Appendix S
USCG Dry Cargo Sweepings Scientific Investigation: Sweepings Characterization—Toxicological Analyses

USCG Dry Cargo Sweepings Scientific Investigation: Sweepings Characterization—Toxicological Analyses

PREPARED FOR: U.S. Coast Guard

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This memorandum provides documentation of the toxicological activities conducted as part of the Sweepings Characterization for the U.S. Coast Guard Dry Cargo Sweepings Impact Analysis Project – Sweepings Characterization (CH2M HILL, 2007). The other activities as part of this task are included in a separate memorandum.

Materials and Methods

Dry deck taconite, limestone, eastern coal, and western coal sweepings were collected in October 2006, along with sump slurries and solids, chemically analyzed, and shipped to EnviroSystems Inc. in Hampton, NH for toxicological analysis. Dry deck sweepings were also sent to Applied Sciences Laboratory in Corvallis, OR for the preparation of the simulated slurry. Simulated deck sweepings slurry was tested for nutrient enrichment, shipped to Lancaster Laboratories and tested concentrations of potential toxic compounds, and shipped to EnviroSystems Inc. in Hampton, NH for toxicological analysis. The collection and chemical analysis of sweepings materials is described in the accompanying technical memorandum, "USCG Dry Cargo Sweepings Scientific Investigation: Sweepings Characterization – Chemical Analyses." The results of the nutrient enrichment study are presented in an accompanying technical memorandum, "USCG Dry Cargo Sweepings Scientific Investigation: Biological Characterization – Nutrient Enrichment." Dry deck sweeping solids and the sweepings diluted with clean sediment were tested with the midge (*Chironomus dilutus)*, and the amphipod (*Hyallela azteca*) in chronic bioassays (20 days and 28-days, respectively) to conservatively simulate exposure to accumulated sweepings deposits on the lake bottom. These tests were conducted using standard methodology for sediment. Multiple dilutions of sump slurry and simulated deck sweeping slurry were tested with the fathead minnow (*Pimephales promelas*) and the water flea (*Daphnia magna*) in acute bioassays (48 hours) to conservatively simulate exposure to discharged slurries in the lake water column. These tests were conduced with standard methodology for liquids. A list of samples and a description of the bioassays is provided in Table 1.

Results

Complete laboratory reports are provided as an attachment to this memorandum. A summary of the results is provided below.

Chironomus

Chironomid statistical evaluations were conducted using a basic comparison to a laboratory control. The average survival and growth (presented as dry weight/larvae after 20 days) in

each sample is presented in Figure 1. Significant effects on midge survival were observed in taconite deck sweepings samples. Significant effects on growth were observed in an eastern coal deck sweepings sample, but not in the taconite samples with observed significant effects on survival. Similar results were observed among cargo types, except for eastern coal, in which significant effects on growth were observed in the sample from the American Courage (1.92 mg) but not the American Republic (2.85 mg).

Hyallela

Hyallela statistical evaluations were conducted two ways, first a basic comparison of the response in "undiluted" samples (i.e., 100% deck sweepings) to the response in the laboratory control, followed by the computation of LC/IC-50 and No-Observed-Effect-Concentrations (NOECs) point estimates. The average survival in undiluted samples is presented in Figure 2. Significant effects on survival as compared to the control were observed in all samples except an eastern coal sample. Survival was lowest in a western coal sample (12.5%) and highest in the eastern coal sample (82.5%). The average growth (presented as dry weight/amphipod after 28-days) is also presented in Figure 2. Significant effects on growth as compared to the control were observed in all samples except an eastern coal sample (a different sample than for survival) and limestone samples.

LC/IC-50 values, which indicate the concentration of sweepings toxic to 50% of the organisms, and NOECs, which indicate the concentration of sweepings at which no effect is expected, are presented in Table 2. For survival, four of the eight samples yielded survival levels sufficiently low to generate an LC-50 of <100% and only one sample had a NOEC effect of 100% (eastern coal sample from the American Republic), indicating that the majority of the samples had some level of effect on survival. Analysis of growth data from the diluted samples showed good correlation with survival, based on the NOEC values. Using an IC (Inhibition Concentration) of 50%, most of the samples were not sufficiently toxic to result in a reduction in growth of 50% or greater. Similar results were observed among cargo types, except for eastern coal, in which each sample had an effect on either growth or survival, but not both.

In comparison to chironomid survival, in which effects were observed in only taconite, significant effects on *Hyallela* were observed more cargo types (all samples except an eastern coal sample). For growth, taconite, western coal, and eastern coal from the American republic had a significant effect on *Hyallela* growth, while no effects were observed in chironomids. The eastern coal sample from the American Courage in which chironomid growth effects were observed did not produce similar results in *Hyallela*.

Daphnia

All liquid toxicity tests (i.e. *Daphnia* and *Pimephales*) statistical evaluations were conducted by the computation of point estimates (LC -50s). The average survival in each dilution treatment is presented in Figure 3. Survival was high (greater than 80%) in most samples, and highest in samples containing only 1% slurry, with greater than 90% survival observed in all sweeping types diluted to 1%. There was no survival in a taconite vessel sump slurry with no dilution (i.e., 100% slurry), 50% taconite vessel sump slurry from the same vessel, and a limestone vessel sump slurry with no dilution. The other taconite and limestone samples did not produce a similar effect.

Pimephales

Average *Pimephales* survival in each dilution treatment is presented in Figure 4. Survival was high (greater than 80%) in most samples. Daphnid and minnow assay results were very similar; if a sample had an effect in daphnid, the minnow was impacted to approximately the same level. Of the 14 samples tested, only 2 showed significant negative effects in the minnow (a taconite and limestone vessel slurry sump).

Discussion

Consistent toxicity was not observed across bioassays, which suggests sensitivity differences among the test species to the physical and chemical properties of the sweepings. High magnitude exceedances of benchmarks by chemical constituent concentrations were not observed (see the accompanying technical memorandum, "USCG Dry Cargo Sweepings Scientific Investigation: Sweepings Characterization – Chemical Analyses"), with all hazard quotients less than 10. For chironomids, survival impacts were observed in taconite exposures, and growth impacts were observed in an eastern coal exposure. No chemical constituents in taconite sample exceeded sediment benchmarks. In the eastern coal sample, there were slight exceedances of the benchmarks for arsenic, chrysene, naphthalene, phenanthrene, and pyrene (all HQs were less than 5.0). For the *Hyallela* bioassays, where impacts were observed in several samples and dilutions, there were also few exceedances. The lowest *Hyallela* survival was observed in western coal, but there were only slight exceedances of sediment benchmarks for benzo(a)anthracene, phenanthrene, and pyrene in this sample.

Both daphnid and minnow survival were decreased in sump slurry samples from a taconite vessel and a limestone vessel. In the taconite sample slurry, aluminum, copper (total and dissolved), and zinc (total, but not dissolved) concentrations exceeded acute criteria. In the limestone sample slurry, only aluminum exceeded criteria. In both samples, total iron also exceeded chronic criteria (acute criteria are not available for iron). In simulated taconite and limestone deck sweepings slurries, no effects on survival were observed.

