	3.95557
	D	Y	Y	Y			3.83288	13.14622	4.28618
B1539-14 100 %	A	Y	Y	Y	6.5	7.2	3.85557	10.9 2254	4.21696
	B	Y	Y	Y			3.85405	11.55612	4.24229
	C	Y	Y	Y			3.82533	9.98135	4.12505
	D	Y	Y	Y			3.82175	9.83373	4.12660
B1539-15 100 %	A	Y	Y	Y	6.4	6.7	3.81147	10.14142	4.11961
	B	N	N	Y			3.82478	9.03781	4.06999
	C	N	N	Y			3.81312	7.11565	3.96480
	D	Y	Y	Y			4.27122	8.31226	4.47253
B1539-16 100 %	A	Y	Y	Y	6.5	6.9	4.26498	12.81465	4.65781
	B	Y	Y	Y			4.27792	11.55094	4.62200
	C	Y	Y	Y			4.28303	11.81586	4.65202
	D	Y	Y	Y			4.27919	15.08474	4.80551
B1539-17 100 %	A	Y	Y	Y	6.5	6.8	4.27332	10.21140	4.55605
	B	Y	Y	Y			4.26840	12.19364	4.64929
	C	Y	Y	Y			4.26112	9.93260	4.53112
	D	Y	Y	Y			4.22869	12.26542	4.64589

Comments: -15- 1 from D to Reps B & C

~~-13- 1 from C to A.~~ the 2 plants in rep C are too interfwined.

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date 3/2/2006

Day 0 Initials Bm Day 12 Initials Bm Day 18 Initials Bm/MS Day 22 Initials Bm

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day 22

CONC.	REP.	Seeds germinated ? (Y / N) DAY 12	DAY 18	DAY 22	pH DAY 0	DAY 40	Tare Weight (g) Initials Date 3-31-06	Total Wet Weight (g) Initials Bm/MS Date 4-11-06	Total Dry Weight (g) Initials Date 4-14-06
B1539-18 100 %	A	Y	Y	Y	6.4	7.1	4.18501	13.01045	4.68923
	B	N	N	Y			4.23608	7.01349	4.38575
	C	Y	Y	Y			4.25454	11.891664	4.70382
	D	Y	Y	Y			4.20796	7.35340	4.41735
B1539-30 100 %	A	Y	Y	Y	6.2	7.1	4.25127	5.06486	4.31295
	B	Y	Y	Y			4.28046	5.86428	4.40799
	C	Y	Y	Y			4.24301	5.94206	4.34917
	D	Y	Y	Y			4.32187	5.21250	4.38561
B1539-31 100 %	A	N	N	Y	6.6	7.0	4.32800	7.31201	4.47291
	B	N	Y	Y			4.28805	6.96000	4.42959
	C	Y	Y	Y			4.17971	10.36465	4.49656
	D	Y	Y	Y			4.31241	7.19884	4.47215
	A								
	B								
	C								
	D								
	A								
	B								
	C								
	D								
	A								
	B								
	C								
	D								

Comments: 3-20-06 Bm/MS 31: 1 plant from B to A
- 18: 2 from D to B.

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date 3/2/2006

Day 0 Initials _____ Day ___ Initials _____ Day ___ Initials _____ Day ___ Initials _____

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day _____

		Seeds germinated ? (Y / N)			pH		Initials _____ Date _____	Initials _____ Date _____	Initials _____ Date _____
CONC.	REP.	DAY	DAY	DAY	DAY 0	DAY 40	Tare Weight (g)	Total Wet Weight (g)	Total Dry Weight (g)
Control	A						3.80825	11.16570	4.22156
	B						3.83486	7.36134	4.05215
	C						3.83167	7.07674	4.00236
	D						3.81356	12.94072	4.28210
B1539-01 100 %	A						3.83243	4.03801	3.84548
	B						3.82970	3.87465	3.83153
	C								
	D						3.83589	4.87463	3.89699
B1539-02 100 %	A						3.89000	7.62857	4.07967
	B						3.78938	5.64807	3.89342
	C						3.75440	8.53004	4.01787
	D								
B1539-03 100 %	A						3.76635	8.09082	4.00790
	B						3.76189	8.81041	4.02268
	C						3.76560	6.98899	3.96468
	D						3.79941	10.23545	4.14668
B1539-04 100 %	A						3.83582	11.35976	4.27188
	B						3.82796	7.68739	4.02406
	C						3.81085	8.27324	4.04450
	D						3.82881	8.03181	4.08621
B1539-05 100 %	A						3.81186	12.05970	4.21499
	B						3.79979	12.60790	4.20307
	C						3.78951	13.15001	4.25364
	D						4.00516	12.99363	4.43617

Comments: Weight data inputted by Bm. April 24, 2006

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date 3/2/2006

Day 0 Initials _____ Day ___ Initials _____ Day ___ Initials _____ Day ___ Initials _____

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day _____

		Seeds germinated ? (Y / N)			pH		Initials _____ Date _____	Initials _____ Date _____	Initials _____ Date _____
CONC.	REP.	DAY	DAY	DAY	DAY 0	DAY 40	Tare Weight (g)	Total Wet Weight (g)	Total Dry Weight (g)
B1539-06 100 %	A						3.80011	6.52813	3.92978
	B						3.81481	4.25781	3.84206
	C						3.82185	8.39032	4.07631
	D						3.82797	6.39948	3.96541
B1539-07 100 %	A						3.81212	13.94406	4.30478
	B						3.81767	13.87888	4.31360
	C						3.83148	15.18302	4.38835
	D						3.83998	9.58856	4.11534
B1539-08 100 %	A						3.83502	13.36019	4.29128
	B						3.81135	11.49645	4.19226
	C						3.79878	14.77086	4.31553
	D						3.81021	10.86518	4.15001
B1539-09 100 %	A						3.81703	7.32146	3.99321
	B						3.81287	5.68931	3.91583
	C						3.81586	7.13022	3.98919
	D						3.84209	8.60826	4.07645
B1539-10 100 %	A						3.78606	10.65026	4.13272
	B						3.80274	7.45848	3.98875
	C						3.80613	7.29634	3.99182
	D						3.80602	8.61858	4.03023
B1539-11 100 %	A						3.82302	6.10828	3.95395
	B						3.80976	7.48417	3.99813
	C						3.83009	4.48955	3.87745
	D						3.74590	5.40205	3.83860

Comments: _____

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date 3/2/2006

Day 0 Initials _____ Day ___ Initials _____ Day ___ Initials _____ Day ___ Initials _____

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day _____

		Seeds germinated ? (Y / N)			pH		Initials _____ Date _____	Initials _____ Date _____	Initials _____ Date _____
CONC.	REP.	DAY	DAY	DAY	DAY 0	DAY 40	Tare Weight (g)	Total Wet Weight (g)	Total Dry Weight (g)
B1539-12 100 %	A						3.78304	7.48637	3.95136
	B						3.76281	5.37300	3.83832
	C						3.76475	10.31660	4.07492
	D						3.75680	10.07572	4.07831
B1539-13 100 %	A								
	B						3.76189	9.99373	4.07760
	C						3.74675	7.71665	3.95557
	D						3.83288	13.14622	4.28618
B1539-14 100 %	A						3.85557	10.92254	4.21696
	B						3.85405	11.55612	4.24229
	C						3.82533	9.98135	4.12505
	D						3.82175	9.83373	4.12660
B1539-15 100 %	A						3.81147	10.14142	4.11961
	B						3.82478	9.03781	4.06999
	C						3.81312	7.11565	3.96480
	D						4.27122	8.31226	4.47253
B1539-16 100 %	A						4.26498	12.81465	4.65781
	B						4.27792	11.55094	4.62200
	C						4.28303	11.81586	4.65202
	D						4.27919	15.08474	4.80551
B1539-17 100 %	A						4.27332	10.21140	4.55605
	B						4.26840	12.19364	4.64929
	C						4.26112	9.93260	4.53112
	D						4.22869	12.26542	4.64589

Comments: _____

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date 3/2/2006

Day 0 Initials _____ Day ___ Initials _____ Day ___ Initials _____ Day ___ Initials _____

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day _____

		Seeds germinated ? (Y / N)			pH		Initials _____ Date _____	Initials _____ Date _____	Initials _____ Date _____
CONC.	REP.	DAY	DAY	DAY	DAY 0	DAY 40	Tare Weight (g)	Total Wet Weight (g)	Total Dry Weight (g)
B1539-18 100 %	A						4.18501	13.01045	4.68923
	B						4.23608	7.01349	4.38575
	C						4.25454	11.91664	4.70382
	D						4.20796	7.35840	4.41735
B1539-30 100 %	A						4.25127	5.06486	4.31295
	B						4.28046	5.86428	4.40799
	C						4.24301	5.94206	4.34917
	D						4.32187	5.21250	4.38561
B1539-31 100 %	A						4.32800	7.31201	4.47291
	B						4.28805	6.96000	4.42959
	C						4.17971	10.36465	4.49656
	D						4.31241	7.19884	4.47215
	A								
	B								
	C								
	D								
	A								
	B								
	C								
	D								
	A								
	B								
	C								
	D								

Comments: _____

CETIS Test Summary

Report Date: 24 Apr-06 4:45 PM
Test Link: 04-4830-4313/B153901pcc

Plant Chronic test — **CH2M Hill**

Test No:	20-3232-0308	**Test Type:**	Plant Chronic test	**Duration:**	40d 0h
Start Date:	02 Mar-06	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Pak Choi
Ending Date:	11 Apr-06	**Dil Water:**		**Source:**	
Setup Date:	02 Mar-06 12:00 AM	**Brine:**			

Sample No:	03-1056-8558	**Code:**	B1539-01	**Client:**	
Sample Date:	05 Feb-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	25d 0h	**Station:**			

Comments: J11143

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
12-1505-8980	AG Average Dry Wt.	< 100	100	N/A	55.52%	Equal Variance t Two-Sample
04-3055-2855	AG Average Wet Wt.	< 100	100	N/A	60.08%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.02533	0.00183	0.06110	0.01818	0.03148	124.31

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	0.42976	0.04495	1.03874	0.30800	0.53348	124.13

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.01305	0.00183	Missing	0.06110

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		0.20558	0.04495	Missing	1.03874

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Dry Wt.	Comparison	04-4830-4313	04-4830-4313	20 Apr-06 11:52 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		<100	100		N/A	55.52%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	3.34002	2.01505	0.0103	0.17624	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.1462977	0.146298	1	11.16	0.02055	Significant Effect
Error	0.0655706	0.013114	5			
Total	0.21186831	0.1594119	6			

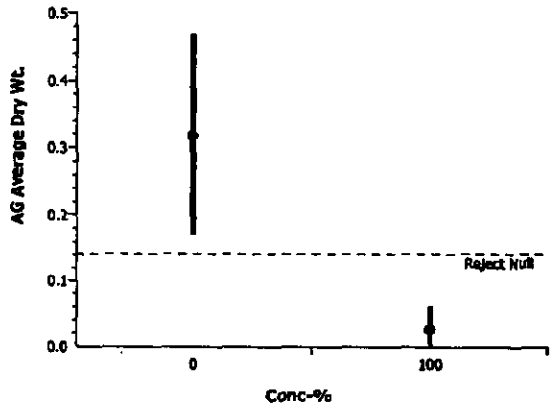
ANOVA Assumptions

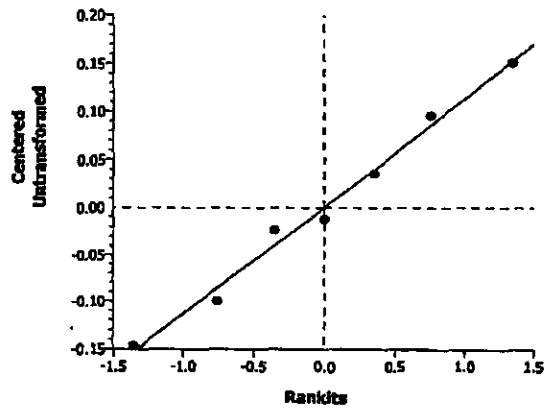
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	21.38274	199.16640	0.09002	Equal Variances
Distribution	Shapiro-Wilk W	0.97893		0.95418	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		3	0.02533	0.00183	0.06110	0.03148				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	04-4830-4313	04-4830-4313	24 Apr-06 4:45 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		<100	100		N/A	60.08%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	3.10582	2.01505	0.0133	3.49331	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	49.69801	49.69801	1	9.65	0.02668	Significant Effect
Error	25.7606	5.152121	5			
Total	75.4586086	54.850126	6			

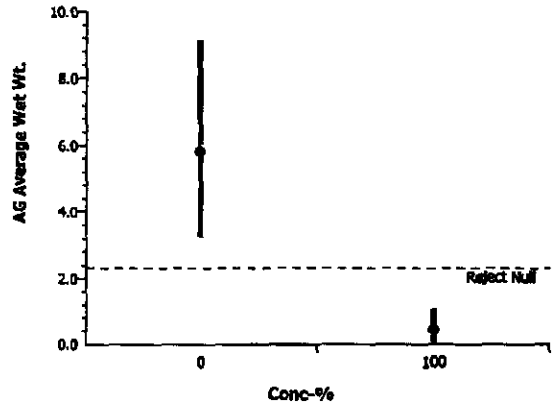
ANOVA Assumptions

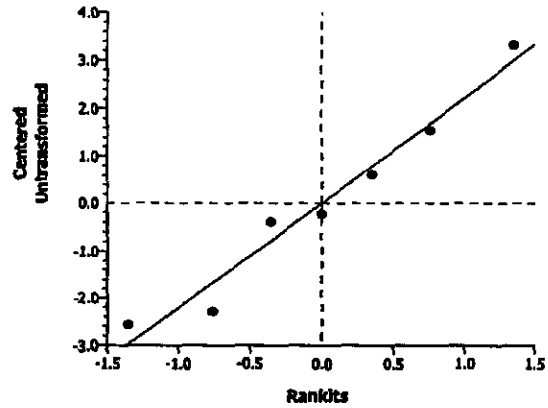
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	29.50547	199.16640	0.06592	Equal Variances
Distribution	Shapiro-Wilk W	0.95743		0.79640	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		3	0.42976	0.04495	1.03874	0.53348				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:12 PM
Test Link: 05-4354-2065/B153902pcc

Plant Chronic test — CH2M Hill

Test No:	19-1435-8517	**Test Type:**	Plant Chronic test	**Duration:**	40d 0h
Start Date:	02 Mar-06	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Pak Choi
Ending Date:	11 Apr-06	**Dil Water:**		**Source:**	
Setup Date:	02 Mar-06 12:00 AM	**Brine:**			

Sample No:	09-8130-6916	**Code:**	B1539-02	**Client:**	
Sample Date:	08 Feb-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	22d 0h	**Station:**			

Comments: J11146

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
03-7107-5057	AG Average Dry Wt.	100	> 100	N/A	59.90%	Equal Variance t Two-Sample
18-0393-6141	AG Average Wet Wt.	100	> 100	N/A	64.37%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.18573	0.10404	0.26347	0.04507	0.07979	42.96%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	3.45763	1.85869	4.77564	0.85369	1.47863	42.76%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.18967	0.10404	0.26347	Missing

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		3.73857	1.85869	4.77564	Missing

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Dry Wt.	Comparison	05-4354-2065	05-4354-2065	24 Apr-06 3:11 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	59.90%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.39603	2.01505	0.1108	0.19014	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0297480	0.029748	1	1.95	0.22152	Non-Significant Effect
Error	0.0763203	0.015264	5			
Total	0.10606837	0.0450121	6			

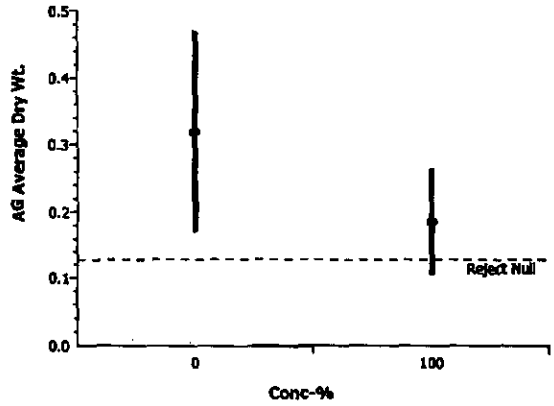
ANOVA Assumptions

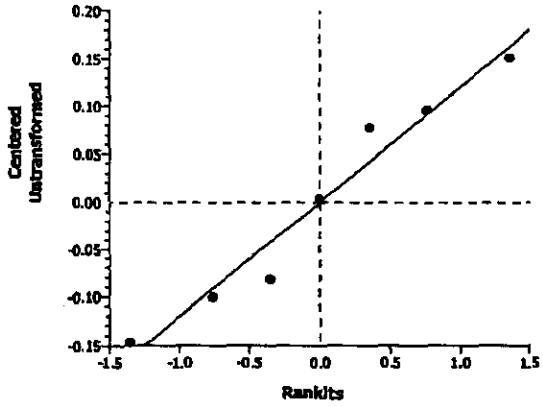
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	3.32949	199.16640	0.47899	Equal Variances
Distribution	Shapiro-Wilk W	0.93751		0.61643	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		3	0.18573	0.10404	0.26347	0.07979				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	05-4354-2065	05-4354-2065	24 Apr-06 3:11 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	64.37%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.26880	2.01505	0.1302	3.74232	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	9.518832	9.518832	1	1.61	0.26037	Non-Significant Effect
Error	29.5641	5.912819	5			
Total	39.0829306	15.431652	6			