Table 1
Summary of Samples Collected and Toxicological Analyses Performed

FieldID	GraphID[1]	Description	Toxicological Analysis	
Dry Deck Sweepings				
DLHTV1-DS-1	TV1	Taconite deck sweeping collected from Edwin R. Gott vessel	*Chironomus dilutus* 20-day exposure: - Measured survival and growth and compared statistically to laboratory control - No sample dilutions - Test chambers were 400 mL and contained 175 mL of deck sweepings - Daily renewal of overlying water. - Monitored overlying water hardness, ammonia and alkalinity at start and end of assay plus day 10. - 8 Replicates per treatment	*Hyallela azteca* 28-day exposure: - 100%, 50%, 10% sample dilutions - Measured survival and growth and compared statistically to laboratory control, LC50, IC50, and NOEC - Daily renewal of overlying water. - Monitored overlying water hardness, ammonia and alkalinity at start and end of assay plus day 10. - 8 Replicates per treatment - Sediment samples were diluted using an artificial sediment composed of graded quartz sand and approximately 2-5% organic matter.
DLHTV2-DS-1	TV2	Taconite deck sweeping collected from Paul R. Tegurtha vessel		
DHLCV1-DS-1	CV1	Western coal deck sweeping collected from American Spirit vessel		
DLHCV2-DS-1	CV2	Western coal deck sweeping collected from American Integrity vessel		
CLECV3-DS-1	CV3	Eastern coal deck sweeping collected from American Courage vessel		
CLECV4-DS-1	CV4	Eastern coal deck sweeping collected from American Republic vessel		
CLELV1-DS-1	LV1	Limestone deck sweeping collected from PathFinder vessel		
CLELV2-DS-1	LV2	Limestone deck sweeping collected from Earl W Oglebay vessel		
Sump Slurry				
DLHTV1-LS-1	TV1	Taconite sump slurry collected from Edwin R. Gott vessel	*Pimephales promelas* 48-hour exposure: - Measured survival - LC50 and NOEC calculated - Dilution series of 1% 10%, 50% and 100% slurry - Assay conducted as static mode.	*Daphnia magna* 48-hour exposure: - Measured survival - LC50 and NOEC calculated - Dilution series of 1% 10%, 50% and 100% slurry - Assay conducted as static mode.
DLHTV2-LS-1	TV2	Taconite sump slurry sweeping collected from Paul R. Tegurtha vessel		
DHLCV1-LS-1	CV1	Western coal sump slurry collected from American Spirit vessel		
DLHCV2-LS-1	CV2	Western coal sump slurry collected from American Integrity vessel		
CLELV1-LS-1	LV1	Limestone sump slurry collected from PathFinder vessel		
CLELV2-LS-1	LV2	Limestone sump slurry collected from Earl W Oglebay vessel		
WCOAL LKE - 10/13/2006	WC-E	Western coal deck sweeping simulated slurry with Lake Erie water		
ECOAL LKE - 10/13/2006	EC-E	Eastern coal deck sweeping simulated slurry with Lake Erie water		
LIME LKE - 10/13/2006	L-E	Limestone deck sweeping simulated slurry with Lake Erie water		
IRON LKE - 10/13/2006	T-E	Taconite deck sweeping simulated slurry with Lake Erie water		
WCOAL LKE - 10/20/2006	WC-S	Western coal deck sweeping simulated slurry with Lake Superior water		
ECOAL LKE- 10/20/2006	EC-S	Eastern coal deck sweeping simulated slurry with Lake Superior water		
LIME LKE- 10/20/2006	L-S	Limestone deck sweeping simulated slurry with Lake Superior water		
IRON LKE- 10/20/2006	T-S	Taconite deck sweeping simulated slurry with Lake Superior water		

[1] See Figures 1-4

Table 2
Hyallela Survival and Growth LC/IC-50 and NOECs

FieldID	GraphID[1]	Survival (% Sweepings)		Growth (% Sweepings)	
		LC50	NOEC	IC50	NOEC
DLHTV1-DS-1	TV1	>100	10	78.1	10
DLHTV2-DS-1	TV2	>100	50	>100	<10
DHLCV1-DS-1	CV1	16.1	<10	84.2	<10
DLHCV2-DS-1	CV2	56	10	>100	<10
CLECV3-DS-1	CV3	74.3	10	>100	<10
CLECV4-DS-1	CV4	>100	100	>100	<10
CLELV1-DS-1	LV1	72.1	10	>100	100
CLELV2-DS-1	LV2	>100	<10	>100	100

[1] See Figure 2

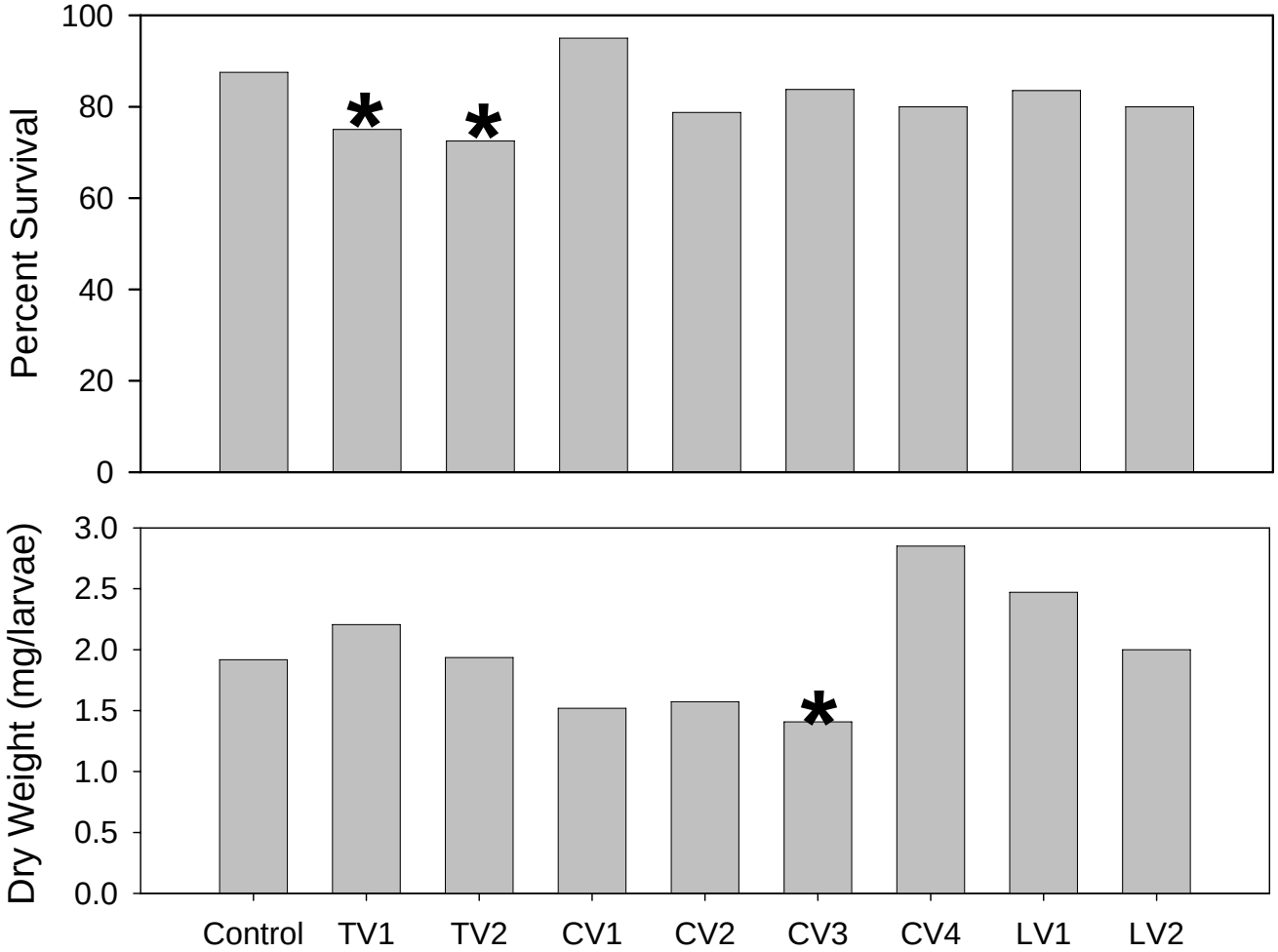

Figure 1. Average *Chironomus* Survival and Dry Weight After a 20-Day Exposure to Deck Sweepings (* = Significantly lower than Control at $p \leq 0.05$)