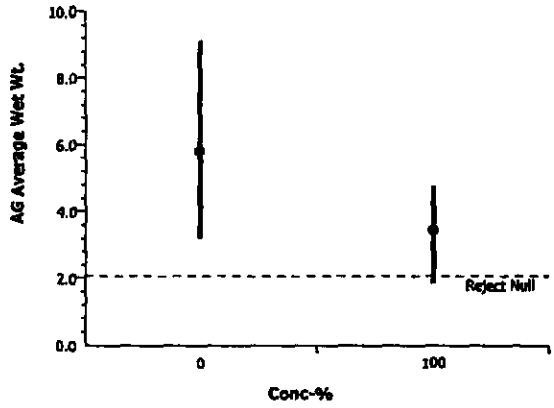
ANOVA Assumptions

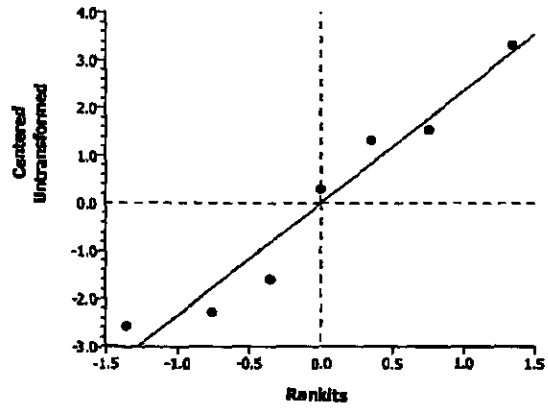
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	3.84072	199.16640	0.42688	Equal Variances
Distribution	Shapiro-Wilk W	0.92793		0.53344	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		3	3.45763	1.85869	4.77564	1.47863				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:15 PM
Test Link: 03-2714-8703/B153903pcc

Plant Chronic test — **CH2M Hill**

Test No:	08-8062-2943	**Test Type:**	Plant Chronic test	**Duration:**	40d 0h
Start Date:	02 Mar-06	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Pak Choi
Ending Date:	11 Apr-06	**Dil Water:**		**Source:**	
Setup Date:	02 Mar-06 12:00 AM	**Brine:**			

Sample No:	05-2776-3110	**Code:**	B1539-03	**Client:**	
Sample Date:	08 Feb-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	22d 0h	**Station:**			

Comments: J11144

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
05-5125-1500	AG Average Dry Wt.	100	> 100	N/A	48.47%	Equal Variance t Two-Sample
07-8099-7600	AG Average Wet Wt.	100	> 100	N/A	53.40%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.26217	0.19908	0.34727	0.03116	0.06231	23.77%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	4.75810	3.22339	6.43604	0.67350	1.34700	28.31%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.24155	0.26079	0.19908	0.34727

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		4.32447	5.04852	3.22339	6.43604

CETIS Analysis Detail

Plant Chronic test						CH2M Hill
Endpoint	**Analysis Type**	**Sample Link**	**Control Link**	**Date Analyzed**	**Version**	
AG Average Dry Wt.	Comparison	03-2714-8703	03-2714-8703	24 Apr-06 3:15 PM	CETISv1.1.2	

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	48.47%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.69820	1.94318	0.2556	0.15386	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0061129	0.006113	1	0.49	0.51119	Non-Significant Effect
Error	0.0752374	0.01254	6			
Total	0.0813503	0.0186524	7			

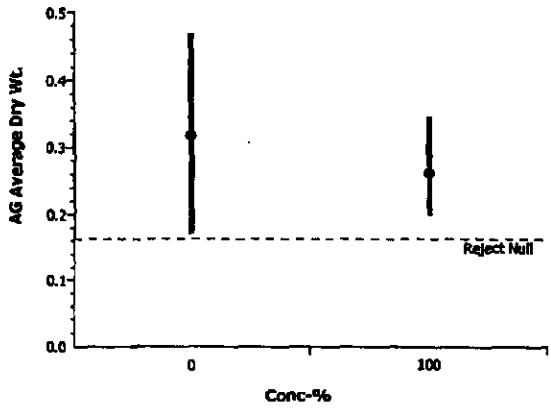
ANOVA Assumptions

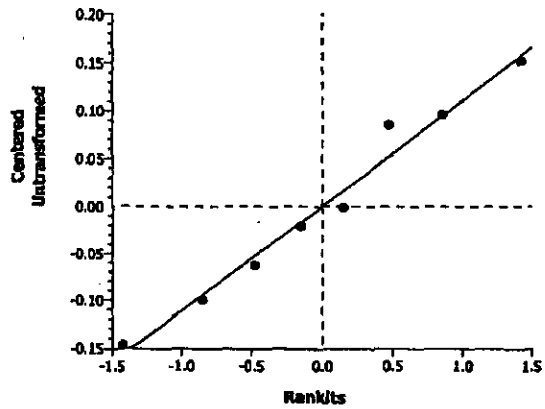
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	5.45848	47.46723	0.19697	Equal Variances
Distribution	Shapiro-Wilk W	0.96360		0.84358	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.26217	0.19908	0.34727	0.06231				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	03-2714-8703	03-2714-8703	24 Apr-06 3:15 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	53.40%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.66088	1.94318	0.2666	3.10476	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	2.229996	2.229996	1	0.44	0.53323	Non-Significant Effect
Error	30.63461	5.105768	6			
Total	32.8646035	7.3357639	7			

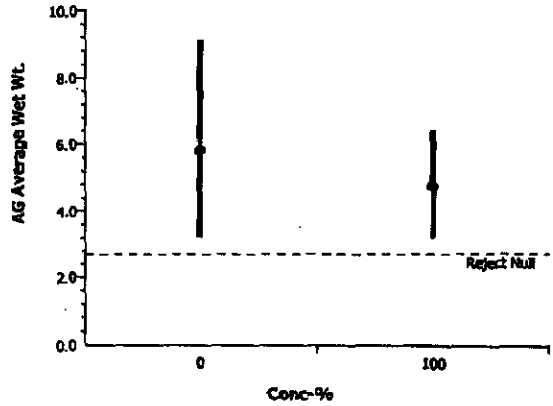
ANOVA Assumptions

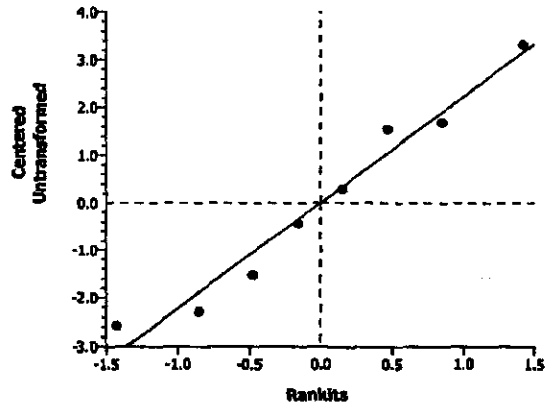
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	4.62806	47.46723	0.24028	Equal Variances
Distribution	Shapiro-Wilk W	0.94948		0.70597	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	4.75810	3.22339	6.43604	1.34700				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:17 PM
Test Link: 08-6488-8417/B153904pcc

Plant Chronic test — **CH2M Hill**

Test No:	20-7964-1273	**Test Type:**	Plant Chronic test	**Duration:**	40d 0h
Start Date:	02 Mar-06	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Pak Choi
Ending Date:	11 Apr-06	**Dil Water:**		**Source:**	
Setup Date:	02 Mar-06 12:00 AM	**Brine:**			

Sample No:	00-7618-1382	**Code:**	B1539-04	**Client:**	
Sample Date:	08 Feb-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	22d 0h	**Station:**			

Comments: J11145

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
12-9194-3369	AG Average Dry Wt.	100	> 100	N/A	55.21%	Equal Variance t Two-Sample
07-6209-5985	AG Average Wet Wt.	100	> 100	N/A	56.08%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.28080	0.19610	0.43606	0.05327	0.10654	37.94%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	5.01219	3.85943	7.52394	0.84631	1.69261	33.77%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.43606	0.19610	0.23365	0.25740

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		7.52394	3.85943	4.46239	4.20300

CETIS Analysis Detail

Plant Chronic test					CH2M Hill
Endpoint	**Analysis Type**	**Sample Link**	**Control Link**	**Date Analyzed**	**Version**
AG Average Dry Wt.	Comparison	08-6488-8417	08-6488-8417	24 Apr-06 3:17 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	55.21%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.40636	1.94318	0.3493	0.17528	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0026872	0.002687	1	0.17	0.69857	Non-Significant Effect
Error	0.0976386	0.016273	6			
Total	0.10032576	0.0189603	7			

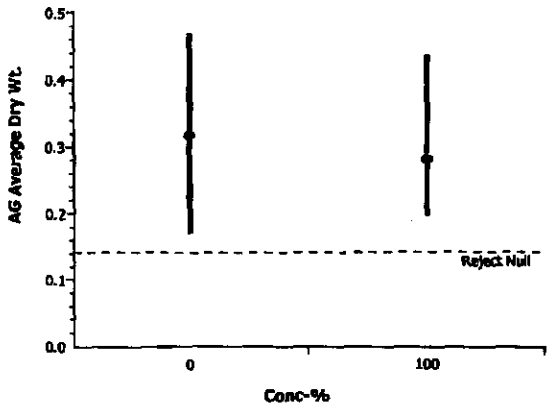
ANOVA Assumptions

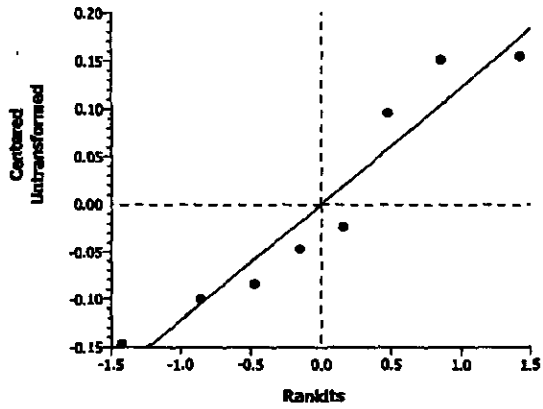
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.86746	47.46723	0.62078	Equal Variances
Distribution	Shapiro-Wilk W	0.89235		0.24605	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.28080	0.19610	0.43606	0.10654				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	08-6488-8417	08-6488-8417	24 Apr-06 3:17 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	56.08%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.47787	1.94318	0.3248	3.26056	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	1.285926	1.285926	1	0.23	0.64965	Non-Significant Effect
Error	33.78622	5.631037	6			
Total	35.0721503	6.9169632	7			

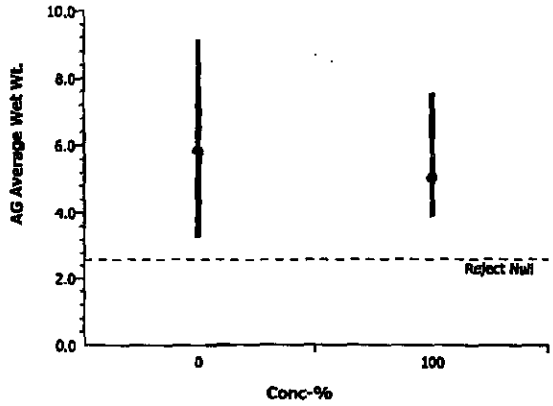
ANOVA Assumptions

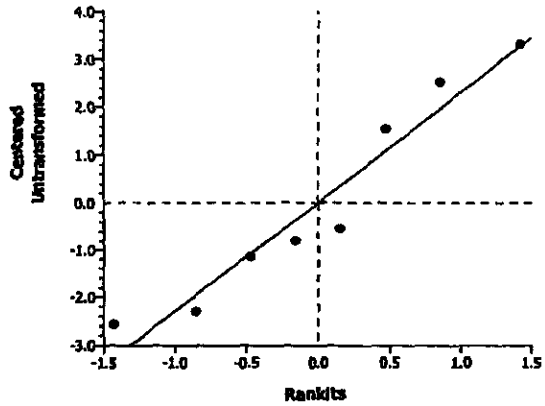
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.93100	47.46723	0.40071	Equal Variances
Distribution	Shapiro-Wilk W	0.91624		0.40009	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	5.01219	3.85943	7.52394	1.69261				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:19 PM
Test Link: 15-5597-1476/B153905pcc

Plant Chronic test — **CH2M Hill**

Test No:	09-2021-3135	**Test Type:**	Plant Chronic test	**Duration:**	40d 0h
Start Date:	02 Mar-06	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Pak Choi
Ending Date:	11 Apr-06	**Dil Water:**		**Source:**	
Setup Date:	02 Mar-06 12:00 AM	**Brine:**			

Sample No:	02-0777-7071	**Code:**	B1539-05	**Client:**	
Sample Date:	09 Feb-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	21d 0h	**Station:**			

Comments: J116N1

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
11-0255-7339	AG Average Dry Wt.	100	> 100	N/A	45.43%	Equal Variance t Two-Sample
05-9959-3176	AG Average Wet Wt.	100	> 100	N/A	49.04%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.42539	0.40313	0.46413	0.01448	0.02896	6.81%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	8.85123	8.24784	9.36050	0.23168	0.46337	5.24%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.40313	0.40328	0.46413	0.43101

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		8.24784	8.80811	9.36050	8.98847

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Dry Wt.	Comparison	15-5597-1476	15-5597-1476	24 Apr-06 3:18 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	45.43%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-1.4542	1.94318	0.9019	0.14422	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0232979	0.023298	1	2.11	0.19613	Non-Significant Effect
Error	0.0661048	0.011017	6			
Total	0.08940264	0.0343153	7			

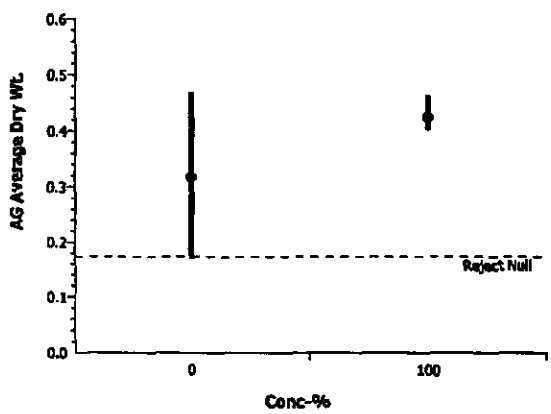
ANOVA Assumptions

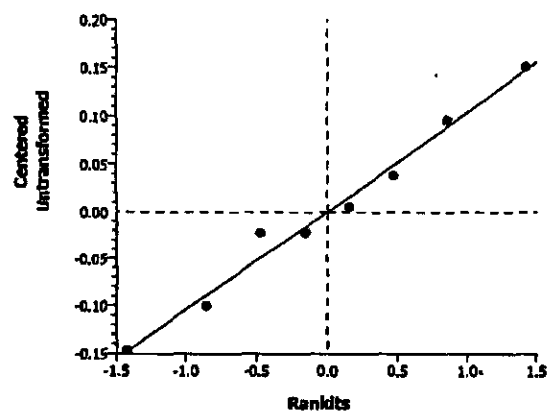
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	25.26610	47.46723	0.02493	Equal Variances
Distribution	Shapiro-Wilk W	0.97956		0.96070	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.42539	0.40313	0.46413	0.02896				

Graphics





CETIS Analysis Detail

Plant Chronic test						CH2M Hill
Endpoint	**Analysis Type**	**Sample Link**	**Control Link**	**Date Analyzed**	**Version**	
AG Average Wet Wt.	Comparison	15-5597-1476	15-5597-1476	24 Apr-06 3:19 PM	CETISv1.1.2	

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	49.04%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-2.0699	1.94318	0.9581	2.85122	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	18.44905	18.44905	1	4.28	0.08390	Non-Significant Effect
Error	25.83554	4.305923	6			
Total	44.2845917	22.754972	7			

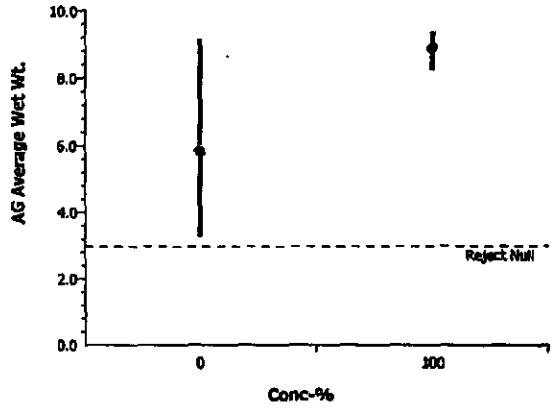
ANOVA Assumptions

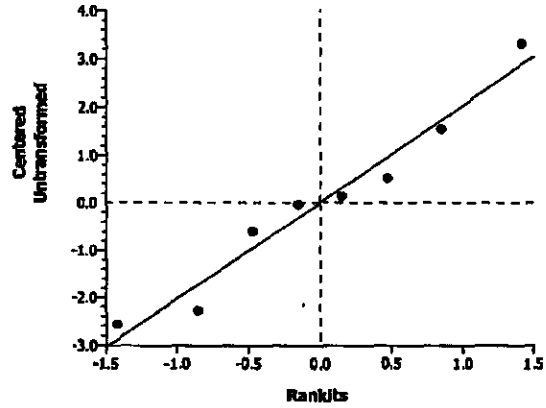
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	39.10920	47.46723	0.01327	Equal Variances
Distribution	Shapiro-Wilk W	0.95831		0.79388	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	8.85123	8.24784	9.36050	0.46337				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:26 PM
Test Link: 11-2571-2856/B153906pcc

Plant Chronic test — **CH2M Hill**

Test No:	02-2968-6400	**Test Type:**	Plant Chronic test	**Duration:**	40d 0h
Start Date:	02 Mar-06	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Pak Choi
Ending Date:	11 Apr-06	**Dil Water:**		**Source:**	
Setup Date:	02 Mar-06 12:00 AM	**Brine:**			

Sample No:	08-2170-6135	**Code:**	B1539-06	**Client:**	
Sample Date:	09 Feb-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	21d 0h	**Station:**			

Comments: J116N3

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
05-6624-5793	AG Average Dry Wt.	< 100	100	N/A	52.86%	Equal Variance t Two-Sample
03-7050-9740	AG Average Wet Wt.	100	> 100	N/A	56.04%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.13721	0.02725	0.25446	0.04645	0.09291	67.71%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	2.57775	0.44300	4.56847	0.84374	1.68748	65.46%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.12967	0.02725	0.25446	0.13744

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		2.72802	0.44300	4.56847	2.57151

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Dry Wt.	Comparison	11-2571-2856	11-2571-2856	24 Apr-06 3:26 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		<100	100		N/A	52.86%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	2.08737	1.94318	0.0409	0.16780	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0649819	0.064982	1	4.36	0.08190	Non-Significant Effect
Error	0.0894837	0.014914	6			
Total	0.15446559	0.0798958	7			

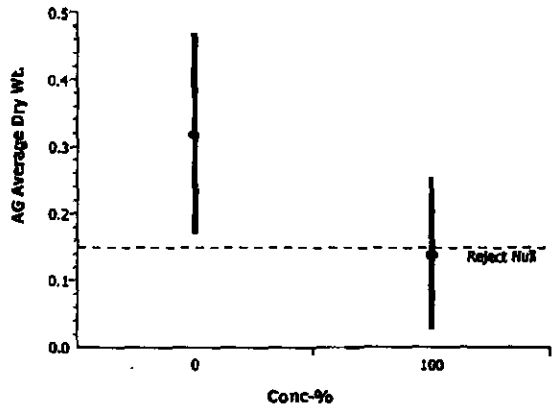
ANOVA Assumptions

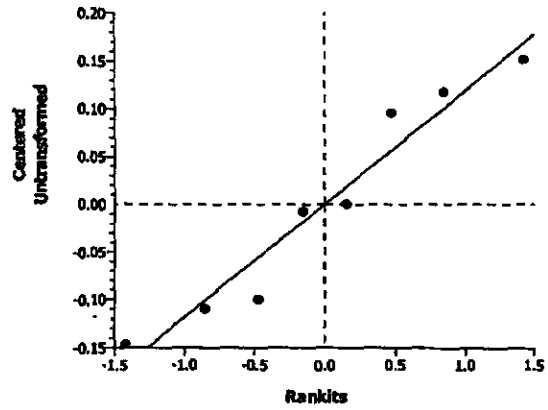
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.45555	47.46723	0.48000	Equal Variances
Distribution	Shapiro-Wilk W	0.91952		0.42599	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.13721	0.02725	0.25446	0.09291				

Graphics





CETIS Analysis Detail

Plant Chronic test						CH2M Hill
Endpoint	**Analysis Type**	**Sample Link**	**Control Link**	**Date Analyzed**	**Version**	
AG Average Wet Wt.	Comparison	11-2571-2856	11-2571-2856	24 Apr-06 3:26 PM	CETISv1.1.2	

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	56.04%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.93020	1.94318	0.0509	3.25805	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	20.94714	20.94714	1	3.73	0.10182	Non-Significant Effect
Error	33.73415	5.622359	6			
Total	54.6812954	26.569501	7			

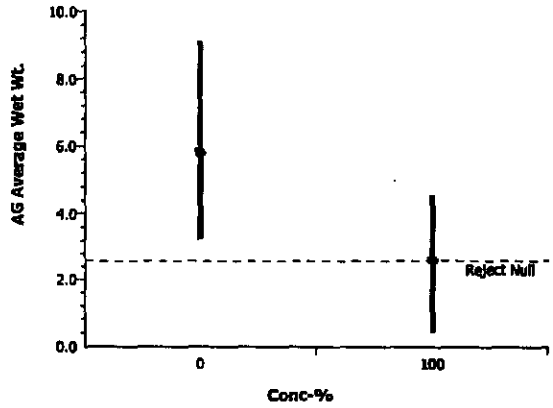
ANOVA Assumptions

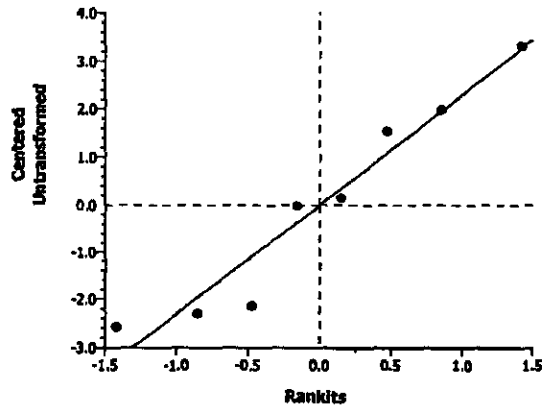
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.94887	47.46723	0.39816	Equal Variances
Distribution	Shapiro-Wilk W	0.91810		0.41460	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	2.57775	0.44300	4.56847	1.68748				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:29 PM
Test Link: 09-2231-4814/B153907pcc

Plant Chronic test — CH2M Hill

Test No:	08-3310-9649	Test Type:	Plant Chronic test	Duration:	40d 0h
Start Date:	02 Mar-06	Protocol:	ASTM E1963-02 (2002)	Species:	Pak Choi
Ending Date:	11 Apr-06	Dil Water:		Source:	
Setup Date:	02 Mar-06 12:00 AM	Brine:			

Sample No:	00-6777-1542	Code:	B1539-07	Client:	
Sample Date:	12 Feb-06	Material:	Sediment	Project:	
Receive Date:		Source:	Hanford		
Sample Age:	18d 0h	Station:			

Comments: J112B7

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
20-6525-7167	AG Average Dry Wt.	100	> 100	N/A	58.43%	Equal Variance t Two-Sample
09-6893-6539	AG Average Wet Wt.	100	> 100	N/A	63.47%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.45521	0.27536	0.55687	0.06174	0.12348	27.13%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.8140	3.2451	9.1272	1.4489	2.8978	49.84%
100		4	9.3233	5.7486	11.352	1.2278	2.4557	26.34%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.49266	0.49593	0.55687	0.27536

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		10.1319	10.0612	11.3515	5.74858

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Dry Wt.	Comparison	09-2231-4814	09-2231-4814	24 Apr-06 3:29 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	58.43%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-1.4431	1.94318	0.9005	0.18548	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0379488	0.037949	1	2.08	0.19909	Non-Significant Effect
Error	0.1093293	0.018222	6			
Total	0.14727813	0.0561704	7			

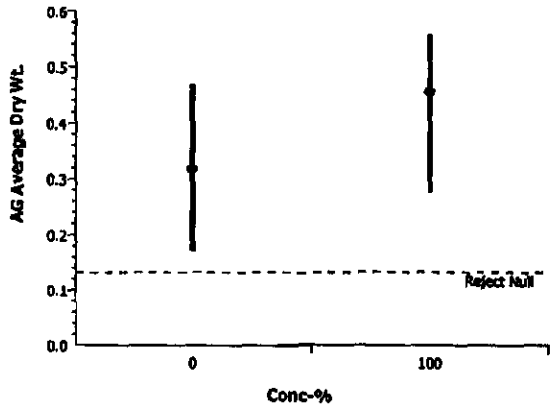
ANOVA Assumptions

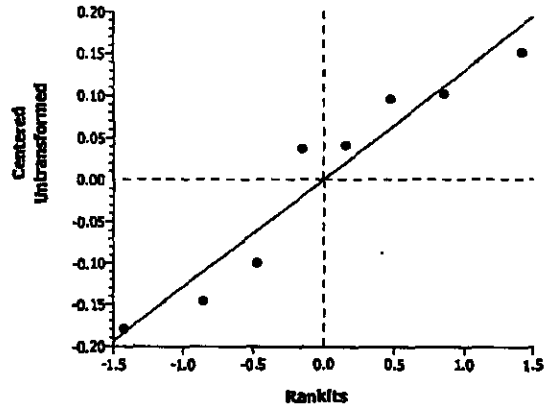
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.39017	47.46723	0.79308	Equal Variances
Distribution	Shapiro-Wilk W	0.89793		0.27678	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.45521	0.27536	0.55687	0.12348				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	09-2231-4814	09-2231-4814	24 Apr-06 3:29 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	63.47%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-1.8478	1.94318	0.9429	3.69043	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	24.63006	24.63006	1	3.41	0.11414	Non-Significant Effect
Error	43.2822	7.2137	6			
Total	67.912262	31.843762	7			

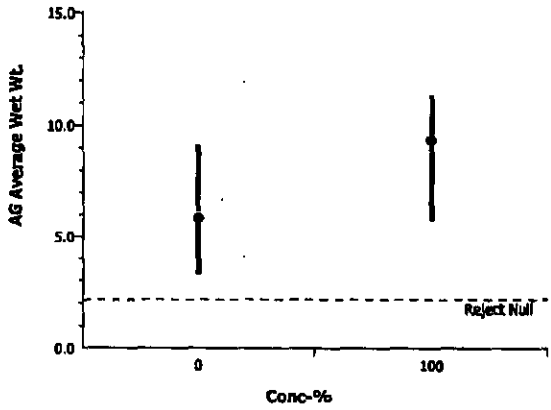
ANOVA Assumptions

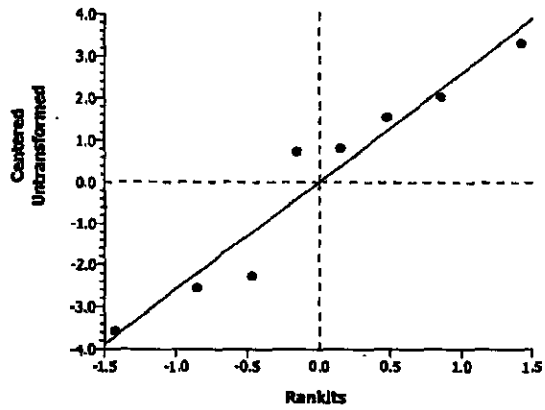
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.39250	47.46723	0.79206	Equal Variances
Distribution	Shapiro-Wilk W	0.91599		0.39818	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	9.32332	5.74858	11.3515	2.45566				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:31 PM
Test Link: 07-5605-8906/B153908pcc

Plant Chronic test — CH2M Hill

Test No:	11-6615-2748	Test Type:	Plant Chronic test	Duration:	40d 0h
Start Date:	02 Mar-06	Protocol:	ASTM E1963-02 (2002)	Species:	Pak Choi
Ending Date:	11 Apr-06	Dil Water:		Source:	
Setup Date:	02 Mar-06 12:00 AM	Brine:			

Sample No:	01-6266-6440	Code:	B1539-08	Client:	
Sample Date:	09 Feb-06	Material:	Sediment	Project:	
Receive Date:		Source:	Hanford		
Sample Age:	21d 0h	Station:			

Comments: J116N2

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
07-4298-5434	AG Average Dry Wt.	100	> 100	N/A	50.65%	Equal Variance t Two-Sample
18-6606-8888	AG Average Wet Wt.	100	> 100	N/A	56.85%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.42343	0.33980	0.51675	0.03936	0.07872	18.59%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.8140	3.2451	9.1272	1.4489	2.8978	49.84%
100		4	8.8093	7.055	10.972	0.8912	1.7825	20.23%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.45626	0.38091	0.51675	0.33980

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		9.52517	7.68510	10.9721	7.05497

CETIS Analysis Detail

Plant Chronic test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Dry Wt.	Comparison	07-5605-8906	07-5605-8906	24 Apr-06 3:31 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	50.65%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-1.2806	1.94318	0.8762	0.16080	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0224603	0.022460	1	1.64	0.24761	Non-Significant Effect
Error	0.0821764	0.013696	6			
Total	0.10463666	0.0361564	7			

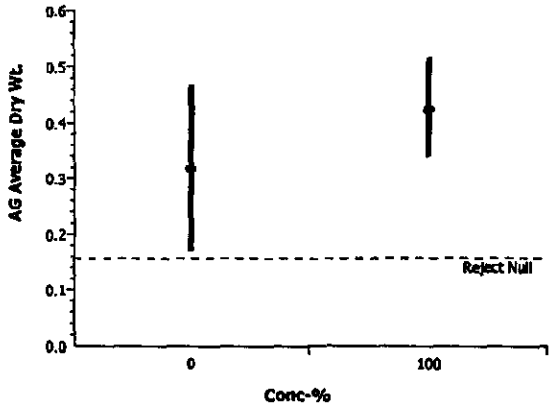
ANOVA Assumptions

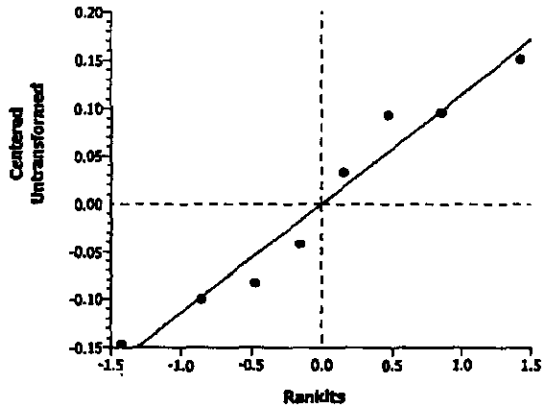
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	3.42086	47.46723	0.33939	Equal Variances
Distribution	Shapiro-Wilk W	0.93682		0.58011	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.42343	0.33980	0.51675	0.07872				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	07-5605-8906	07-5605-8906	24 Apr-06 3:31 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	56.85%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-1.7608	1.94318	0.9356	3.30545	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	17.94353	17.94353	1	3.10	0.12874	Non-Significant Effect
Error	34.723	5.787167	6			
Total	52.6665306	23.730698	7			

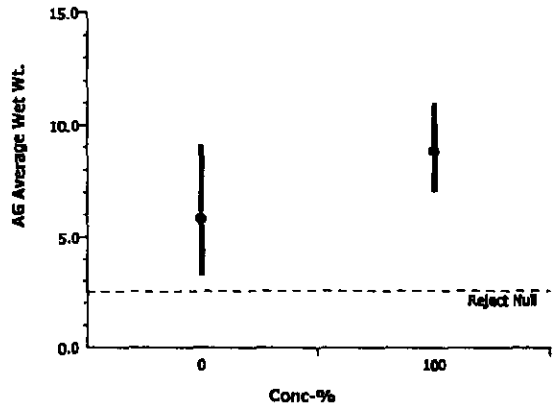
ANOVA Assumptions

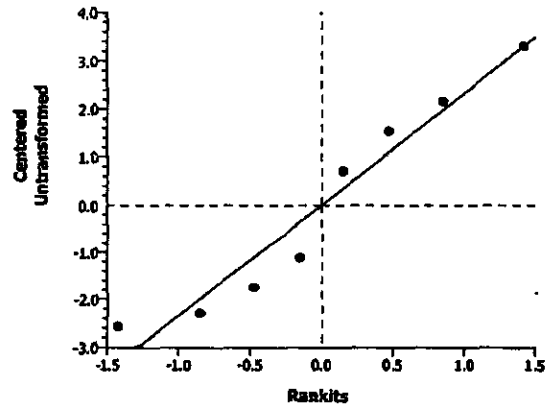
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.64294	47.46723	0.44589	Equal Variances
Distribution	Shapiro-Wilk W	0.91872		0.41957	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	8.80933	7.05497	10.9720	1.78247				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:32 PM
Test Link: 05-0380-7129/B153909pcc

Plant Chronic test — CH2M Hill

Test No:	06-4027-7320	Test Type:	Plant Chronic test	Duration:	40d 0h
Start Date:	02 Mar-06	Protocol:	ASTM E1963-02 (2002)	Species:	Pak Choi
Ending Date:	11 Apr-06	Dil Water:		Source:	
Setup Date:	02 Mar-06 12:00 AM	Brine:			

Sample No:	03-4917-8822	Code:	B1539-09	Client:	
Sample Date:	12 Feb-06	Material:	Sediment	Project:	
Receive Date:		Source:	Hanford		
Sample Age:	18d 0h	Station:			

Comments: J116M4

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
09-5253-8712	AG Average Dry Wt.	100	> 100	N/A	47.50%	Equal Variance t Two-Sample
06-6909-0471	AG Average Wet Wt.	100	> 100	N/A	52.31%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.17171	0.10296	0.23436	0.02689	0.05377	31.32%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	3.36535	1.87644	4.76617	0.59169	1.18337	35.16%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.17618	0.10296	0.17333	0.23436

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		3.50443	1.87644	3.31436	4.76617

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Dry Wt.	Comparison	05-0380-7129	05-0380-7129	24 Apr-06 3:32 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	47.50%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.87821	1.94318	0.0547	0.15079	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0424861	0.042486	1	3.53	0.10943	Non-Significant Effect
Error	0.0722622	0.012044	6			
Total	0.11474833	0.0545298	7			

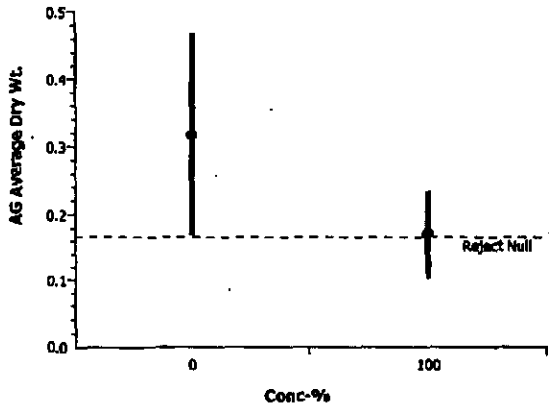
ANOVA Assumptions

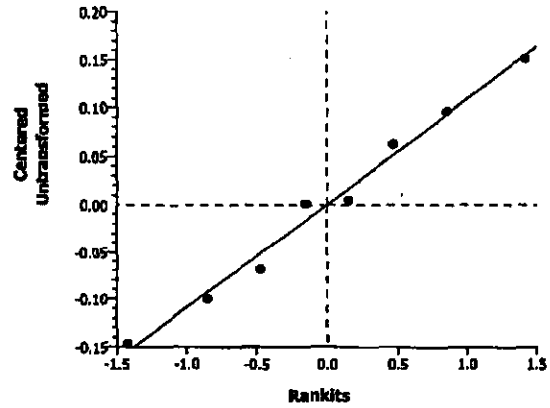
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	7.33070	47.46723	0.13601	Equal Variances
Distribution	Shapiro-Wilk W	0.97467		0.93191	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.17171	0.10296	0.23436	0.05377				