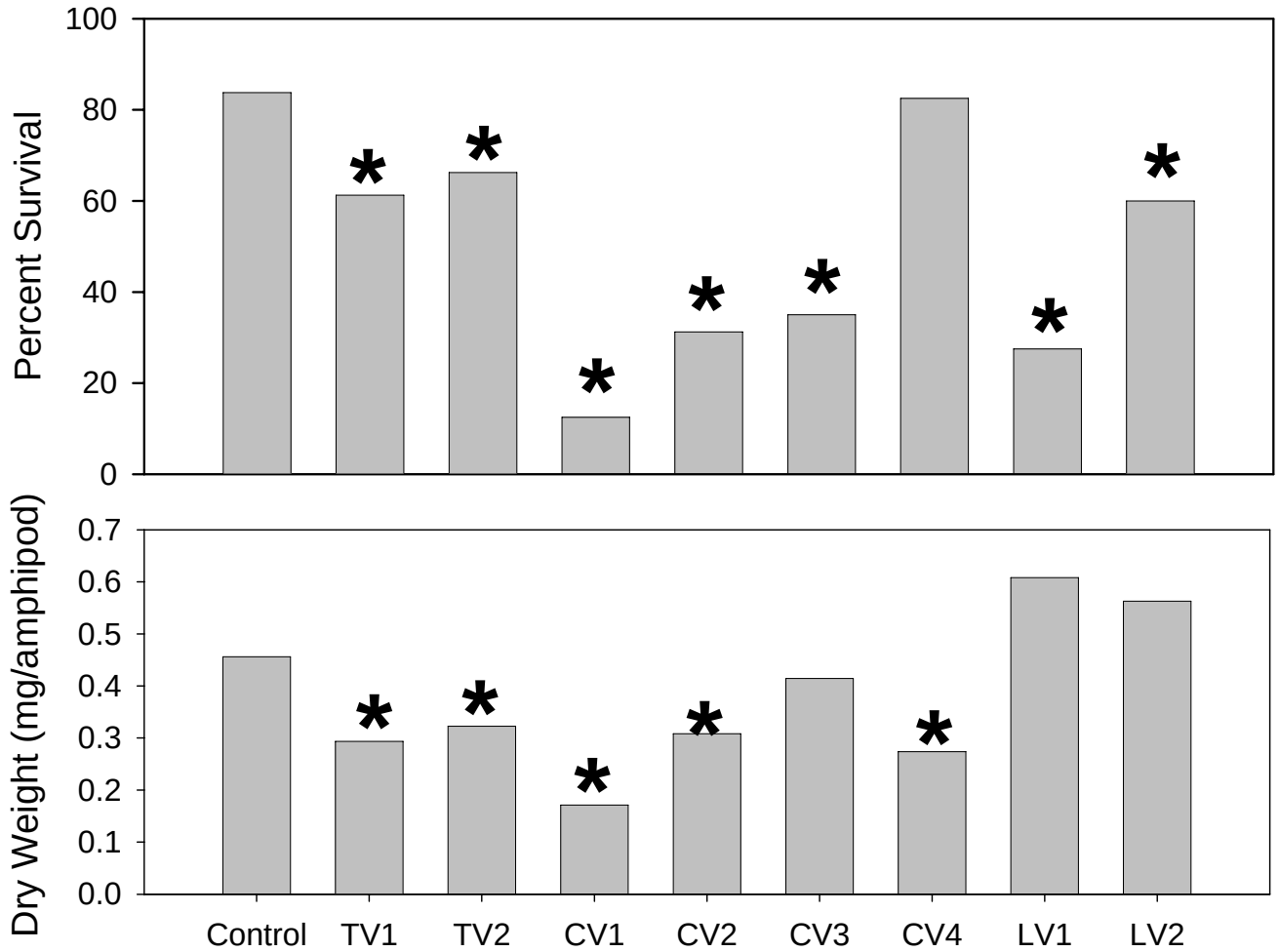

Figure 2. Average *Hyallela* Survival and Dry Weight After a 28-Day Exposure to 100% Deck Sweepings (* = Significantly lower than Control at $p \leq 0.05$)

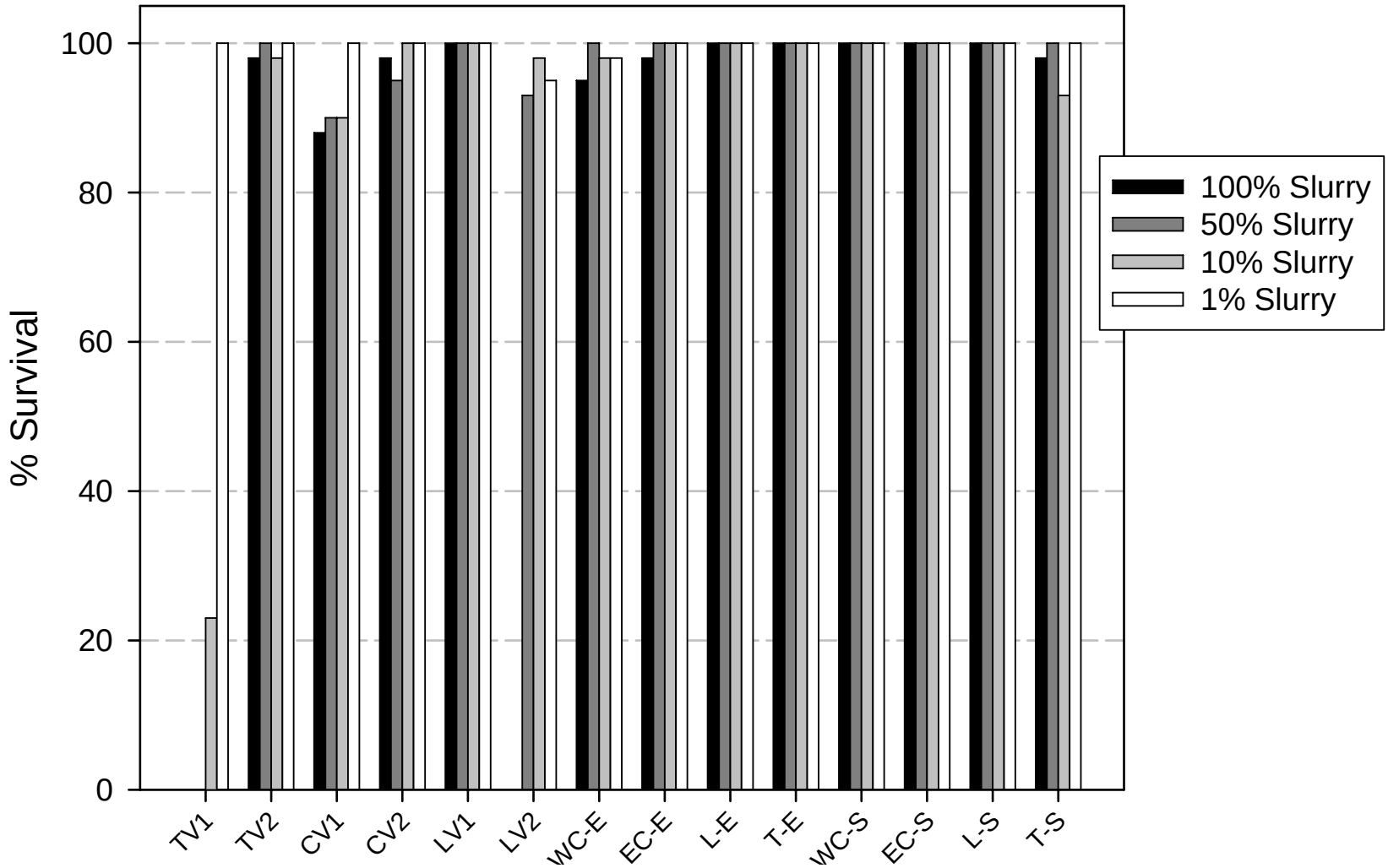

Figure 3. Average *Daphnia* Survival After 48-Hour Exposures to Sump Slurry and Simulated Deck Sweepings Slurry at Serial Dilutions