Graphics





CETIS Analysis Detail

Plant Chronic test						CH2M Hill
Endpoint	**Analysis Type**		**Sample Link**	**Control Link**	**Date Analyzed**	**Version**
AG Average Wet Wt.	Comparison		05-0380-7129	05-0380-7129	24 Apr-06 3:32 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	52.31%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.56461	1.94318	0.0844	3.04117	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	11.99216	11.99216	1	2.45	0.16871	Non-Significant Effect
Error	29.39251	4.898751	6			
Total	41.3846674	16.890913	7			

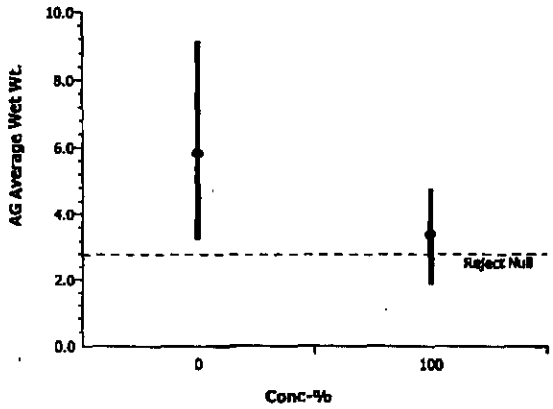
ANOVA Assumptions

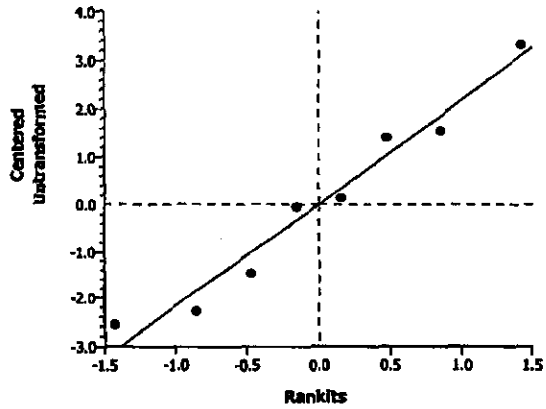
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	5.99839	47.46723	0.17539	Equal Variances
Distribution	Shapiro-Wilk W	0.95119		0.72324	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	3.36535	1.87644	4.76617	1.18337				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:36 PM
Test Link: 10-3384-6085/B153910pcc

Plant Chronic test — **CH2M Hill**

Test No:	11-8551-9760	**Test Type:**	Plant Chronic test	**Duration:**	40d 0h
Start Date:	02 Mar-06	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Pak Choi
Ending Date:	11 Apr-06	**Dil Water:**		**Source:**	
Setup Date:	02 Mar-06 12:00 AM	**Brine:**			

Sample No:	02-6903-7024	**Code:**	B1539-10	**Client:**	
Sample Date:	09 Feb-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	21d 0h	**Station:**			

Comments: J116N0

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
18-3416-1292	AG Average Dry Wt.	100	> 100	N/A	50.29%	Equal Variance t Two-Sample
11-4727-8981	AG Average Wet Wt.	100	> 100	N/A	54.95%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.23564	0.18569	0.34666	0.03809	0.07619	32.33%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	4.70568	3.49021	6.86420	0.77730	1.55460	33.04%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.34666	0.18601	0.18569	0.22421

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		6.86420	3.65574	3.49021	4.81256

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Dry Wt.	Comparison	10-3384-6085	10-3384-6085	24 Apr-06 3:36 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	50.29%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.99581	1.94318	0.1789	0.15965	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0133874	0.013387	1	0.99	0.35779	Non-Significant Effect
Error	0.0810022	0.013500	6			
Total	0.0943896	0.0268877	7			

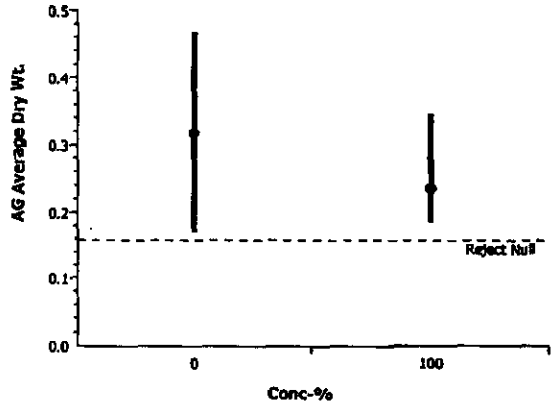
ANOVA Assumptions

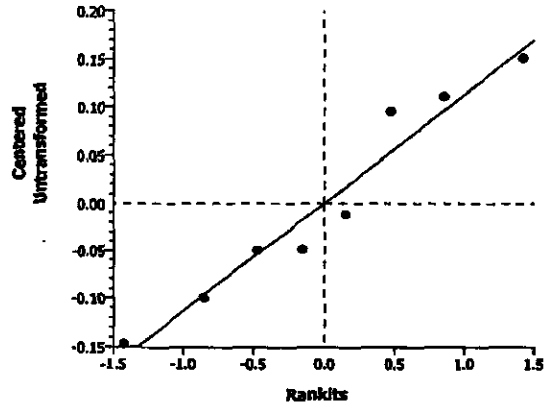
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	3.65151	47.46723	0.31570	Equal Variances
Distribution	Shapiro-Wilk W	0.93162		0.53092	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.23564	0.18569	0.34666	0.07619				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	10-3384-6085	10-3384-6085	24 Apr-06 3:36 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	54.95%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.67409	1.94318	0.2627	3.19503	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	2.456934	2.456934	1	0.45	0.52536	Non-Significant Effect
Error	32.44178	5.406964	6			
Total	34.8987179	7.8638978	7			

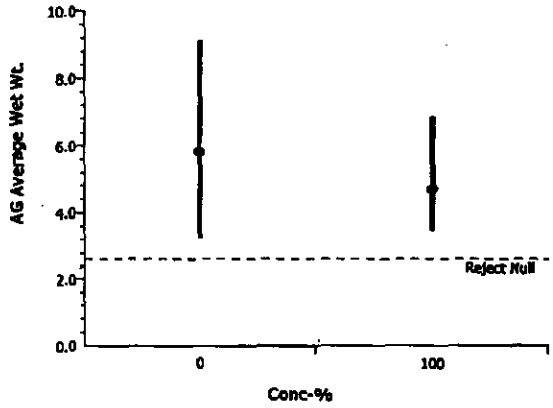
ANOVA Assumptions

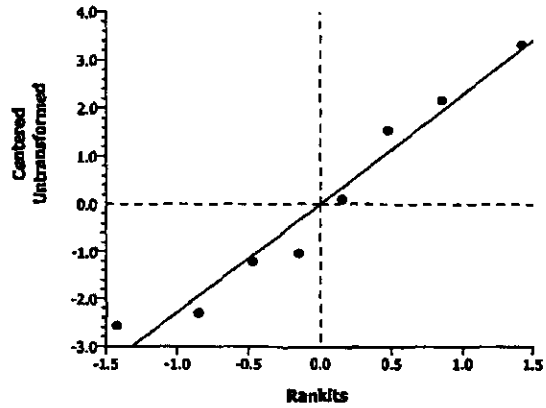
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	3.47450	47.46723	0.33362	Equal Variances
Distribution	Shapiro-Wilk W	0.93712		0.58296	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	4.70568	3.49021	6.86420	1.55460				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:39 PM
Test Link: 03-7766-0693/B153911pcc

Plant Chronic test — **CH2M Hill**

Test No:	09-2955-3969	**Test Type:**	Plant Chronic test	**Duration:**	40d 0h
Start Date:	02 Mar-06	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Pak Choi
Ending Date:	11 Apr-06	**Dil Water:**		**Source:**	
Setup Date:	02 Mar-06 12:00 AM	**Brine:**			

Sample No:	06-7043-7897	**Code:**	B1539-11	**Client:**	
Sample Date:	09 Feb-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	21d 0h	**Station:**			

Comments: J11731

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
04-1671-6358	AG Average Dry Wt.	< 100	100	N/A	48.16%	Equal Variance t Two-Sample
12-6558-2304	AG Average Wet Wt.	< 100	100	N/A	52.82%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.11484	0.04736	0.18837	0.02987	0.05975	52.03%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	2.06882	0.65946	3.67441	0.63123	1.26245	61.02%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.13093	0.18837	0.04736	0.09270

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		2.28526	3.67441	0.65946	1.65615

CETIS Analysis Detail

Plant Chronic test						CH2M Hill
Endpoint	**Analysis Type**	**Sample Link**	**Control Link**	**Date Analyzed**	**Version**	
AG Average Dry Wt.	Comparison	03-7766-0693	03-7766-0693	24 Apr-06 3:38 PM	CETISv1.1.2	

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		<100	100		N/A	48.16%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	2.57502	1.94318	0.0210	0.15290	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0821077	0.082108	1	6.63	0.04205	Significant Effect
Error	0.0742973	0.012383	6			
Total	0.15640499	0.0944906	7			

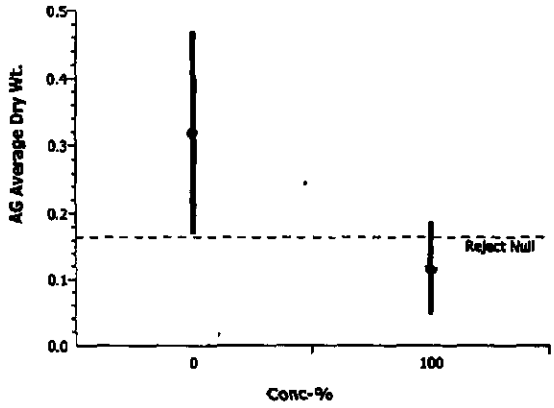
ANOVA Assumptions

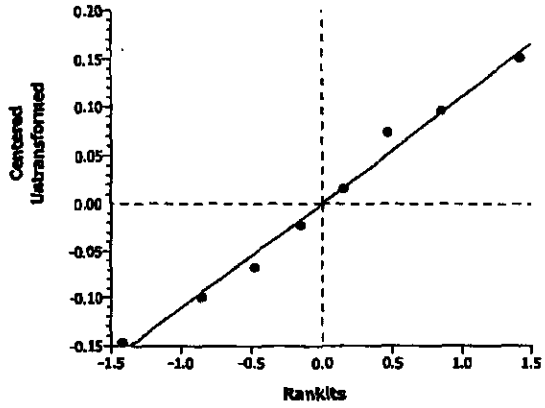
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	5.93766	47.46723	0.17755	Equal Variances
Distribution	Shapiro-Wilk W	0.97445		0.93047	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.11484	0.04736	0.18837	0.05975				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	03-7766-0693	03-7766-0693	24 Apr-06 3:39 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		<100	100		N/A	52.82%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	2.36976	1.94318	0.0278	3.07104	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	28.05334	28.05334	1	5.62	0.05554	Non-Significant Effect
Error	29.97277	4.995461	6			
Total	58.0261097	33.048802	7			

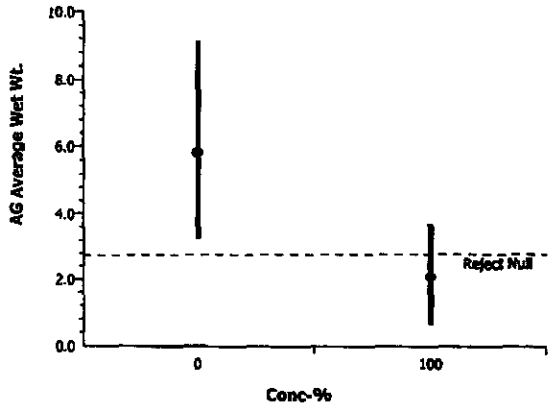
ANOVA Assumptions

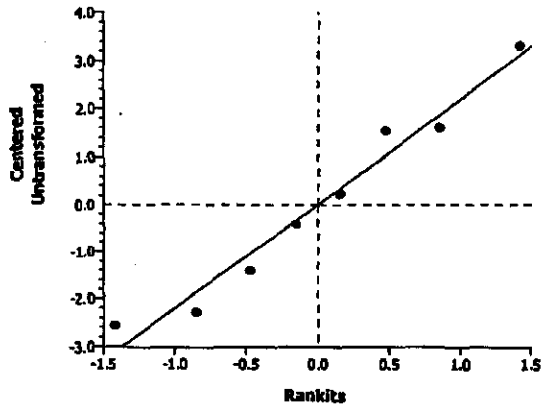
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	5.26867	47.46723	0.20566	Equal Variances
Distribution	Shapiro-Wilk W	0.95246		0.73602	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	2.06882	0.65946	3.67441	1.26245				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:40 PM
Test Link: 14-6644-6067/B153912pcc

Plant Chronic test — **CH2M Hill**

Test No:	11-7635-9414	Test Type:	Plant Chronic test	Duration:	40d 0h
Start Date:	02 Mar-06	Protocol:	ASTM E1963-02 (2002)	Species:	Pak Choi
Ending Date:	11 Apr-06	Dil Water:		Source:	
Setup Date:	02 Mar-06 12:00 AM	Brine:			

Sample No:	09-2724-9468	Code:	B1539-12	Client:	
Sample Date:	12 Feb-06	Material:	Sediment	Project:	
Receive Date:		Source:	Hanford		
Sample Age:	18d 0h	Station:			

Comments: J116M5

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
12-6017-1026	AG Average Dry Wt.	100	> 100	N/A	57.41%	Equal Variance t Two-Sample
19-0991-8331	AG Average Wet Wt.	100	> 100	N/A	62.29%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.21888	0.07551	0.32151	0.05915	0.11829	54.04%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	4.54607	1.61019	6.55185	1.17245	2.34491	51.58%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.16832	0.07551	0.31017	0.32151

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		3.70333	1.61019	6.55185	6.31892

CETIS Analysis Detail

Plant Chronic test	CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Dry Wt.	Comparison	14-6644-6067	14-6644-6067	24 Apr-06 3:40 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C >.T	Untransformed		100	>100	1	N/A	57.41%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.05103	1.94318	0.1669	0.18226	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.019436	0.019436	1	1.10	0.33372	Non-Significant Effect
Error	0.1055661	0.017594	6			
Total	0.12500212	0.0370303	7			

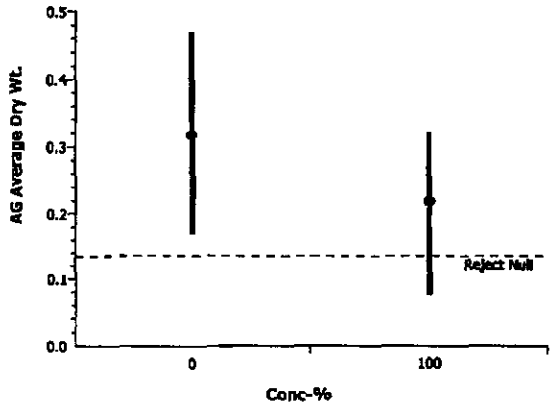
ANOVA Assumptions

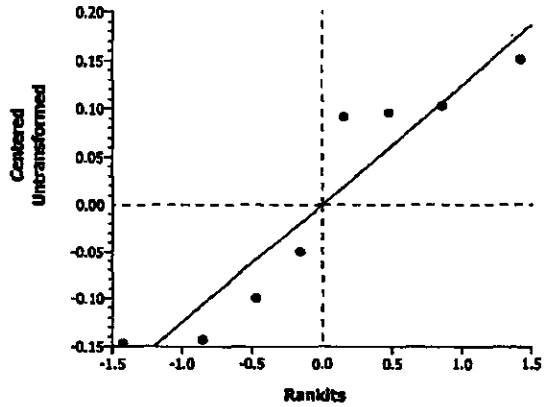
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.51479	47.46723	0.74119	Equal Variances
Distribution	Shapiro-Wilk W	0.85462		0.10608	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.21888	0.07551	0.32151	0.11829				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M HILL**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	14-6644-6067	14-6644-6067	24 Apr-06 3:40 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	62.29%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.6803	1.94318	0.2608	3.62179	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	3.215482	3.215482	1	0.46	0.52169	Non-Significant Effect
Error	41.68716	6.947861	6			
Total	44.9026458	10.163342	7			

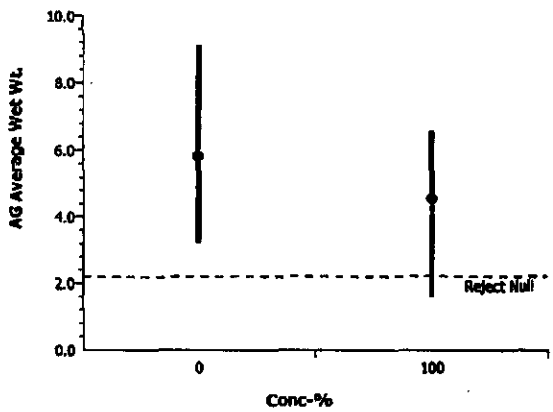
ANOVA Assumptions

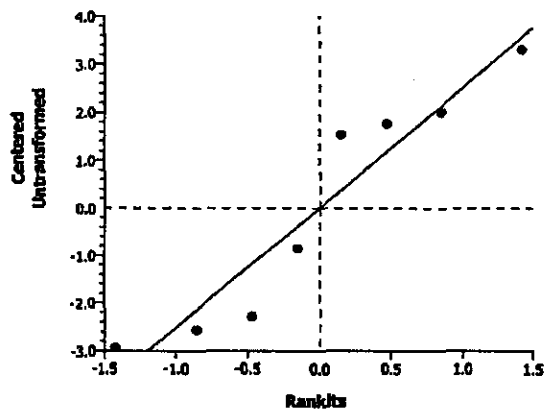
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.52715	47.46723	0.73635	Equal Variances
Distribution	Shapiro-Wilk W	0.88496		0.20990	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	4.54607	1.61019	6.55185	2.34491				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:47 PM
Test Link: 09-4239-5099/B153913pcc

Plant Chronic test — **CH2M Hill**

Test No:	05-3872-7251	Test Type:	Plant Chronic test	Duration:	40d 0h
Start Date:	02 Mar-06	Protocol:	ASTM E1963-02 (2002)	Species:	Pak Choi
Ending Date:	11 Apr-06	Dil Water:		Source:	
Setup Date:	02 Mar-06 12:00 AM	Brine:			

Sample No:	04-3354-2349	Code:	B1539-13	Client:	
Sample Date:	12 Feb-06	Material:	Sediment	Project:	
Receive Date:		Source:	Hanford		
Sample Age:	18d 0h	Station:			

Comments: J116M8

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
10-6520-5888	AG Average Dry Wt.	100	> 100	N/A	66.34%	Equal Variance t Two-Sample
08-3581-0839	AG Average Wet Wt.	100	> 100	N/A	74.48%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.32594	0.20882	0.45330	0.07076	0.12256	37.60%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	6.50503	3.96990	9.31334	1.54855	2.68217	41.23%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		Missing	0.31571	0.20882	0.45330

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		Missing	6.23184	3.96990	9.31334

CETIS Analysis Detail

Plant Chronic test						CH2M Hill
Endpoint	**Analysis Type**	**Sample Link**	**Control Link**	**Date Analyzed**	**Version**	
AG Average Dry Wt.	Comparison	09-4239-5099	09-4239-5099	24 Apr-06 3:46 PM	CETISv1.1.2	

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	66.34%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-0.0812	2.01505	0.5308	0.21060	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0001234	0.000123	1	0.01	0.93844	Non-Significant Effect
Error	0.0936304	0.018726	5			
Total	0.09375383	0.0188495	6			

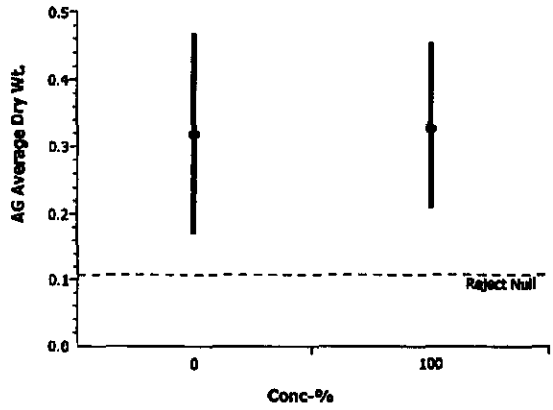
ANOVA Assumptions

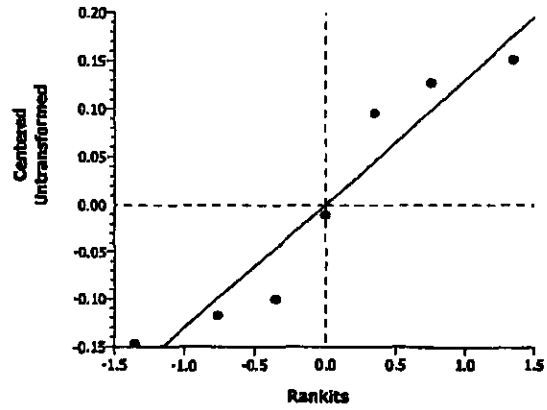
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.41108	199.16640	0.88064	Equal Variances
Distribution	Shapiro-Wilk W	0.88180		0.23458	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		3	0.32594	0.20882	0.45330	0.12256				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	09-4239-5099	09-4239-5099	24 Apr-06 3:46 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	74.48%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-0.3216	2.01505	0.6196	4.33006	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.8185077	0.818508	1	0.10	0.76079	Non-Significant Effect
Error	39.57954	7.915907	5			
Total	40.3980442	8.7344146	6			

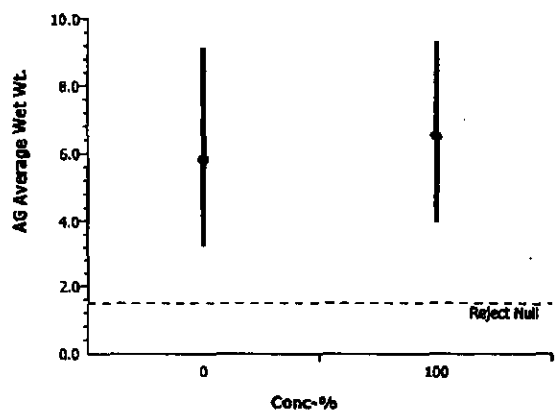
ANOVA Assumptions

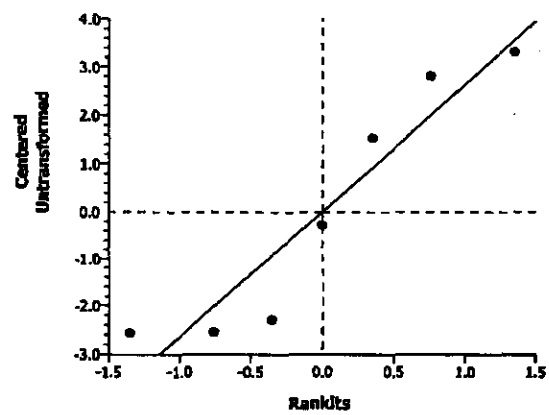
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.16723	199.16640	0.98445	Equal Variances
Distribution	Shapiro-Wilk W	0.85728		0.14309	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		3	6.50503	3.96990	9.31334	2.68217				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:51 PM
Test Link: 08-6311-7974/B153914pcc

Plant Chronic test — **CH2M Hill**

Test No:	02-8661-2508	Test Type:	Plant Chronic test	Duration:	40d 0h
Start Date:	02 Mar-06	Protocol:	ASTM E1963-02 (2002)	Species:	Pak Choi
Ending Date:	11 Apr-06	Dil Water:		Source:	
Setup Date:	02 Mar-06 12:00 AM	Brine:			

Sample No:	15-8395-4899	Code:	B1539-14	Client:	
Sample Date:	13 Feb-06	Material:	Sediment	Project:	
Receive Date:		Source:	Hanford		
Sample Age:	17d 0h	Station:			

Comments: J11752

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
10-7890-6458	AG Average Dry Wt.	100	> 100	N/A	46.49%	Equal Variance t Two-Sample
04-2795-5212	AG Average Wet Wt.	100	> 100	N/A	50.22%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.33855	0.29972	0.38824	0.02167	0.04334	12.80%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	6.73426	6.01198	7.70207	0.39827	0.79653	11.83%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.36139	0.38824	0.29972	0.30485

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		7.06697	7.70207	6.15602	6.01198

CETIS Analysis Detail

Plant Chronic test					CH2M Hill
Endpoint	**Analysis Type**	**Sample Link**	**Control Link**	**Date Analyzed**	**Version**
AG Average Dry Wt.	Comparison	08-6311-7974	08-6311-7974	24 Apr-06 3:51 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	46.49%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-0.2777	1.94318	0.8047	0.14759	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0008898	0.00089	1	0.08	0.79055	Non-Significant Effect
Error	0.0692223	0.011537	6			
Total	0.07011205	0.0124268	7			

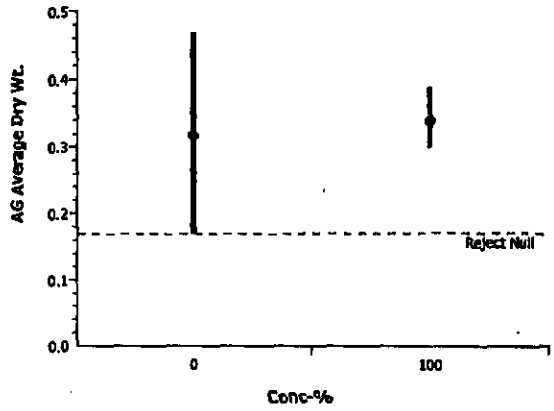
ANOVA Assumptions

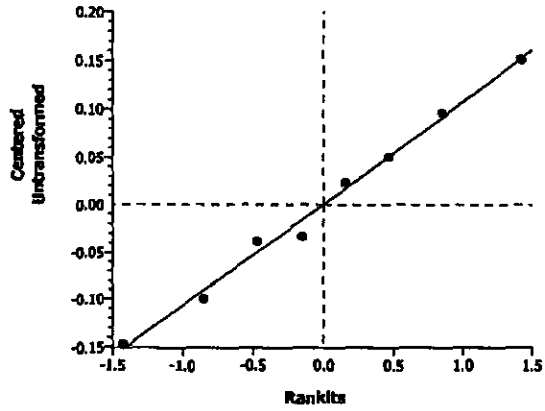
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	11.28602	47.46723	0.07689	Equal Variances
Distribution	Shapiro-Wilk W	0.98344		0.97789	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.33855	0.29972	0.38824	0.04334				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	08-6311-7974	08-6311-7974	24 Apr-06 3:51 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	50.22%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-0.6124	1.94318	0.7186	2.91988	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	1.693611	1.693611	1	0.38	0.56274	Non-Significant Effect
Error	27.09481	4.515802	6			
Total	28.7884253	6.2094134	7			

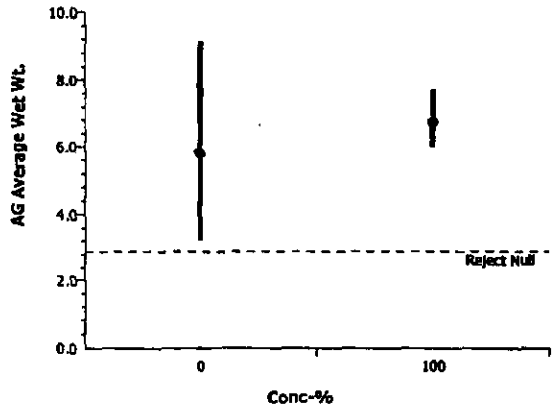
ANOVA Assumptions

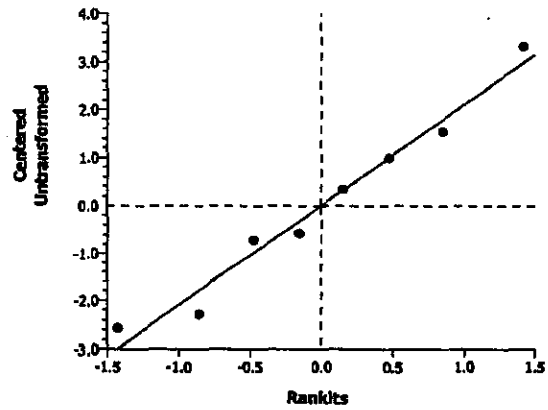
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	13.23494	47.46723	0.06187	Equal Variances
Distribution	Shapiro-Wilk W	0.96682		0.87192	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	6.73426	6.01198	7.70207	0.79653				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:52 PM
Test Link: 06-8133-9903/B153915pcc

Plant Chronic test — **CH2M Hill**

Test No:	07-0667-4824	**Test Type:**	Plant Chronic test	**Duration:**	40d 0h
Start Date:	02 Mar-06	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Pak Choi
Ending Date:	11 Apr-06	**Dil Water:**		**Source:**	
Setup Date:	02 Mar-06 12:00 AM	**Brine:**			

Sample No:	03-9009-6147	**Code:**	B1539-15	**Client:**	
Sample Date:	13 Feb-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	17d 0h	**Station:**			

Comments: J11745

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
05-9315-6809	AG Average Dry Wt.	100	> 100	N/A	48.98%	Equal Variance t Two-Sample
18-8468-0563	AG Average Wet Wt.	100	> 100	N/A	53.28%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.22658	0.15168	0.30814	0.03323	0.06645	29.33%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	4.72164	3.30253	6.32995	0.66491	1.32981	28.16%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.30814	0.24521	0.15168	0.20131

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		6.32995	5.21303	3.30253	4.04104

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Dry Wt.	Comparison	06-8133-9903	06-8133-9903	24 Apr-06 3:52 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	48.98%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.13564	1.94318	0.1497	0.15549	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0165156	0.016516	1	1.29	0.29942	Non-Significant Effect
Error	0.0768357	0.012806	6			
Total	0.09335135	0.0293216	7			

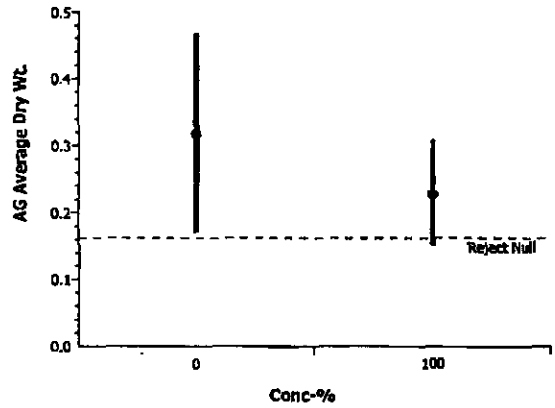
ANOVA Assumptions

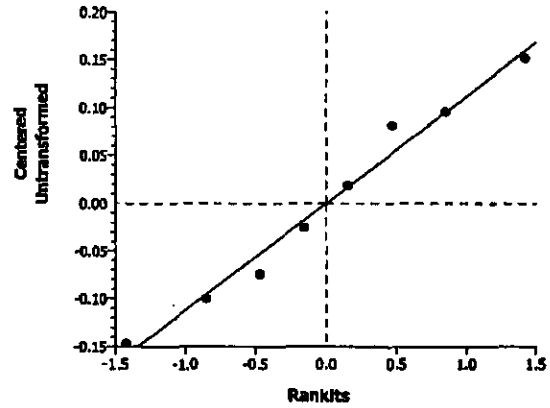
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	4.79994	47.46723	0.23009	Equal Variances
Distribution	Shapiro-Wilk W	0.96357		0.84334	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.22658	0.15168	0.30814	0.06645				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	06-8133-9903	06-8133-9903	24 Apr-06 3:52 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	53.28%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.68525	1.94318	0.2594	3.09776	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	2.386685	2.386685	1	0.47	0.51877	Non-Significant Effect
Error	30.49663	5.082771	6			
Total	32.8833125	7.469456	7			

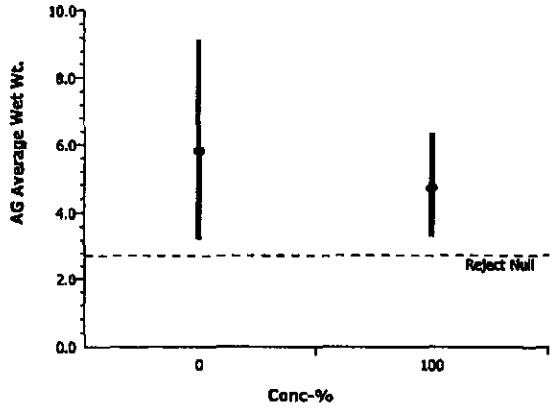
ANOVA Assumptions

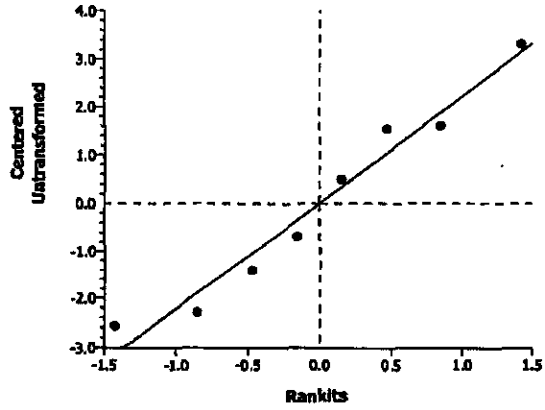
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	4.74842	47.46723	0.23307	Equal Variances
Distribution	Shapiro-Wilk W	0.94778		0.68887	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	4.72164	3.30253	6.32995	1.32981				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:54 PM
Test Link: 06-8702-6507/B153916pcc

Plant Chronic test — **CH2M Hill**

Test No:	18-9978-6940	Test Type:	Plant Chronic test	Duration:	40d 0h
Start Date:	02 Mar-06	Protocol:	ASTM E1963-02 (2002)	Species:	Pak Choi
Ending Date:	11 Apr-06	Dil Water:		Source:	
Setup Date:	02 Mar-06 12:00 AM	Brine:			

Sample No:	06-6928-1482	Code:	B1539-16	Client:	
Sample Date:	13 Feb-06	Material:	Sediment	Project:	
Receive Date:		Source:	Hanford		
Sample Age:	17d 0h	Station:			

Comments: J11750

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
08-2463-5202	AG Average Dry Wt.	100	> 100	N/A	51.04%	Equal Variance t Two-Sample
10-2695-5458	AG Average Wet Wt.	100	> 100	N/A	55.38%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.40806	0.34408	0.52632	0.04066	0.08132	19.93%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.8140	3.2451	9.1272	1.4489	2.8978	49.84%
100		4	8.5403	7.2730	10.806	0.8038	1.6075	18.82%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.39283	0.34408	0.36899	0.52632

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		8.54967	7.27302	7.53283	10.8055

CETIS Analysis Detail

Plant Chronic test						CH2M Hill
Endpoint	**Analysis Type**	**Sample Link**	**Control Link**	**Date Analyzed**	**Version**	
AG Average Dry Wt.	Comparison	06-8702-6507	06-8702-6507	24 Apr-06 3:54 PM	CETISv1.1.2	