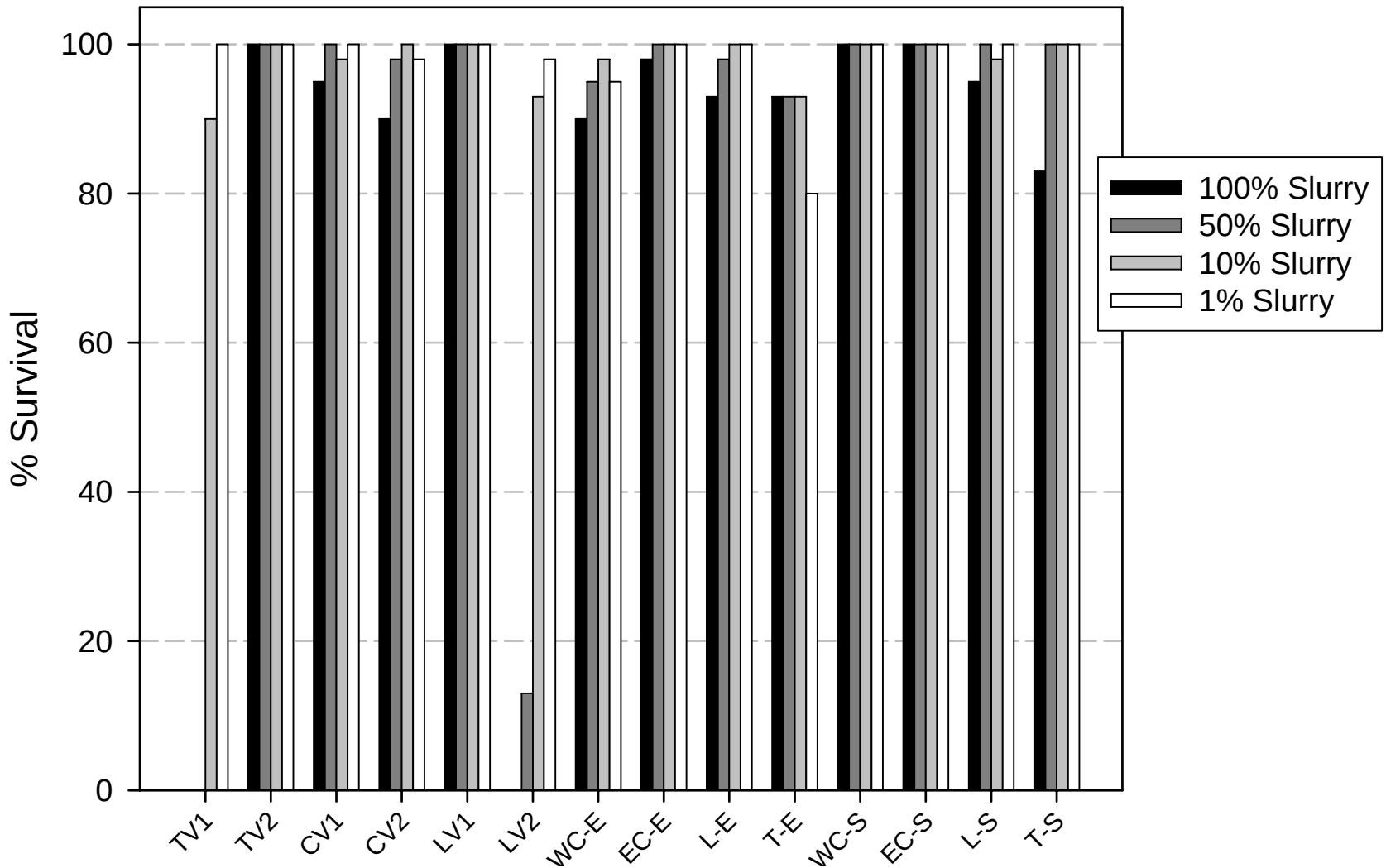

Figure 4. Average *Pimephales* Survival After 48-Hour Exposures to Sump Slurry and Simulated Deck Sweepings Slurry at Serial Dilutions

TOXICOLOGICAL EVALUATION OF WATER COLUMN SAMPLES:

Great Lakes Sweepings Characterization Acute Exposure Toxicity Tests Using *Daphnia magna* and *Pimephales promelas*

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TOXICOLOGICAL EVALUATION OF WATER COLUMN SAMPLES:

Great Lakes Sweepings Characterization Acute Exposure Toxicity Tests Using *Daphnia magna* and *Pimephales promelas*

1.0 INTRODUCTION

This report presents the results of acute exposure water column toxicity tests conducted on water samples provided by CH2M Hill as part of a program to evaluate deck sweepings discharged to the Great Lakes. Testing was based on programs and protocols developed by the EPA and US ACOE (1998) and US EPA (2002). The toxicity of the samples was assessed by conducting short term, acute toxicity tests using the freshwater daphnid, *Daphnia magna* and minnow, *Pimephales promelas*. Assays were performed at EnviroSystems, Incorporated (ESI), Hampton, New Hampshire.

Toxicity tests expose groups of organisms to environmental samples and a laboratory control for a specified period to assess potential impacts on a variety of endpoints, such as survival, growth or reproduction. For this series of acute exposure assays the endpoint measured was survival. Regression and analysis of variance techniques are used to compute LC-50 and No Effect Concentrations.

2.0 MATERIALS AND METHODS

2.1 General Methods, Biological Evaluations

Toxicological and analytical protocols used in this program follow procedures outlined in *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms* (US EPA, 2002) and *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual* (US EPA, US ACOE 1998) and *Standard Methods for the Examination of Water and Wastewater*, 20th Edition (APHA 1998). These protocols provide standard approaches for physical and chemical analysis and for the evaluation of toxicological effects of sediments on aquatic invertebrates.

2.2 Test Samples and Laboratory Control Water

Water samples from the project site were received at ESI under chain of custody from CH2M Hill's Laboratory in Corvallis, Oregon. Samples were shipped via overnight delivery. Once received, samples were inspected, to determine integrity, given unique sample numbers and logged into the laboratory sample management database. Samples were then placed in a secure storage area and refrigerated at 2 - 4 °C until required. A listing of sample sites, sample collection and receipt information is summarized in Table 1. As samples were received from CH2M Hill's laboratory on a periodic basis, 8 separate rounds of testing were conducted to complete the study.

The laboratory water used as the control and diluent was artificial reconstituted soft water prepared according to specifications provided in US EPA, 2002.

2.3 Test Species

D. magna, <24 hours old, were obtained from cultures maintained by ESI. The original stock for the cultures were obtained from Aquatic Research Organisms, Inc. (ARO), Hampton, NH approximately 1 week prior to testing. Daphnids were maintained in laboratory water at approximate test conditions and were fed yeast/trout chow/Cerophyll (YTC) supplemented with *Pseudokirchneriella subcapitata* (algae) daily during culture (EPA 2002). Adult daphnids were isolated 24 hours prior to test start and allowed to reproduce overnight. Organisms used in the assay were ≤24 hours old. Organisms were transferred to test vessels using a large bore pipet to minimize the amount of water added to test solutions.

P. promelas, 7 days old, were obtained from ARO. Prior to use, test organisms were transferred to reconstituted laboratory water which was also used as a diluent and control for a minimum of 2 hours, under temperature conditions similar to those used in the assay. Fish were transferred to the test beakers using a large bore pipet to minimize the amount of culture water added to the test solution. Twenty representative fish, measured at the start of the assay, were used to determine loading rates. Data are provided in the data appendix.

2.4 Water Column Assays

2.4.1 *D. magna* Acute Exposure Evaluations

The 48 hour static acute toxicity tests were conducted at 25±2°C with a photoperiod of 16:8 hours light:dark. Test chambers were 250 mL glass beakers each containing 100 mL of test solution in each of 4 replicates with 10 organisms/replicate. Survival in all test replicates was recorded after 24 and 48 hours exposure. Dissolved oxygen and pH and were measured at the start and end of the assay in one replicate of each treatment. Conductivity was measured at the start of the assay in one replicate. Temperature data was obtained from monitoring equipment maintained in the test incubator. Organisms were not fed during the assay.

2.4.1 *P. promelas* Acute Exposure Evaluations

The 48 hour static acute toxicity tests were conducted at 25±2°C with a photoperiod of 16:8 hours light:dark. Test chambers were 250 mL glass beakers each containing 200 mL of test solution in each of 4 replicates with 10 organisms/replicate. Survival in all test replicates was recorded after 24 and 48 hours exposure. Dissolved oxygen and pH and were measured at the start and end of the assay in one replicate of each treatment. Conductivity was measured at the start of the assay in one replicate. Temperature data was obtained from monitoring equipment maintained in the test incubator. Organisms were not fed during the assay.

2.5 Data Analysis

As appropriate, statistical analysis of acute and chronic exposure data was completed using CETIS, Comprehensive Environmental Toxicity Testing System, software. The program computes acute exposure endpoints, LC-50 values, plus No Effect Concentrations (NOEC) based on EPA decision tree guidelines specified in individual test methods. For No Effect Concentration endpoints statistical significance was accepted at $\propto$ <0.05.

2.6 Quality Control

As part of the laboratory quality control program, standard reference toxicant assays are conducted on a regular basis for each test species. These results provide relative health and response data while allowing for comparison with historic data sets. Summaries of acute exposure reference toxicant assays conducted in support of this study are provided in Table 4.

2.7 Protocol Deviations

Review of data from the assay documented no deviations from the prescribed method and ESI's related standard operating procedures.

3.0 RESULTS AND DISCUSSION

A summary of endpoints and adverse effects on each species is provided in Table 5. Water quality characteristics are presented in Tables 6 and 7. Support data are included in Appendix A.

3.1 Acute Exposure Water Column Evaluations - *D. magna*

Protocol mandate that at the end of the 48 hour exposure period daphnid survival must be ≥90%. Review of the data generated from the 8 sets of assays documented that the survival of *D. magna* ranged from

95 to 100%. This meets the minimum test acceptability criteria of 90% survival and is an indication that the test organisms were healthy and not stressed by handling. These data are considered as valid for evaluating impacts associated with the water column samples.

3.2 Acute Exposure Water Column Evaluations - *P. promelas*

Protocol mandate that at the end of the 48 hour exposure period minnow survival must be ≥90%. Review of the data generated from the 8 sets of assays documented that the survival of *P. promelas* ranged from 95 to 100%. This meets the minimum test acceptability criteria of 90% survival and is an indication that the test organisms were healthy and not stressed by handling. These data are considered to be valid for evaluating impacts associated with the water column samples.

3.3 Summary

The following matrix summarizes adverse effects, based on a significant decrease in survival, for the water samples after 48 hour exposure.