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	51.04%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-1.0866	1.94318	0.8405	0.16202	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0164159	0.016416	1	1.18	0.31894	Non-Significant Effect
Error	0.0834253	0.013904	6			
Total	0.09984116	0.0303201	7			

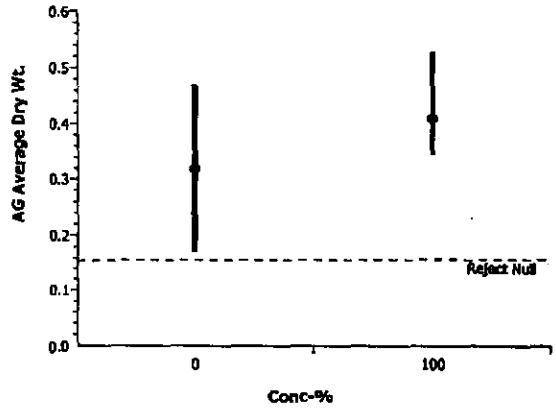
ANOVA Assumptions

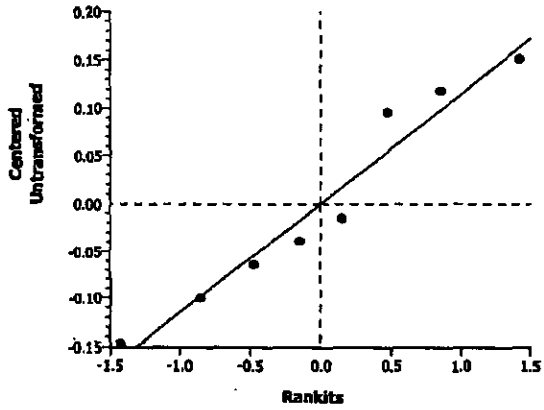
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	3.20549	47.46723	0.36429	Equal Variances
Distribution	Shapiro-Wilk W	0.93067		0.52221	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.40806	0.34408	0.52632	0.08132				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	06-8702-6507	06-8702-6507	24 Apr-06 3:54 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	55.38%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-1.6454	1.94318	0.9245	3.21966	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	14.86463	14.86463	1	2.71	0.15099	Non-Significant Effect
Error	32.94385	5.490642	6			
Total	47.8084831	20.355273	7			

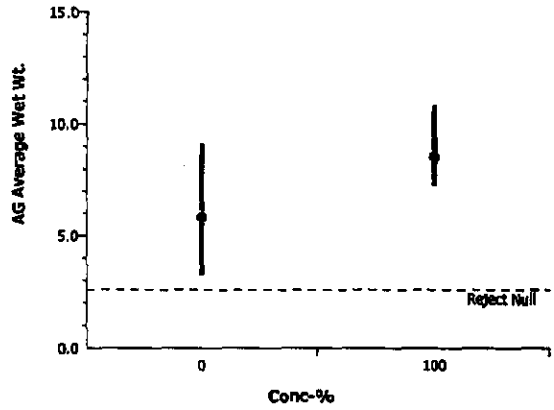
ANOVA Assumptions

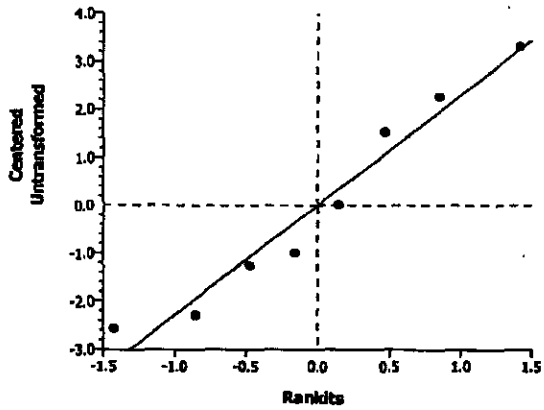
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	3.24948	47.46723	0.35896	Equal Variances
Distribution	Shapiro-Wilk W	0.93456		0.55851	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	8.54027	7.27302	10.8055	1.60753				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:55 PM
Test Link: 15-0347-9430/B153917pcc

Plant Chronic test — CH2M Hill

Test No:	05-8217-4108	Test Type:	Plant Chronic test	Duration:	40d 0h
Start Date:	02 Mar-06	Protocol:	ASTM E1963-02 (2002)	Species:	Pak Choi
Ending Date:	11 Apr-06	Dil Water:		Source:	
Setup Date:	02 Mar-06 12:00 AM	Brine:			

Sample No:	14-0550-4973	Code:	B1539-17	Client:	
Sample Date:	13 Feb-06	Material:	Sediment	Project:	
Receive Date:		Source:	Hanford		
Sample Age:	17d 0h	Station:			

Comments: J11751

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
10-4786-6677	AG Average Dry Wt.	100	> 100	N/A	49.78%	Equal Variance t Two-Sample
13-7591-9588	AG Average Wet Wt.	100	> 100	N/A	52.82%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.33770	0.27000	0.41720	0.03628	0.07255	21.48%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	6.89288	5.67148	8.03673	0.63098	1.26196	18.31%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.28273	0.38089	0.27000	0.41720

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		5.93808	7.92524	5.67148	8.03673

CETIS Analysis Detail

Plant Chronic test						CH2M Hill
Endpoint	**Analysis Type**	**Sample Link**	**Control Link**	**Date Analyzed**	**Version**	
AG Average Dry Wt.	Comparison	15-0347-9430	15-0347-9430	24 Apr-06 3:55 PM	CETISv1.1.2	

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	49.78%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-0.2489	1.94318	0.5941	0.15804	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0008199	0.00082	1	0.06	0.81170	Non-Significant Effect
Error	0.0793787	0.01323	6			
Total	0.08019862	0.0140497	7			

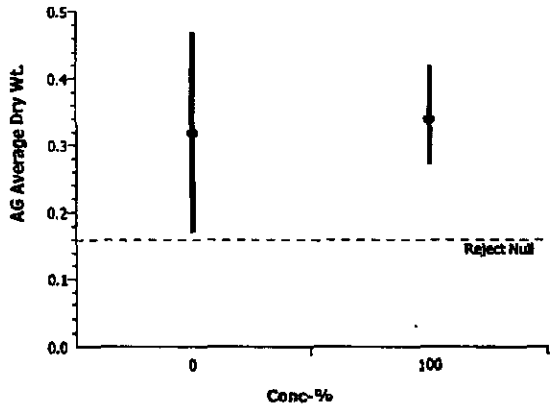
ANOVA Assumptions

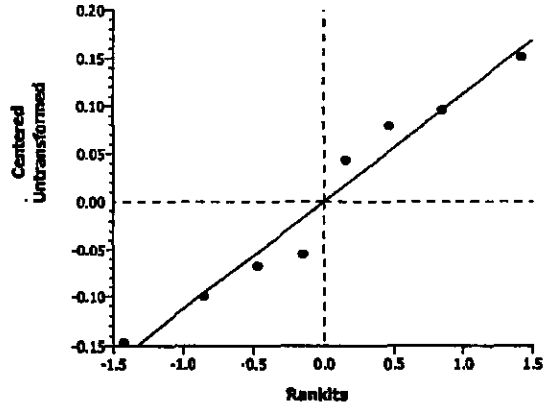
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	4.02694	47.46723	0.28258	Equal Variances
Distribution	Shapiro-Wilk W	0.94262		0.63706	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.33770	0.27000	0.41720	0.07255				

Graphics





CETIS Analysis Detail

Plant Chronic test	CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	15-0347-9430	15-0347-9430	24 Apr-06 3:55 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	52.82%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-0.6827	1.94318	0.7399	3.07085	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	2.327803	2.327803	1	0.47	0.52029	Non-Significant Effect
Error	29.96903	4.994839	6			
Total	32.2968352	7.3226416	7			

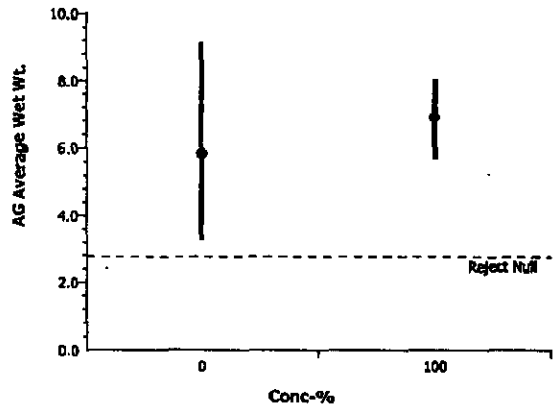
ANOVA Assumptions

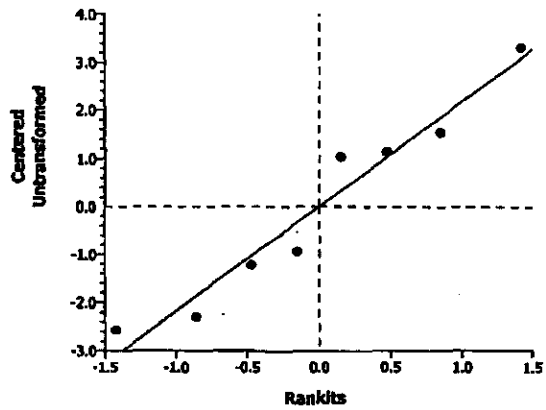
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	5.27280	47.46723	0.20547	Equal Variances
Distribution	Shapiro-Wilk W	0.93631		0.57515	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	6.89288	5.67148	8.03673	1.26196				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:57 PM
Test Link: 12-2754-1244/B153918pcc

Plant Chronic test — CH2M Hill

Test No:	03-8348-5695	Test Type:	Plant Chronic test	Duration:	40d 0h
Start Date:	02 Mar-06	Protocol:	ASTM E1963-02 (2002)	Species:	Pak Choi
Ending Date:	11 Apr-06	Dil Water:		Source:	
Setup Date:	02 Mar-06 12:00 AM	Brine:			

Sample No:	12-8062-0396	Code:	B1539-18	Client:	
Sample Date:	13 Feb-06	Material:	Sediment	Project:	
Receive Date:		Source:	Hanford		
Sample Age:	17d 0h	Station:			

Comments: J11753

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
04-6165-5632	AG Average Dry Wt.	100	> 100	N/A	69.62%	Equal Variance t Two-Sample
00-9561-6038	AG Average Wet Wt.	100	> 100	N/A	70.78%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.32814	0.14967	0.50422	0.08738	0.17477	53.26%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	5.60385	2.77741	8.82544	1.54443	3.08885	55.12%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.50422	0.14967	0.44928	0.20939

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		8.82544	2.77741	7.66210	3.15044

CETIS Analysis Detail

Plant Chronic test					CH2M Hill
Endpoint	**Analysis Type**	**Sample Link**	**Control Link**	**Date Analyzed**	**Version**
AG Average Dry Wt.	Comparison	12-2754-1244	12-2754-1244	24 Apr-06 3:56 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	69.62%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-0.0939	1.94318	0.5359	0.22100	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0002282	0.000228	1	0.01	0.92823	Non-Significant Effect
Error	0.1552205	0.025870	6			
Total	0.15544869	0.0260983	7			

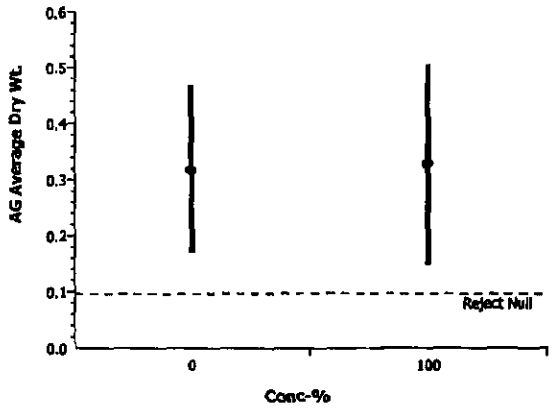
ANOVA Assumptions

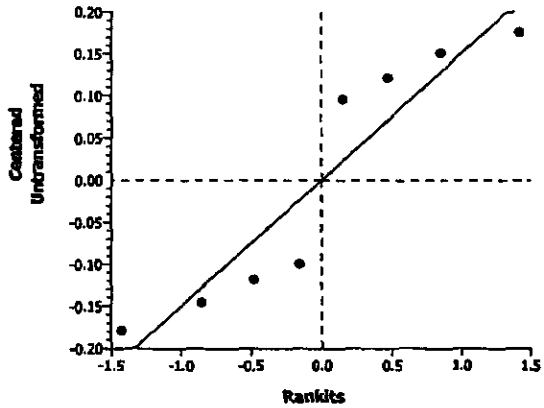
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.44103	47.46723	0.77122	Equal Variances
Distribution	Shapiro-Wilk W	0.84338		0.08158	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.32814	0.14967	0.50422	0.17477				

Graphics





CETIS Analysis Detail

Plant Chronic test						CH2M Hill
Endpoint	**Analysis Type**	**Sample Link**	**Control Link**	**Date Analyzed**	**Version**	
AG Average Wet Wt.	Comparison	12-2754-1244	12-2754-1244	24 Apr-06 3:57 PM	CETISv1.1.2	

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	70.78%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.09926	1.94318	0.4621	4.11502	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0883614	0.088361	1	0.01	0.92417	Non-Significant Effect
Error	53.81443	8.969072	6			
Total	53.9027955	9.0574338	7			

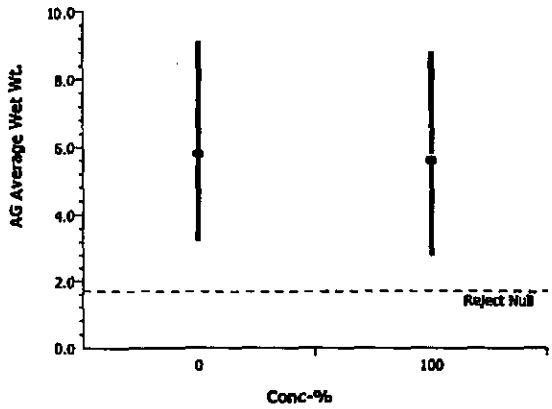
ANOVA Assumptions

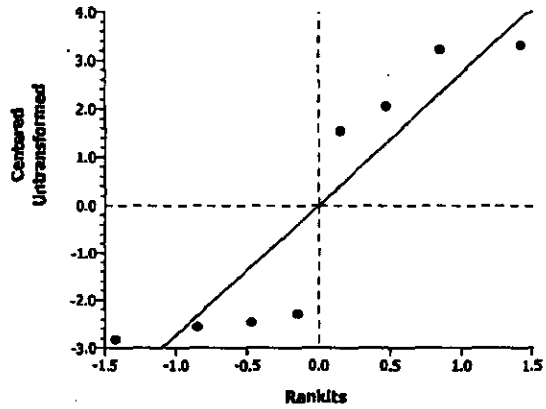
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.13622	47.46723	0.91886	Equal Variances
Distribution	Shapiro-Wilk W	0.79791		0.02719	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	5.60385	2.77741	8.82544	3.08885				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:58 PM
Test Link: 18-1465-6350/B153930pcc

Plant Chronic test — CH2M Hill

Test No:	03-0089-6547	Test Type:	Plant Chronic test	Duration:	40d 0h
Start Date:	02 Mar-06	Protocol:	ASTM E1963-02 (2002)	Species:	Pak Choi
Ending Date:	11 Apr-06	Dil Water:		Source:	
Setup Date:	02 Mar-06 12:00 AM	Brine:			

Sample No:	10-7678-7313	Code:	B1539-30	Client:	
Sample Date:	27 Feb-06	Material:	Sediment	Project:	
Receive Date:		Source:	Hanford		
Sample Age:	72h	Station:			

Comments: J116X2

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
01-5302-6525	AG Average Dry Wt.	< 100	100	N/A	45.65%	Equal Variance t Two-Sample
10-6767-0209	AG Average Wet Wt.	< 100	100	N/A	49.03%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.08978	0.06168	0.12753	0.01623	0.03246	36.16%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	1.24677	0.81359	1.69905	0.22961	0.45922	36.83%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.06168	0.12753	0.10616	0.06374

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		0.81359	1.58382	1.69905	0.89063

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Dry Wt.	Comparison	18-1465-6350	18-1465-6350	24 Apr-06 3:58 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		<100	100		N/A	45.65%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	3.05276	1.94318	0.0112	0.14493	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.1036761	0.103676	1	9.32	0.02243	Significant Effect
Error	0.0667491	0.011125	6			
Total	0.17042519	0.114801	7			

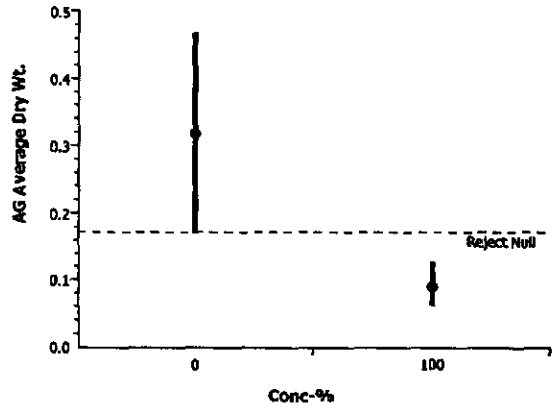
ANOVA Assumptions

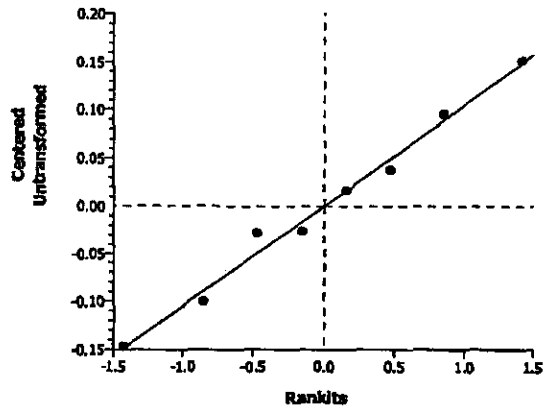
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	20.11617	47.46723	0.03449	Equal Variances
Distribution	Shapiro-Wilk W	0.98295		0.97600	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.08978	0.06168	0.12753	0.03246				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	18-1465-6350	18-1465-6350	24 Apr-06 3:58 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		<100	100		N/A	49.03%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	3.1134	1.94318	0.0104	2.85059	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	41.71986	41.71986	1	9.69	0.02076	Significant Effect
Error	25.82405	4.304009	6			
Total	67.5439091	46.023865	7			