		Significant Negative Effect on Survival	
Field ID	Lab ID	*D. pulex*	*P. promelas*
DLHTV1-LS-1	15061-002	Yes	Yes
DHLCV1-LS-1	15061-003	No	No
DLHCV2-LS-1	15061-006	No	No
DLHTV2-LS-1	15061-009	No	No
CLELV1-LS-1	15061-012	No	No
WCOAL LKE	15061-013	No	No
ECOAL LKE	15061-014	No	No
LIME LKE	15061-015	No	No
IRON LKE	15061-016	No	No
WCOAL LKE	15061-017	No	No
ECOAL LKE	15061-018	No	No
LIME LKE	15061-019	No	No
IRON LKE	15061-020	No	No
CLELV2-DS-1	15061-049	Yes	Yes

4.0 REFERENCES

APHA. 1998. *Standard Methods for the Examination of Water and Wastewater*, 20th edition. Washington D.C.

U.S. EPA, U.S. Army Corps of Engineers. 1998. *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual*. EPA-823-B-98-004, February 1998.

U.S. EPA. 2002. *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*. Fifth Edition. EPA-821-R-02-012.

TABLE 1. Sample Collection Information. Great Lakes Sweepings Characterization. CH2M Hill. October 2006.

Sample ID	ESI Ref#	Matrix	Sample Collection Date	Sample Collection Time	Sample Receipt Date	Sample Receipt Time	Assay Start Date
DLHTV1-LS-1	15061-002	Water	10/01/06	1440	10/03/06	1200	10/03/06
DHLCV1-LS-1	15061-003	Water	10/03/06	-	10/05/06	1030	10/05/06
DLHCV2-LS-1	15061-006	Water	10/04/06	2300	10/07/06	1130	10/09/06
DLHTV2-LS-1	15061-009	Water	10/03/06	1300	10/09/06	0945	10/10/06
CLELV1-LS-1	15061-012	Water	10/10/06	0700	10/11/06	1000	10/11/06
WCOAL LKE	15061-013	Water	10/13/06	1315	10/14/06	1330	10/14/06
ECOAL LKE	15061-014	Water	10/13/06	1320	10/14/06	1330	10/14/06
LIME LKE	15061-015	Water	10/13/06	1325	10/14/06	1330	10/14/06
IRON LKE	15061-016	Water	10/13/06	1330	10/14/06	1330	10/14/06
WCOAL LKE	15061-017	Water	10/20/06	1130	10/21/06	1330	10/21/06
ECOAL LKE	15061-018	Water	10/20/06	1130	10/21/06	1330	10/21/06
LIME LKE	15061-019	Water	10/20/06	1130	10/21/06	1330	10/21/06
IRON LKE	15061-020	Water	10/20/06	1130	10/21/06	1330	10/21/06
CLELV2-DS-1	15061-049	Water	10/27/06	0700	10/28/06	1030	10/30/06

TABLE 2. Reference Toxicant Data Summary. Great Lakes Sweepings Characterization. CH2M Hill. October 2006.

Date	Endpoint		Value	Historic Mean/ Central Tendency	Acceptable Range	Reference Toxicant
D. magna						
11/06/06	Survival	LC-50	32.7	35.4	30.7 - 40.2	SDS (mg/L)
P. promelas						
11/06/06	Survival	LC-50	25.9	27.3	14.2 - 40.3	SDS (mg/L)

Means and Acceptable Ranges based on the most recent 20 reference toxicant assays

TABLE 3. Endpoint and Adverse Effects Summary. Great Lakes Sweepings Characterization. CH2M Hill. October 2006.

Field ID	Lab ID	*Daphnia magna* 24 Hours LC-50	24 Hours NOEC	48 Hours LC-50	48 Hours NOEC
DLHTV1-LS-1	15061-002	59.50%	50%	4.94%	1%
DHLCV1-LS-1	15061-003	>100.00%	100%	>100.00%	100%
DLHCV2-LS-1	15061-006	>100.00%	100%	>100.00%	100%
DLHTV2-LS-1	15061-009	>100.00%	100%	>100.00%	100%
CLELV1-LS-1	15061-012	>100.00%	100%	>100.00%	100%
WCOAL LKE	15061-013	>100.00%	100%	>100.00%	100%
ECOAL LKE	15061-014	>100.00%	100%	>100.00%	100%
LIME LKE	15061-015	>100.00%	100%	>100.00%	100%
IRON LKE	15061-016	>100.00%	100%	>100.00%	100%
WCOAL LKE	15061-017	>100.00%	100%	>100.00%	100%
ECOAL LKE	15061-018	>100.00%	100%	>100.00%	100%
LIME LKE	15061-019	>100.00%	100%	>100.00%	100%
IRON LKE	15061-020	>100.00%	100%	>100.00%	100%
CLELV2-DS-1	15061-049	80.79%	50%	66.58%	50%

Field ID	Lab ID	*Pime phales promelas* 24 Hours LC-50	24 Hours NOEC	48 Hours LC-50	48 Hours NOEC
DLHTV1-LS-1	15061-002	18.39%	10%	18.39%	10%
DHLCV1-LS-1	15061-003	>100.00%	100%	>100.00%	100%
DLHCV2-LS-1	15061-006	>100.00%	100%	>100.00%	100%
DLHTV2-LS-1	15061-009	>100.00%	100%	>100.00%	100%
CLELV1-LS-1	15061-012	>100.00%	100%	>100.00%	100%
WCOAL LKE	15061-013	>100.00%	100%	>100.00%	100%
ECOAL LKE	15061-014	>100.00%	100%	>100.00%	100%
LIME LKE	15061-015	>100.00%	100%	>100.00%	100%
IRON LKE	15061-016	>100.00%	100%	>100.00%	100%
WCOAL LKE	15061-017	>100.00%	100%	>100.00%	100%
ECOAL LKE	15061-018	>100.00%	100%	>100.00%	100%
LIME LKE	15061-019	>100.00%	100%	>100.00%	100%
IRON LKE	15061-020	>100.00%	100%	>100.00%	100%
CLELV2-DS-1	15061-049	30.69%	10%	22.61%	10%

TABLE 4. Initial Water Quality Data Summary. Great Lakes Sweepings Characterization. CH2M Hill. October 2006.

Field ID	Lab ID	pH (SU)	Conductivity (µmhos/cm)
DLHTV1-LS-1	15061-002	7.46	303
DHLCV1-LS-1	15061-003	7.82	156
DLHCV2-LS-1	15061-006	7.66	128
DLHTV2-LS-1	15061-009	7.69	241
CLELV1-LS-1	15061-012	7.93	368
WCOAL LKE	15061-013	7.22	236
ECOAL LKE	15061-014	7.39	241
LIME LKE	15061-015	7.02	245
IRON LKE	15061-016	7.06	241
WCOAL LKE	15061-017	7.42	115
ECOAL LKE	15061-018	7.40	117
LIME LKE	15061-019	7.54	124
IRON LKE	15061-020	7.33	131
CLELV2-DS-1	15061-049	7.89	941

Additional water quality support data provided in Appendix A.

APPENDIX A
RAW DATA & SUPPORT

Contents	Number Pages
Daphnia magna Assays	
Daily Observation Bench Sheets	14
Statistical Analysis Reports	48
Pimephales promelas Assays	
Daily Observation Bench Sheets	28
Statistical Analysis Reports	60
Organism History Record	8
Fish Loading Rate Calculation Bench Sheets	7
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Total Appendix Pages	210

DAPHNID ACUTE DEFINITIVE ASSAY

STUDY: 15061 -002	CLIENT: CH2M Hill	SAMPLE: -002	DILUENT: LAB
SPECIES: *D. magna*	SOURCE:	AGE: <24 Hours	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C (µmhos/cm) 0	Comments:
LAB Control	A	10	10	10	8.7	8.4	7.63	7.62	176	10 *D. magna* / replicate 250 mL beakers 100 mL / replicate
	B	10	10	9						
	C	10	10	10						
	D	10	10	10						
1%	A	10	10	10	8.6	8.4	7.66	7.71	180	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
10%	A	10	10	1	8.5	8.1	7.65	7.72	189	
	B	10	10	2						
	C	10	10	4						
	D	10	10	2						
50%	A	10	10	0	7.0	7.4	7.51	7.67	235	
	B	10	8	0						
	C	10	9	0						
	D	10	7	0						
100%	A	10	0	—	7.6	7.2	7.46	7.87	303	
	B	10	0	—						
	C	10	0	—						
	D	10	0	—						
INC TEMP (°C)		25	25	25						
DATE		10/3	10/4	10/5	10/3	10/5				
TIME		1540	1410	1530	1525	1530				
INITIALS		m	m	CS	m	CS				

DAPHNID ACUTE DEFINITIVE ASSAY

STUDY: 15061	CLIENT: CH2M Hill	SAMPLE: -003	DILUENT: LAB
SPECIES: *D. magna*	SOURCE:	AGE: <24 Hours	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C (µmhos/cm) 0	Comments:
LAB Control	A	10	10	10	8.5	~~8.8~~ ①	7.58	~~7.41~~ ①	200	10 *D. magna* / replicate 250 mL beakers 100 mL / replicate
	B	10	10	9		8.5		7.70		
	C	10	9	9						
	D	10	10	10						
1%	A	10	10	10	8.4	~~8.9~~ ①	7.69	~~7.48~~ ①	183	
	B	10	10	10		8.4		7.83		
	C	10	10	10						
	D	10	10	10						
10%	A	10	9	9	8.4	~~8.8~~ ①	7.66	~~7.70~~ ①	179	
	B	10	10	10		8.4		7.83		
	C	10	9	9						
	D	10	8	8						
50%	A	10	9	8	9.5	~~8.9~~ ①	7.74	~~7.63~~ ①	169	
	B	10	9	9		8.4		7.95		
	C	10	9	9						
	D	10	10	10						
100%	A	10	9	9	10.4	~~8.9~~ ①	7.82	~~7.64~~ ①	156	
	B	10	10	10		8.4		8.07		
	C	10	8	8						
	D	10	8	8						

INC TEMP (°C)	25	25	25			
DATE	10/5/06	10/6/06	10/7/06	10/5/06	~~10/6~~	10/7/06
TIME	1320	1130	1145	1310	~~1130~~ 1140	1135
INITIALS	YM	CS	EG	YM	CS	EG

① E3 CS

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

SAMPLE: -002

DILUENT: Lab

TEST ORGANISM: *P. promelas*

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
Effluent	<0.05						
Diluent	<0.05						

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
LAB CONTROL	A	10	10	10	8.7	5.8	6.5	7.63	7.14	7.25	24	24	24	176
	B	10	10	10	8.7	5.8	5.9							
	C	10	10	10	8.7	5.6	7.9							
	D	10	10	10	8.7	5.5	8.0							
1%	A	10	10	10	8.6	4.9	8.2	7.66	7.08	7.70	24	24	24	180
	B	10	10	10	8.6	5.1	8.3							
	C	10	10	10	8.6	5.1	8.3							
	D	10	10	10	8.6	5.1	8.2							
10%	A	10	10	10	8.5	5.1	8.0	7.65	7.13	7.72	25	24	24	189
	B	10	7	7	8.5	5.0	8.1							
	C	10	10	10	8.5	4.9	8.1							
	D	10	9	9	8.5	4.9	8.2							
50%	A	10	0	–	7.0	3.1	–	7.51	7.20	–	25	24	24	235
	B	10	0	–	7.0	1.4	–							
	C	10	0	–	7.0	0.9	–							
	D	10	0	–	7.0	0.6	–							
DATE		10/3	10/4	10/5	10/3	10/4	10/5							
TIME		1610	1420	1538	1525	1450	1550							
INITIALS		m	m	CS	m	m	CS							

* on a.r 24 hrs

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -002

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION.						
DIL							

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
100%	A	10	0	—	4.6	1.1	—	7.46	7.31	—	26	24	—	303
	B	10	0	—	4.6	3.6	—							
	C	10	0	—	4.6	0.5	—							
	D	10	0	—	4.6	0.4	—							
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
DATE		10/3	10/4	~~10/5~~	10/3									
TIME		1610	1420		1525									
INITIALS		[illegible]	[illegible]		[illegible]									

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061 - 003

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -003

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
Effluent							
Diluent							

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
LAB CONTROL	A	10	10	10	8.5	6.4	5.3	7.58	6.99	7.18	24	24	24	200
	B	10	10	9	8.4	6.4	4.9							
	C	10	10	10	8.4	8.0	6.2							
	D	10	10	10	8.4	7.2	5.5							
1%	A	10	10	10	8.3	6.0	5.5	7.69	7.00	7.24	24	24	24	182
	B	10	10	10	8.4	9.2	4.8							
	C	10	10	10	8.4	9.2	5.5							
	D	10	10	10	8.4	9.2	5.4							
10%	A	10	10	9	8.4	9.2	5.0	7.66	6.96	7.23	24	24	24	179
	B	10	10	10	8.5	9.3	5.8							
	C	10	10	10	8.5	9.3	5.0							
	D	10	10	10	8.5	9.3	6.0							
50%	A	10	10	10	9.5	9.4	5.9	7.74	7.07	7.36	24	24	24	169
	B	10	10	10	9.5	9.4	4.5							
	C	10	10	10	9.5	9.4	4.7							
	D	10	10	10	9.5	9.4	6.3							
DATE		10/5/06	10/6/06	10/7/06	10/5/06	10/6/06	10/7/06							
TIME		1500	1340	1320	1315	1350	1205							
INITIALS		SJ	CS	EG	[illegible]	CS	EG							

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061 - 003		"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES	
CLIENT: CH2M Hill	TEST ORGANISM: *P. promelas*		TRC / TS/S / ALK / HAR / AMM / TOC / METALS
SAMPLE: -003	ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*	EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION
DILUENT: Lab		DIL	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
100%	A	10	9	8	10.4	9.3	4.9	7.82	7.14	7.37	24	24	24	156
	B	10	10	10	10.4	9.3	4.5							
	C	10	10	10	10.4	9.3	4.9							
	D	10	10	10	10.3	9.3	4.7							
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
DATE		10/5/06	10/6/06	10/7/06	10/5/06	10/6/06	10/7/06							
TIME		1500	1340	1320	1315	1350	1205							
INITIALS		SJ	CS	EG	[illegible]	CS	EG							

DAPHNID ACUTE DEFINITIVE ASSAY

STUDY: 15061	CLIENT: CH2M Hill	SAMPLE: -006	DILUENT: LAB RB
SPECIES: *D. magna*	SOURCE:	AGE: <24 Hours	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C (µmhos/cm) 0	Comments:
LAB Control	A	10	10	9	9.0	9.0	7.35	7.35	204	10 *D. magna* / replicate 250 mL beakers 100 mL / replicate
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
1%	A	10	10	10	9.1	8.5	7.50	7.53	184	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
10%	A	10	10	10	9.1	8.8	7.55	7.57	178	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
50%	A	10	10	10	8.8	8.6	7.60	7.57	139	
	B	10	10	10						
	C	10	10	9						
	D	10	10	EI CS ~~8~~ 9						
100%	A	10	10	EI CS ~~9~~ 10	8.7	8.6	7.66	7.72	128	
	B	10	10	9						
	C	10	10	10						
	D	10	10	10 EI ~~7~~ ~~6~~						
INC TEMP (°C)		26	25	25						
DATE		10/9/06	10/10	10/11	10/9 ~~10/11~~ EI CS	10/11				
TIME		1410	1250	1345	1400 ~~1300~~ EI CS	1400				
INITIALS		CS	m	CS	CS ~~CS~~ EI CS	CS				

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061 -006

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -006

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab RB

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
Effluent	<0.05						
Diluent	<0.05						

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
LAB CONTROL	A	~~9.0~~ 10	10	10	9.0	5.6	5.2	7.35	7.11	6.97	24	24	24	204
	B	~~8.9~~ 10	10	9	8.9	5.2	5.1							
	C	~~8.9~~ 10	10	10	8.9	5.7	5.1							
	D	~~8.9~~ 10	10	10	8.9	5.9	5.9							
1%	A	~~9.1~~ 10	10	10	9.1	6.0	6.3	7.50	7.17	7.02	24	24	24	184
	B	~~9.0~~ 10	10	9	9.0	5.0	6.0							
	C	~~8.9~~ 10	10	10	8.9	5.5	6.0							
	D	~~8.9~~ 10	10	10	8.9	6.0	6.3							
10%	A	~~9.1~~ 10	10	10	9.1	6.5	6.3	7.55	7.26	7.08	24	24	24	178
	B	~~8.9~~ 10	10	10	8.9	5.1	4.6							
	C	~~8.9~~ 10	10	10	8.9	6.0	5.3							
	D	~~8.9~~ 10	10	10	8.9	6.4	6.0							
50%	A	~~8.8~~ 10	10	10	8.8	5.6	6.0	7.60	7.24	7.16	24	24	24	138
	B	~~8.6~~ 10	10	10	8.6	6.1	6.0							
	C	~~8.6~~ 10	10	9	8.6	6.2	6.4							
	D	~~8.8~~ 10	10	10	8.8	6.1	6.0							
DATE 10/9/06		10/9	10/10	10/11	10/9	10/10	10/11							
TIME 1400		1400	1230	1400	1310	1235	1300							
INITIALS CS		CS	m	CS	CS	m	CS							