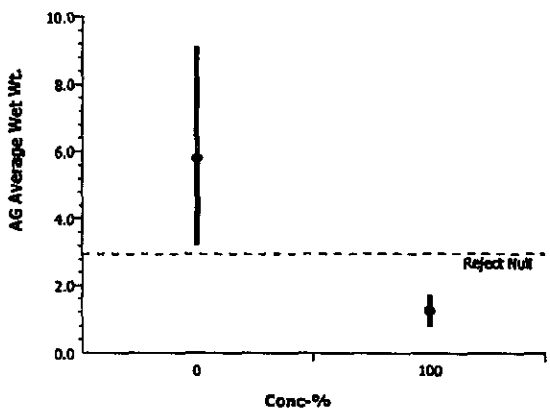
ANOVA Assumptions

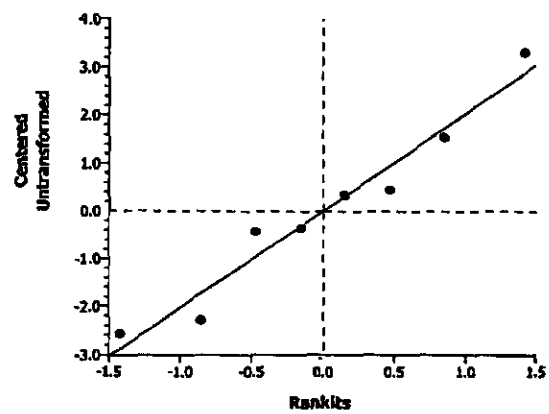
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	39.81947	47.46723	0.01292	Equal Variances
Distribution	Shapiro-Wilk W	0.95457		0.75713	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	1.24677	0.81359	1.69905	0.45922				

Graphics





CETIS Test Summary

Report Date: 24 Apr-06 3:59 PM
Test Link: 02-4977-5786/B153931pcc

Plant Chronic test — **CH2M Hill**

Test No:	02-0475-5855	**Test Type:**	Plant Chronic test	**Duration:**	40d 0h
Start Date:	02 Mar-06	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Pak Choi
Ending Date:	11 Apr-06	**Dil Water:**		**Source:**	
Setup Date:	02 Mar-06 12:00 AM	**Brine:**			

Sample No:	04-9697-6278	**Code:**	B1539-31	**Client:**	
Sample Date:	27 Feb-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	72h	**Station:**			

Comments: J116W9

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
14-6291-8849	AG Average Dry Wt.	100	> 100	N/A	51.51%	Equal Variance t Two-Sample
07-0817-8932	AG Average Wet Wt.	100	> 100	N/A	55.92%	Equal Variance t Two-Sample

AG Average Dry Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.07279	0.14559	45.86%
100		4	0.19076	0.14154	0.31685	0.04222	0.08443	44.26%

AG Average Wet Wt. Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	5.81404	3.24507	9.12716	1.44889	2.89778	49.84%
100		4	3.68183	2.67195	6.18494	0.83691	1.67382	45.46%

AG Average Dry Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.41331	0.21729	0.17069	0.46854
100		0.14491	0.14154	0.31685	0.15974

AG Average Wet Wt. Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	7.35745	3.52648	3.24507	9.12716
100		2.98401	2.67195	6.18494	2.88643

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Dry Wt.	Comparison	02-4977-5786	02-4977-5786	24 Apr-06 3:59 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	51.51%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.50562	1.94318	0.0914	0.16352	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0321045	0.032104	1	2.27	0.18287	Non-Significant Effect
Error	0.0849739	0.014162	6			
Total	0.11707832	0.0462668	7			

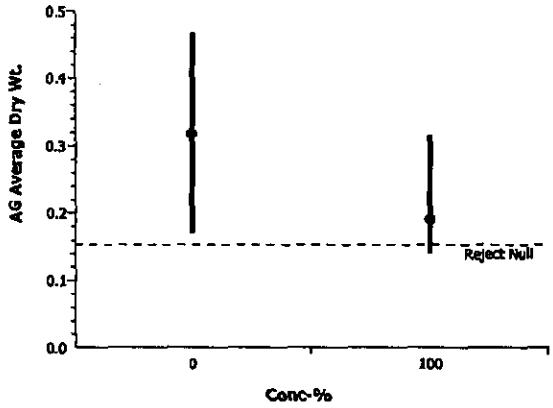
ANOVA Assumptions

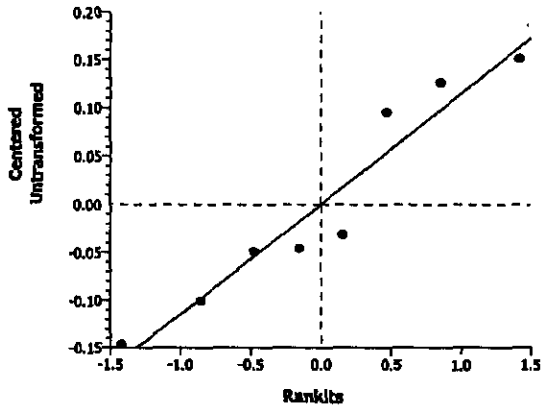
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.97337	47.46723	0.39470	Equal Variances
Distribution	Shapiro-Wilk W	0.90967		0.35172	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.31746	0.17069	0.46854	0.14559				
100		4	0.19076	0.14154	0.31685	0.08443				

Graphics





CETIS Analysis Detail

Plant Chronic test — CH2M-Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
AG Average Wet Wt.	Comparison	02-4977-5786	02-4977-5786	24 Apr-06 3:59 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	55.92%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.27431	1.94318	0.1248	3.25139	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	9.092616	9.092616	1	1.62	0.24968	Non-Significant Effect
Error	33.59644	5.599407	6			
Total	42.6890593	14.692023	7			

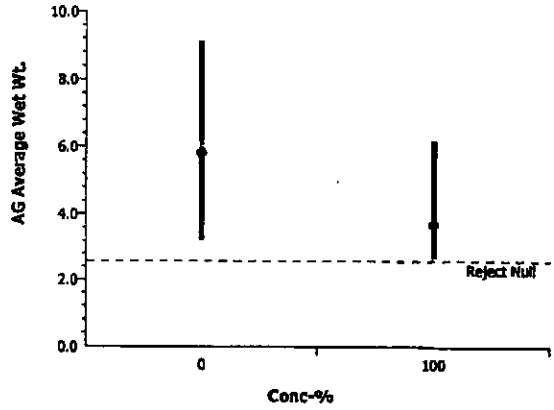
ANOVA Assumptions

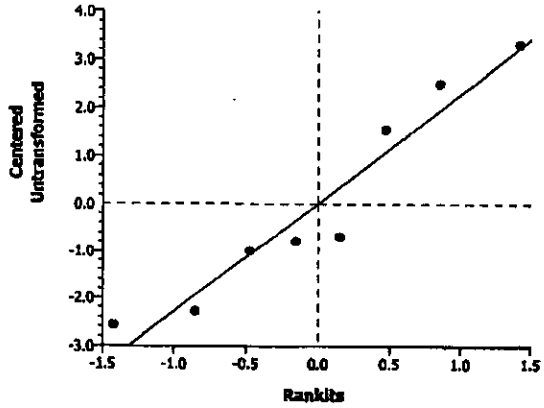
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.99718	47.46723	0.39139	Equal Variances
Distribution	Shapiro-Wilk W	0.90924		0.34871	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	5.81404	3.24507	9.12716	2.89778				
100		4	3.68183	2.67195	6.18494	1.67382				

Graphics





APPENDIX B
CHAIN OF CUSTODY

F1162

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-6	Page 1 of 1

Collector: JE Bernhard	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 9N; Data Turnaround: 21 Days
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: ~~300-1~~ REF #16 JEB 2-5-06	SAF No.: RC-047	Air Quality:
Ice Chest No.: SHWS-336	Field Logbook No.: EL-1596 7 JEB 2-5-06; COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT	
Shipped To: CH2MHILL	Offsite Property No.: A060151	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	3000g	19000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11								

Sample No.	Matrix *	Sample Date	Sample Time										
J11143	OTHER SOLID	02-05-06	1130	X	X	X							-1

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From: JAMES BERNHARD; Date/Time: 1400 02-05-06	Received By/Stored In: EAS LOCKED STORAGE; Date/Time: 1400 02-05-06	(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422
Relinquished By/Removed From: EAS LOCKED STORAGE; Date/Time: 0745 02-06-06	Received By/Stored In: RZ Stoffler RJ Stoffler; Date/Time: 0745 2-6-06	B1539-01 For Pak Choi
Relinquished By/Removed From: RZ Stoffler RJ Stoffler; Date/Time: 1500 2-6-06	Received By/Stored In: Fed Ex; Date/Time:	
Relinquished By/Removed From: FED EX; Date/Time:	Received By/Stored In: KMcKinley; Date/Time: 2/7/06 1020	
Relinquished By/Removed From; Date/Time:	Received By/Stored In; Date/Time:	
Relinquished By/Removed From; Date/Time:	Received By/Stored In; Date/Time:	

Matrix *: S=Soil; SE=Sediment; SO=Solid; SL=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By: KMcKinley	Title	Date/Time: 2/7/06 1020
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-9	Page 1 of 1

Collector: JAMES BERNHARD	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 21 Days	Air Quality: ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: U-2	SAF No.: RC-047	
Ice Chest No.: AFS-04-050	Field Logbook No.: EL-15967 JMC 2-8-06	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None									
Type of Container	G/P	P/G	P/G									
No. of Container(s)	1 JMC 2-8-06	1	1									
Volume	1000g	3000g	19000g									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11									

Sample No.	Matrix *	Sample Date	Sample Time										
J11146	OTHER SOLID	2-8-06	1245	X	X	X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: JAMES BERNHARD	2-8-06 1700	Received By/Stored In: EAS LOCKED STORAGE	2-8-06 1700
Relinquished By/Removed From: JAMES BERNHARD	2-9-06 0715	Received By/Stored In: RZ Stettler	2-9-06 0715
Relinquished By/Removed From: RZ Stettler	2-9-06 1500	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex		Received By/Stored In: Brett Mulvey	2-10-06 1400
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1539-02 for Hyallelin
B1539-02 for nutsedge / pac cinn
COC seals intact

Matrix *: S=Soil; SE=Sediment; SO=Solid; Sl=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; Wi=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-047-7	Page 1 of 1
Collector JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 300-2		SAF No. RC-047	Air Quality ☐
Ice Chest No. AFS-04-050	Field Logbook No. EL-1596 SEB 2-8-06	COA BESRAS6520	Method of Shipment GROUND TRANSPORT	
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC	

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS
POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage
COOL 4C

Preservation	Cool 4C	None	None									
Type of Container	G/P	P/G	P/G									
No. of Container(s)	2 SEB 2-8-06	1	1									
Volume	1000g	3000g	19000g									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11									

Sample No.	Matrix *	Sample Date	Sample Time										
J11144	OTHER SOLID	2-8-06	1430	X	X	X							

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From JAMES BERNHARD	Date/Time 1700 2-8-06	Received By/Stored In EAS LOCKED STORAGE	Date/Time 1700 2-8-06
Relinquished By/Removed From JAMES BERNHARD	Date/Time 0715 2-9-06	Received By/Stored In RZ Stoffler	Date/Time 0715 2-9-06
Relinquished By/Removed From RZ Stoffler	Date/Time 1500 WTH 2-9-06	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time	Received By/Stored In Brett Mackey	Date/Time 1400 2-10-06
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1538-03 for Hyalella
B1539-03 for Mutsudgi / Pak Choi
COC seals intact on arrival

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-8	Page 1 of 1

Collector: JEB JAMES BERNHARD	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: U-1		SAF No.: RC-047
Ice Chest No.: AFS-04-050	Field Logbook No.: EL-15987 SEB 2-8-06	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 9N

Air Quality: [ ]

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None
Type of Container	G/P	P/G	P/G
No. of Container(s)	#2 SEB 2-8-06	1	1
Volume	1000g	3000g	19000g
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11

Sample No.	Matrix *	Sample Date	Sample Time			
J11145	OTHER SOLID	2-8-06	1130	X	X	X

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	1700 2-8-06	EAS LOCKED STORAGE	1700 2-8-06
JAMES BERNHARD	0715 2-9-06	RZ Steffler R.J. Steffler	0715 2-9-06
RZ Steffler R.J. Steffler	1500 2-9-06	Fed Ex	
Fed Ex		Brett Mulkey	1400 2-10-06

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1538-04 for Hyalella
B1539-04 for notcedge/pakchoi

COC seals intact on arrival

Matrix *: S=Soil, SE=Sediment, SO=Solid, SI=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx Express

Ship Date: 09FEB06
ActWgt: 38 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

[redacted]

PRIORITY OVERNIGHT **FRI**

Deliver By: 10FEB06

TRK# 7918 5661 0690 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

Shipping Label

View all labels

Place label in shipping label pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $500, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

Ship Date: 09FEB06
ActWgt: 78 LB
System#: 5851986/INET2400
Account#: S ********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

[redacted]

PRIORITY OVERNIGHT

FRI
Deliver By:
10FEB06

TRK# 7918 5661 0680 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

Shipping Label

View all labels

Place label in shipping label pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $500, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx Express

Ship Date: 09FEB06
ActWgt: 55 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

[redacted]

PRIORITY OVERNIGHT

FRI
Deliver By:
10FEB06

TRK# 7918 5661 0705 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

Shipping Label

View all labels

Place label in shipping label pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $500, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-50	Page 1 of 1

Collector: TILLER JAMES BERNHARD	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: REF 12 SEDIMENT		SAF No.: RC-047
Ice Chest No.: ERC-99-065	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 9N

Air Quality ☐

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	X2 JED 1-9-06	1	1								
Volume	1000g	3000g	19000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11								

Sample No.	Matrix *	Sample Date	Sample Time										
J116N1	OTHER SOLID	2-9-06	1530	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: JAMES BERNHARD	Date/Time: 2-9-06 1530	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 2-9-06 1530
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 2-13-06 0745	Received By/Stored In: RZ Stettler R.J. Stettler	Date/Time: 2-13-06 0745
Relinquished By/Removed From: RZ Stettler R.J. Stettler with	Date/Time: 2-13-06 1500	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: FED-X	Date/Time: 2-14	Received By/Stored In: Mike Stanaway	Date/Time: 2-14-06 1100
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1538-05 = Hyalella
B1539-05 = Nutsedge/Pakchoi
F1192-01
COC intact.