① EB CS

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061 - 006		"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES	
CLIENT: CH2M Hill	TEST ORGANISM: *P. promelas*		TRC / TS/S / ALK / HAR / AMM / TOC / METALS
SAMPLE: -006	ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*	EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION.
DILUENT: Lab		DIL	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
100%	A	8.7 10	10	9	8.7	5.4	6.3	7.66	7.31	7.28	25	24	24	128
	B	8.7 10	10	8	8.7	5.5	6.0							
	C	8.8 10	10	9	8.8	6.0	6.1							
	D	8.8 10	10	10	8.8	6.1	6.1							
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
DATE		10/9/06	10/10	10/11	10/9/06	10/10	10/11							
TIME		1400	1230	1420	1415	1235	1400							
INITIALS		CS	[illegible]	CS	CS	[illegible]	CS							

Q=3 CS

DAPHNID ACUTE DEFINITIVE ASSAY

STUDY: 15061	CLIENT: CH2M Hill	SAMPLE: -009	DILUENT: LAB
SPECIES: *D. magna*	SOURCE:	AGE: <24 Hours	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C (µmhos/cm) 0	Comments:
LAB Control	A	10	9	9	8.6	8.3	7.04	7.70	195	10 *D. magna* / replicate 250 mL beakers 100 mL / replicate
	B	10	10	9						
	C	10	10	10						
	D	10	10	10						
1%	A	10	10	10	8.9	8.3	7.50	7.73	185	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
10%	A	10	10	10	9.0	8.2	7.54	7.75	188	
	B	10	9	9						
	C	10	10	10						
	D	10	10	10						
50%	A	10	10	10	8.9	8.2	7.51	7.86	213	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
100%	A	10	10	10	9.6	8.2	7.69	8.02	241	
	B	10	10	10						
	C	10	10	10						
	D	10	9	9						
INC TEMP (°C)		26	25	25						
DATE		9/10/06	10/10	10/11	10/11					
TIME		1300	1220	1400	1440					
INITIALS		CS	[illegible]	[illegible]	EG					

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -009

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab RB

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
Effluent	<0.05						
Diluent	<0.05						

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
LAB CONTROL	A	10	10	10	8.6	6.0	5.5	7.04	7.52	7.06	23	24	24	195
	B	10	10	10	8.8	5.1	4.9							
	C	10	10	10	8.8	6.0	5.7							
	D	10	10	10	8.8	5.7	5.1							
1%	A	10	10	10	8.9	6.0	5.4	7.50	7.50	7.12	24	24	24	185
	B	10	10	10	8.9	6.4	5.9							
	C	10	10	10	8.9	6.4	5.4							
	D	10	10	10	9.0	6.2	4.3							
10%	A	10	10	10	9.0	6.7	5.9	7.54	7.64	7.26	24	24	24	188
	B	10	10	10	9.0	6.0	5.5							
	C	10	10	10	9.1	6.0	5.5							
	D	10	10	10	9.1	5.9	5.9							
50%	A	10	10	10	8.9	5.9	5.9	7.57	7.56	7.31	24	24	24	213
	B	10	10	10	9.2	5.9	5.0							
	C	10	10	10	9.5	6.4	5.5							
	D	10	10	10	9.5	6.4	5.9							
DATE		10/9	10/10	10/11/06	10/9	10/10	10/11							
TIME		1550	1525	1430	1315	1515	1430							
INITIALS		CS	m	yr	CS	m	EG							

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061		"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES	
CLIENT: CH2M Hill	TEST ORGANISM: *P. promelas*		
SAMPLE: -009	ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*	EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION
DILUENT: Lab RB		DIL	

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION						
DIL							

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
100%	A	10	10	10	9.6	6.9	5.8	7.69	7.83	7.41	24	24		241
	B	10	10	10	9.9	6.6	6.1							
	C	10	10	10	9.8	6.0	6.5							
	D	10	10	10	9.9	6.1	5.0							
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
DATE 10/9		10/9	10/10	10/11/00	10/9	10/10	10/11							
TIME 1315		1550	1525	1435	1315	1515	1430							
INITIALS CS		CS	[illegible]	[illegible]	CS	[illegible]	EG							

DAPHNID ACUTE DEFINITIVE ASSAY

STUDY: 15061	CLIENT: CH2M Hill	SAMPLE: -012	DILUENT: LAB
SPECIES: *D. magna*	SOURCE:	AGE: <24 Hours	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C (µmhos/cm) 0	Comments:
LAB Control	A	5 10	10	10	8.2	8.0	7.70	7.91	190	10 *D. magna* / replicate 250 mL beakers 100 mL / replicate
	B	5 10	10	10						
	C	5 10	10	9						
	D	5 10	10	10						
1%	A	5 10	10	10	8.1	8.3	7.75	7.62	192	
	B	5 10	10	10						
	C	5 10	10	10						
	D	5 10	10	10						
10%	A	5 10	10	10	8.4	8.1	7.92	7.95	203	
	B	5 10	10	10						
	C	5 10	10	10						
	D	5 10	10	10						
50%	A	5 10	10	10	9.1	8.1	7.93	7.98	273	
	B	5 10	10	10						
	C	5 10	10	10						
	D	5 10	10	10						
100%	A	5 10	10	10	9.6	8.2	7.93	8.01	368	
	B	5 10	10	10						
	C	5 10	10	10						
	D	5 10	10	10						
INC TEMP (°C)		25	25	25						
DATE		10/11/06	10/12	10/13	10/11	10/13				
TIME		1455	1415	1550	1220	1400				
INITIALS		EG	EG	CS	m	CS				

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -012

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
Effluent	<0.05						
Diluent	<0.05						

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
LAB CONTROL	A	10	10	10	8.2	6.7	~~8.0~~ 6.5	7.70	7.27	7.10	24	24	24	190
	B	10	10	10	8.2	6.7	~~6.1~~ 6.5							
	C	10	10	10	8.2	6.7	6.1							
	D	10	10	10	8.2	6.9	5.1							
1%	A	10	10	10	8.1	6.9	5.1	7.75	7.37	7.39	24	24	24	192
	B	10	10	10	8.1	7.0	4.9							
	C	10	10	10	8.1	7.0	5.0							
	D	10	10	10	8.1	7.1	5.0							
10%	A	10	10	10	8.4	6.8	5.1	7.92	7.47	7.57	24	24	24	205
	B	10	10	10	8.4	6.8	4.9							
	C	10	10	10	8.4	6.9	5.1							
	D	10	10	10	8.4	7.0	5.2							
50%	A	10	10	10	9.1	6.9	5.1	7.93	7.74	7.87	24	24	24	273
	B	10	10	10	9.1	7.1	5.1							
	C	10	10	10	9.1	7.0	5.1							
	D	10	10	10	9.1	7.0	5.3							
DATE		10/11	10/12	10/13	10/11	10/12	10/13							
TIME		1600	1425	1430	1220	1430	1400							
INITIALS		CS	EG	CS	[illegible]	EG	CS							

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061	
CLIENT: CH2M Hill	TEST ORGANISM: *P. promelas*
SAMPLE: -012	ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*
DILUENT: Lab	

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION.						
DIL							

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
100%	A	10	10	~~4.9~~ 10	9.6	7.0	4.5	7.93	7.86	7.91	25	24	24	368
	B	10	10	~~4.6~~ 10	9.6	7.3	4.6							
	C	10	10	~~4.9~~ 10	9.6	7.1	4.9							
	D	10	10	~~4.9~~ 10	9.6	7.1	4.9							
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													

DATE	10/11/06	10/12	10/13	10/11	10/12	10/13
TIME	1500	1425	1425	1220	1430	1400
INITIALS	CS	EG	CS	m	EG	CS

DAPHNID ACUTE DEFINITIVE ASSAY

STUDY: 15061	CLIENT: CH2M Hill	SAMPLE: -013	DILUENT: LAB
SPECIES: *D. magna*	SOURCE:	AGE: <24 Hours	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C (µmhos/cm) 0	Comments:
LAB Control	A	10	10	10	8.4	8.0	7.53	7.28	171	10 *D. magna* / replicate 250 mL beakers 100 mL / replicate
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
1%	A	10	10	10	8.4	8.0	7.53	7.52	173	
	B	10	9	9						
	C	10	10	10						
	D	10	10	10						
10%	A	10	9	9	8.5	7.8	7.57	7.66	178	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
50%	A	10	10	10	8.6	7.8	7.37	7.73	203	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
100%	A	10	10	9	9.1	7.7	7.22	7.99	236	
	B	10	9	9						
	C	10	10	10						
	D	10	10	10						
INC TEMP (°C)		25	25	25						
DATE		10/14/06	10/15	10/16	10/14/06	10/16/06				
TIME		1640	1540	1606	1455	1610				
INITIALS		BB	SJ	CS	BB	CS				