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-52	Page 1 of 1

Collector: TILLER JAMES BERNHARD	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: REF/3 SEDIMENT		SAF No.: RC-047
Ice Chest No.: ERC-99-065	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 9N

Air Quality ☐

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None
Type of Container	G/P	P/G	P/G
No. of Container(s)	X2 2-9-06 KSG	1	1
Volume	1000g	3000g	19000g
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11

Sample No.	Matrix *	Sample Date	Sample Time			
J116N3	OTHER SOLID	2-9-06	1400	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: JAMES BERNHARD	Date/Time: 2-9-06 1400	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 2-9-06 1400
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 02-13-06 0745	Received By/Stored In: RZ Stettler	Date/Time: 2-13-06 0745
Relinquished By/Removed From: RZ Stettler	Date/Time: 2-13-06 1500 WCH	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed-X	Date/Time:	Received By/Stored In: [signature]	Date/Time: 2-14-06 1100
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1538-06 Hyalella

B1539-06 Nutsedge/Pakchoi

Custody seals intact

F1192-02

Matrix *: S=Soil, SE=Sediment, SO=Solid, SI=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-27	Page 1 of 1

Collector TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N	Data Turnaround 21 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location Cr 5, SEDIMENT		SAF No. RC-047	Air Quality [ ]	
Ice Chest No. ERC-96-012	Field Logbook No. EL-1598 7 & 1310 6	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <LOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None
Type of Container	G/P	Poly Bag	Poly Bag
No. of Container(s)	2	1	1
Volume	1000g	3000g	19000g

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11
J112B7	OTHER SOLID	2-12-06	1200	X	X	X

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From JAMES BERNHARD Date/Time 1900 2-12-06	Received By/Stored In EAS LOCKED STORAGE Date/Time 1900 2-12-06	(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422 Cooler temp for chemical analysis = 1.4°C	S=Soil SE=Sediment SO=Solid SJ=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 0745 02-13-06	Received By/Stored In RZ Steffler Date/Time 0745 2-13-06	B1538-07 Hydrella B1539-07 Nutsedge/Pickerelweed Custody seals intact F1192-03	
Relinquished By/Removed From RZ Steffler Date/Time 1500 2-13-06	Received By/Stored In Fed Ex Date/Time		
Relinquished By/Removed From Fed-X Date/Time	Received By/Stored In Date/Time 2-14-06		
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time		
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time		

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-047-51	Page 1 of 1
Collector TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N / Data Turnaround 21 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location REF 12 SEDIMENT		SAF No. RC-047	Air Quality ☐
Ice Chest No. ERC-96-012	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT	
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage
COOL 4C

Preservation	Cool 4C	None	None									
Type of Container	G/P	P/G	P/G									
No. of Container(s)	4 2 SES 2-9-06	1	1									
Volume	1000g	3000g	19000g									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11									

Sample No.	Matrix *	Sample Date	Sample Time										
J116N2	OTHER SOLID	2-9-06	1445	X	X	X							

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From JAMES BERNHARD	Date/Time 1830 2-9-06	Received By/Stored In EAS LOCKED STORAGE	Date/Time 1830 2-9-06
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 0745 02-13-06	Received By/Stored In RZ Steffler R.J. Steffler	Date/Time 0745 2-13-06
Relinquished By/Removed From RZ Steffler R.J. Steffler	Date/Time 1500 WLH 2-13-06	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed-X	Date/Time	Received By/Stored In [signature]	Date/Time 2-14-06 1100
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1538-~~09~~ 08 MS Hyalella
B1539-~~09~~ 08 MS Nutsedge/Pickerel
custody seals intact
F1192-04

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
W=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-43	Page 1 of 1

Collector: TILLER JAMES BERNHARD	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: Cr9 SEDIMENT		SAF No.: RC-047
Ice Chest No.: AFS-04-034	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 9N

Air Quality ☐

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS
Cool 4°C 2-13-06

Preservation	Cool 4C	None	None									
Type of Container	G/P	P/G	P/G									
No. of Container(s)	SEE X 2 2-12-06	1	1									
Volume	1000g	3000g	19000g									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11									

Sample No.	Matrix *	Sample Date	Sample Time										
J116M4	OTHER SOLID	2-12-06	1400	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: JAMES BERNHARD	Date/Time: 1900 2-12-06	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 1900 2-12-06
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 0745 02-13-06	Received By/Stored In: RZ Steffler R.Z. Steffler	Date/Time: 0745 2-13-06
Relinquished By/Removed From: RZ Steffler R.Z. Steffler	Date/Time: 1500 WCH 2-13-06	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed-X	Date/Time:	Received By/Stored In: Mike Stanaway	Date/Time: 2-14-06 1100
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS — Cooler Temp = 1.4°C

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1538-09 ns Hyalella
B1539-09 Nutsedge/Pakchain
Custody seals intact

F1192-05

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-49	Page 1 of 1

Collector TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N	Data Turnaround 21 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location REF/14, SEDIMENT		SAF No. RC-047	Air Quality ☐	
Ice Chest No. ERC-96-058	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	2 SEE 2-9-06	1	1								
Volume	1000g	3000g	19000g								
SAMPLE ANALYSIS	See Item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11								

Sample No.	Matrix *	Sample Date	Sample Time										
J116N0	OTHER SOLID	2-9-06	1230	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From JAMES BERNHARD	Date/Time 1830 2-9-06	Received By/Stored In EAS LOCKED STORAGE	Date/Time 1830 2-9-06
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 0745 02-13-06	Received By/Stored In RZ Stoller R.J. Stoller	Date/Time 0745 2-13-06
Relinquished By/Removed From RZ Stoller R.J. Stoller	Date/Time 1500 2-13-06	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time	Received By/Stored In Brett Mackey	Date/Time 1300 2-14-06
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1538-10

B1539-10

COC seals intact

F1192-06

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
Ve=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-97	Page 1 of 1
Collector: TILLER JAMES BERNHARD	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 9N; Data Turnaround: 21 Days
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: REF11, SEDIMENT FULL QC	SAF No.: RC-047	Air Quality ☐
Ice Chest No.: ERC-96-058	Field Logbook No.: EL-1597; COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT	
Shipped To: CH2MHILL	Offsite Property No.: A060151	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	~~1~~ 2 JEG 2-9-06	1	1								
Volume	1000g	3000g	19000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11								

Sample No.	Matrix *	Sample Date	Sample Time										
J11731	OTHER SOLID	2-9-06	1600	X	X	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	1830 2-9-06	EAS LOCKED STORAGE	1830 2-9-06
EAS LOCKED STORAGE	0745 02-13-06	RZ Stiffler R.J. Stiffler	0745 2-13-06
RZ Stiffler R.J. Stiffler	1500 WCH 2-13-06	Fed Ex	
Fed Ex		Brett Mulkey BRETT Mulkey	1700 2-14-06

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1532-11

B1539-11

COC seals intact

F1192-07

Matrix *: S=Soil; SE=Sediment; SO=Solid; Sl=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; Wh=Wipe; L=Liquid; Ve=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-44	Page 1 of 1
Collector: TILLER JAMES BERNHARD	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 9N; Data Turnaround: 21 Days
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: Cr/oSEDIMENT	SAF No.: RC-047	Air Quality ☐
Ice Chest No.: ERC-02-501	Field Logbook No.: EL-1597; COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT	
Shipped To: CH2MHILL	Offsite Property No.: A060151	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	X2 2-12-06	1	1								
Volume	1000g	3000g	19000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11								
Sample No. / Matrix * / Sample Date / Sample Time											
J116M5 / OTHER SOLID / 2-12-06 / 1530	X	X	X								

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2-12-06 1600	EAS LOCKED STORAGE	2-12-06 1600
EAS LOCKED STORAGE	02-13-06 0745	RZ Stoffler R.J. Stoffler	2-13-06 0745
RZ Stoffler R.J. Stoffler	2-13-06 1500	Fed Ex	
Fed Ex		Brett Muller	2-14-06 1300

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1538-12

B1539-12

COC seals intact

F1192-08

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-47	Page 1 of 1
Collector TILLER JAMES BERNHARD	Company Contact JOAN KESSNER / Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N / Data Turnaround 21 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location Cr6 SEDIMENT FULL QC	SAF No. RC-047	Air Quality ☐
Ice Chest No. ERC-02-501	Field Logbook No. EL-1597 / COA BESRAS6520	Method of Shipment GROUND TRANSPORT	
Shipped To CH2MHILL	Offsite Property No. A060151	Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	3 JEL 2-12-06	1	1								
Volume	1000g	3000g	19000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11								

Sample No.	Matrix *	Sample Date	Sample Time										
J116M8	OTHER SOLID	2-12-06	1315	X	X	X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From JAMES BERNHARD	1900 2-12-06	Received By/Stored In EAS LOCKED STORAGE	1900 2-12-06
Relinquished By/Removed From EAS LOCKED STORAGE	0745 02-13-06	Received By/Stored In RZ Steffler	0745 2-13-06
Relinquished By/Removed From RZ Steffler	1500 2-13-06	Received By/Stored In Fed Ex	
Relinquished By/Removed From Fed Ex		Received By/Stored In	1300 2-14-06
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

31538-13

31539-13

COC seals intact

F1192-09

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
Ve=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

Ship Date: 13FEB06
ActWgt: 72 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

[redacted]

PRIORITY OVERNIGHT

TUE
Deliver By:
14FEB06

TRK# 7913 7159 9081 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

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View all labels

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Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $500, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

B1538-05-13 & B1539-05-13

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

Ship Date: 13FEB06
ActWgt: 76 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

[redacted]

PRIORITY OVERNIGHT **TUE**

Deliver By: 14FEB06

TRK# 7903 2014 0379 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

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B1539 & B1558-05-13

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx Express

Ship Date: 13FEB06
ActWgt: 26 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

[redacted]

PRIORITY OVERNIGHT **TUE**

Deliver By: 14FEB06

TRK# 7913 7159 9059 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

Shipping Label

View all labels

Place label in shipping label pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

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B1538 & B1539 - 05-13

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx Express

Ship Date: 13FEB06
ActWgt: 95 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

[redacted]

PRIORITY OVERNIGHT

TUE
Deliver By:
14FEB06

TRK# 7903 2014 0368 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

Shipping Label

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B1538 & B1539 - 05 - 13

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx Express

Ship Date: 13FEB06
ActWgt: 78 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

[redacted]

PRIORITY OVERNIGHT

TUE
Deliver By:
14FEB06

TRK# 7913 7159 9070 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

Shipping Label

View all labels

Place label in shipping label pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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B1538 & B1539 - 05 - 13

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

Ship Date: 13FEB06
ActWgt: 88 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

[redacted]

PRIORITY OVERNIGHT

TUE
Deliver By:
14FEB06

TRK# 7903 2014 0390 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

Shipping Label

View all labels

Place label in shipping label pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $500, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

B 1538 & B 1539 - 05 - 13

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-128	Page 1 of 1

Collector: TILLER JAMES BERNHARD	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: U.S. SEDIMENT		SAF No.: RC-047
Ice Chest No.: ERC-99-027	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	300 x 2 2-13-06	1	1								
Volume	1000g	3000g	19000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11								
Sample No.	Matrix *	Sample Date	Sample Time								
J11752	OTHER SOLID	2-13-06	1345	X	X	X					

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: JAMES BERNHARD	2-13-06 1730	Received By/Stored In: EAS LOCKED STORAGE	2-13-06 1730
Relinquished By/Removed From: EAS LOCKED STORAGE	02-14-06 0700	Received By/Stored In: RZ Steffler R.J. Steffler	2-14-06 0700
Relinquished By/Removed From: RZ Steffler R.J. Steffler	2-14-06 1600	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex		Received By/Stored In: Brit Mulkey	2-16-06 11:00
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

300g logged in as B1539-14 received 2-15-06

1900g logged in as ~~B1539-2~~ B1539-14 received 2-15-06

COC received 2-16-06, COC seals intact @ 3.0°C

1000g containers (2) arrived w/COC on 2-16-06

F1207-01 for chemistry

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
Li=Liquid
Ve=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-121	Page 1 of 1

Collector TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4088	Project Coordinator KESSNER, JH	Price Code 9N	Data Turnaround 21 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location U 6, SEDIMENT		SAF No. RC-047	Air Quality ☐	
Ice Chest No. ERC-99-027	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None
Type of Container	G/P	P/G	P/G
No. of Container(s)	1	1	1
Volume	1000g	3000g	19000g
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11

Sample No.	Matrix *	Sample Date	Sample Time			
J11745	OTHER SOLID	2-13-06	1145	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	1730 2-13-06	EAS LOCKED STORAGE	1730 2-13-06
EAS LOCKED STORAGE	0700 2-14-06	RZ Steffler RZ Steffler	2-14-06 / 0700
RZ Steffler RZ Steffler	1600 2-14-06	Fed Ex	
Fed Ex		Brett Mackay Brett Mackay	1100 2-16-06

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

COC seals intact

B1532-15 for Hydride (3 wks)

B1539-15 for Metals/Pb/Cd (1 wk)

F1207.02 for Chem lab (2x 1000g) @ 3.0°C

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-126	Page 1 of 1

Collector TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location U 8, SEDIMENT		SAF No. RC-047
Ice Chest No. AFS-04-049	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

Price Code 9N

Air Quality ☐

Data Turnaround 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation				Cool 4C	None	None						
Type of Container				G/P	P/G	P/G						
No. of Container(s)				JEB x 2 2-13-06	1	1						
Volume				1000g	3000g	19000g						
SAMPLE ANALYSIS				See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11						
Sample No.	Matrix *	Sample Date	Sample Time									
J11750	OTHER SOLID	2-13-06	1545	X	X	X						

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From JL Date/Time 1730 JAMES BERNHARD 2-13-06	Received By/Stored In JL Date/Time 1730 EAS LOCKED STORAGE 2-13-06	
Relinquished By/Removed From B Date/Time 0700 EAS LOCKED STORAGE 02-14-06	Received By/Stored In RZ Steffler R.J. Steffler Date/Time 0700 2-14-06	
Relinquished By/Removed From RZ Steffler R.J. Steffler Date/Time 1600 with 2-14-06	Received By/Stored In Fed Ex Date/Time	
Relinquished By/Removed From Fed Ex Date/Time	Received By/Stored In [signature] Date/Time 1100 BRIT Mackey 2-16-06	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

COC seals intact

B1538-16 for Hyalella (3000g)

B1539-16 for Nutsedge / Pak choi (19000g)

F1207-03 for Chemistry (2x1000g) @ 3.0°C

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-127	Page 1 of 1

Collector: TILLER JAMES BERNHARD	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: U3, SEDIMENT		SAF No.: RC-047
Ice Chest No.: AFS-04-049	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 9N

Air Quality ☐

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None									
Type of Container	G/P	P/G	P/G									
No. of Container(s)	[illegible] #2 2-13-06	1	1									
Volume	1000g	3000g	19000g									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11									

Sample No.	Matrix *	Sample Date	Sample Time										
J11751	OTHER SOLID	2-13-06	1445	X	X	X							

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	1730 2-13-06	EAS LOCKED STORAGE	1730 2-13-06
EAS LOCKED STORAGE	0700 02-14-06	RZ Steffler R.J. Steffler	0700 2-14-06
RZ Steffler R.J. Steffler	1600 WCH 2-14-06	Fed Ex	
Fed Ex		[illegible] Brett Mudey	1100 2-16-06

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

. COC seals intact
B1538-17 for Hyalella (3000g)
B1539-17 for Nutsedge / Pak choi (19000g)
F1207-04 for Chemistry @ 3.0°C

Matrix *: S=Soil, SE=Sediment, SO=Solid, SI=Sludge, W = Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BFI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-129	Page 1 of 1

Collector TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location U 7, SEDIMENT		SAF No. RC-047
Ice Chest No. ERC-02-007	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

Price Code 9N

Air Quality ☐

Data Turnaround 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None									
Type of Container	G/P	P/G	P/G									
No. of Container(s)	[illegible] 2-13-06	1	1									
Volume	1000g	3000g	19000g									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11									

Sample No.	Matrix *	Sample Date	Sample Time										
J11753	OTHER SOLID	2-13-06	1245	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From JAMES BERNHARD Date/Time 1730 2-13-06	Received By/Stored In EAS LOCKED STORAGE Date/Time 1730 2-13-06	
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 0700 02-14-06	Received By/Stored In RZ Steffler Date/Time 0700 2-14-06	
Relinquished By/Removed From RZ Steffler Date/Time 1600 2-14-06	Received By/Stored In Fed Ex Date/Time	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time 1100 2-16-06	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

CUC seals intact
D1538-18 for Hyalella (3000g)
D1539-18 for Notcadge / Pink Choi (19000g)
F1207-05 for Chemistry @ 3.0°C

Matrix *
S=Soil
SE=Sediment
SD=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx Express

Ship Date: 14FEB06
ActWgt: 116 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

[redacted]

PRIORITY OVERNIGHT **WED**

Deliver By: 15FEB06

TRK# 7913 7327 4586 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

Shipping Label

View all labels

Place label in shipping label pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $500, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

Cooler received 2-16-06

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx Express

Ship Date: 14FEB06
ActWgt: 64 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

[redacted]

PRIORITY OVERNIGHT

WED
Deliver By:
15FEB06

TRK# 7913 7327 4612 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

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Order received. 2-16-06

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

Ship Date: 14FEB06
ActWgt: 91 LB
System#: 5851986/INET2400
Account#: S *********

REF: A080151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

[redacted]

PRIORITY OVERNIGHT

WED
Deliver By:
15FEB06

TRK# 7913 7327 4575 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

Shipping Label

View all labels

Place label in shipping label pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $500, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

Color received 2-16-06

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-80	Page 1 of 1

Collector: TILLER JAMES BERNHARD	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 9N; Data Turnaround: 21 Days
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: Sr 3, SEDIMENT	SAF No.: RC-047	Air Quality ☐
Ice Chest No.: ERC-96-014	Field Logbook No.: EL-1597; COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT	
Shipped To: CH2MHILL	Offsite Property No.: A060151	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None									
Type of Coutainer	G/P	P/G	P/G									
No. of Container(s)	12 [illegible] 2-27-06	1	1									
Volume	1000g	3000g	19000g									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11									

Sample No.	Matrix *	Sample Date	Sample Time										
J116X2	OTHER SOLID	2-27-06	1130	X	X	X							
				FIRBO-01	B1538-30	B639-30							

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From: JAMES BERNHARD; Date/Time: 1700 2-27-06	Received By/Stored In: EAS LOCKED STORAGE; Date/Time: 1700 2-27-06	(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422	S=Soil, SE=Sediment, SO=Solid, SI=Sludge, W = Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other
Relinquished By/Removed From: EAS LOCKED STORAGE; Date/Time: 0715 03/01/06	Received By/Stored In: RZ Steffler; Date/Time: 0715 3-1-06	Temp. upon arrival @ lab = 2.7 °C	
Relinquished By/Removed From: RZ Steffler; Date/Time: 1600 3-1-06	Received By/Stored In: Fed Ex; Date/Time:		
Relinquished By/Removed From: Fed Ex; Date/Time:	Received By/Stored In: Doug Winn; Date/Time: 3-2-06/1230		
Relinquished By/Removed From: ; Date/Time:	Received By/Stored In: ; Date/Time:		
Relinquished By/Removed From: ; Date/Time:	Received By/Stored In: ; Date/Time:		

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-77	Page 1 of 1

Collector: TILLER JAMES BERNHARD	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: Sr 1, SEDIMENT JED 2-27-06 FULL QC		SAF No.: RC-047
Ice Chest No.: ERC-96-014	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 9N

Air Quality: ☐

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None									
Type of Container	G/P	P/G	P/G									
No. of Container(s)	12 JED 2-27-06	1	1									
Volume	1000g	3000g	19000g									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11									

Sample No.	Matrix *	Sample Date	Sample Time										
J116W9	OTHER SOLID	2-27-06	1000	X	X	X							
				F1282U2	B1538-31	B1539-31							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: JAMES BERNHARD	Date/Time: 2-27-06 1700	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 2-27-06 1700
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 03/01/06 0715	Received By/Stored In: RZ Steffler R.J. Steffler	Date/Time: 3-1-06 0715
Relinquished By/Removed From: RZ Steffler R.J. Steffler	Date/Time: 3-1-06 1600	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time:	Received By/Stored In: Doug Winn	Date/Time: 3-2-06/1230
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

Temp. upon arrival @ lab = 2.6°C

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)