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -013

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
Effluent	<0.05						
Diluent	<0.05						

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
LAB CONTROL	A	10	9	9	8.4	7.9	7.6	7.53	7.45	7.15	24	24	24	171
	B	10	10	10	8.4	7.9	7.1							
	C	10	10	10	8.4	8.0	7.1							
	D	10	10	10	8.4	7.9	7.2							
1%	A	10	9	9	8.4	7.8	7.2	7.53	7.46	7.20	24	24	24	173
	B	10	9	9	8.4	7.8	7.0							
	C	10	10	10	8.4	7.8	7.0							
	D	10	10	10	8.4	7.7	7.2							
10%	A	10	10	10	8.5	7.9	7.0	7.57	7.60	7.36	24	24	24	178
	B	10	10	9	8.5	8.0	7.0							
	C	10	10	10	8.5	8.0	7.3							
	D	10	10	10	8.5	8.0	7.3							
50%	A	10	10	9	8.6	7.8	7.4	7.37	7.70	7.39	24	24	24	203
	B	10	10	10	8.6	7.8	7.4							
	C	10	10	10	8.6	7.2	7.3							
	D	10	9	9	8.6	7.3	7.4							
DATE		10/14/06	10/15	10/16	10/14/06	10/15	10/16							
TIME		1600	1550	1600	1455	1535	1610							
INITIALS		BB	SJ	CS	BB	SJ	CS							

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061		"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES	
CLIENT: CH2M Hill	TEST ORGANISM: *P. promelas*		
SAMPLE: -013	ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*	EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION.
DILUENT: Lab		DIL	

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
EFF							
DIL							

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
100%	A	10	10	9	9.1	7.6	6.9	7.22	7.84	7.69	25	24	24	236
	B	10	10	10	9.1	7.4	6.9							
	C	10	10	9	9.1	7.6	7.0							
	D	10	9	8	9.1	7.6	7.0							
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													

DATE	10/14/06	10/15	10/16	10/14/06	10/15	10/16
TIME	1600	1550	1600	1455	1535	1615
INITIALS	BB	SJ	CS	BB	SJ	CS

DAPHNID ACUTE DEFINITIVE ASSAY

STUDY: 15061	CLIENT: CH2M Hill	SAMPLE: -014	DILUENT: LAB

SPECIES: *D. magna*	SOURCE:	AGE: <24 Hours

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C (µmhos/cm) 0	Comments:
LAB Control	A	10	10	10	8.4	8.5	7.53	7.36	171	10 *D. magna* / replicate 250 mL beakers 100 mL / replicate
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
1%	A	10	10	10	8.4	8.3	7.60	7.49	171	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
10%	A	10	10	10	8.5	8.2	7.60	7.65	179	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
50%	A	10	10	10	8.6	8.2	7.50	7.79	204	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
100%	A	10	10	10	8.8	8.2	7.39	7.90	241	
	B	10	10	10						
	C	10	10	9						
	D	10	10	10						
INC TEMP (°C)		25	25	25						
DATE		10/14/06	10/15	10/16	10/14/06	10/16				
TIME		1705	1600	1530	1500	1510				
INITIALS		BB	SJ	CS	BB	CS				

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -014

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
Effluent							
Diluent							

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
LAB CONTROL	A	10	10	10	8.4	8.0	7.8	7.53	7.40	6.99	24	24	23	171
	B	10	10	10	8.4	7.9	7.5							
	C	10	10	10	8.4	7.9	7.4							
	D	10	10	9	8.4	7.8	7.4							
1%	A	10	10	10	8.4	7.8	7.2	7.60	7.51	7.24	24	24	23	171
	B	10	10	10	8.4	7.8	7.5							
	C	10	10	10	8.4	7.8	7.5							
	D	10	10	10	8.4	7.8	7.5							
10%	A	10	10	10	8.5	7.6	7.5	7.60	7.48	7.23	24	24	23	179
	B	10	10	10	8.5	7.6	7.1							
	C	10	10	10	8.5	7.6	7.1							
	D	10	10	10	8.5	7.6	7.1							
50%	A	10	10	10	8.6	7.8	6.8	7.50	7.58	7.35	24	24	23	204
	B	10	10	10	8.6	7.4	6.8							
	C	10	10	9	8.6	7.4	6.8							
	D	10	10	10	8.6	7.6	6.8							
DATE		10/14/06	10/15	10/16	10/14/06	10/15	10/16							
TIME		1610	1605	1505	1500	1545	10/16							
INITIALS		BB	SJ	CS	BB	SJ	1450							

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061		"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES	
CLIENT: CH2M Hill	TEST ORGANISM: *P. promelas*		
SAMPLE: -014	ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*	EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION
DILUENT: Lab		DIL	

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION						
DIL							

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
100%	A	10	9	9	8.8	7.2	7.2	7.39	7.77	7.63	24	24	24	E3 ~~207~~
	B	10	10	10	8.8	7.4	7.1							241
	C	10	10	10	8.8	7.5	7.1							
	D	10	10	10	8.8	7.5	7.1							
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
DATE		10/14/06	10/15	10/16	10/14/06	10/15	10/16							
TIME		1610	1605	1515	1500	1545	1500							
INITIALS		BB	SJ	CS	BB	SJ	CS							

DAPHNID ACUTE DEFINITIVE ASSAY

STUDY: 15061	CLIENT: CH2M Hill	SAMPLE: -015	DILUENT: LAB
SPECIES: *D. magna*	SOURCE:	AGE: <24 Hours	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C (µmhos/cm) 0	Comments:
LAB Control	A	10	10	10	8.4	8.3	7.53	6.92	171	10 *D. magna* / replicate 250 mL beakers 100 mL / replicate
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
1%	A	10	10	10	8.3	7.9	7.67	7.15	174	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
10%	A	10	10	10	8.3	6.9	7.55	7.32	181	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
50%	A	10	10	10	8.6	8.5	7.25	7.61	209	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
100%	A	10	10	10	9.1	9.0	7.02	7.91	245	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
INC TEMP (°C)		25	25	25						
DATE		10/14/06	10/15	10/16	10/14/06	10/16/06				
TIME		1710	1525	1540	1505	1555				
INITIALS		BB	SJ	CS	BB	CS				

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -015

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
Effluent	<0.05						
Diluent	<0.05						

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24 (23) SJ 10/15	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
LAB CONTROL	A	10	10	10	8.4	8.0	8.0	7.53	~~7.38~~ 7.40	7.05	24	24	24	171
	B	10	10	10	8.4	7.8	7.5							
	C	10	10	10	8.4	7.8	7.5							
	D	10	10	10	8.4	7.6	7.3							
1%	A	10	10	10	8.3	7.6	7.3	7.67	7.31	7.14	24	24	24	174
	B	10	10	10	8.3	7.4	7.2							
	C	10	10	10	8.3	7.5	7.2							
	D	10	10	10	8.3	7.6	7.2							
10%	A	10	10	10	8.3	7.5	7.4	7.55	7.42	7.23	24	24	24	181
	B	10	10	10	8.3	7.4	7.2							
	C	10	10	10	8.3	7.5	7.2							
	D	10	10	10	8.3	7.4	7.0							
50%	A	10	10	10	8.6	7.6	7.2	7.25	7.62	7.40	24	24	24	209
	B	10	10	10	8.6	7.6	7.3							
	C	10	9	9	8.6	7.6	7.1							
	D	10	10	10	8.6	7.7	7.1							
DATE		10/14/06	10/15	10/16	10/14/06	10/15	10/16							
TIME		1530	1530	1550	1505	1520	1545							
INITIALS		BB	SJ	CS	BB	SJ	CS							

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -015

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION						
DIL							

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
100%	A	10	10	10	9.1	7.7	7.5	7.02	7.72	7.59	24	24	24	245
	B	10	9	9	9.1	7.7	7.1							
	C	10	9	9	9.1	7.7	7.0							
	D	10	9	9	9.1	7.6	7.1							
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
DATE		10/14/06	10/15	10/16	10/14/06	10/15	10/16							
TIME		1530	1530	1545	1505	1520	1530							
INITIALS		BB	SJ	CS	BB	SJ	CS							

DAPHNID ACUTE DEFINITIVE ASSAY

STUDY: 15061	CLIENT: CH2M Hill	SAMPLE: -016	DILUENT: LAB
SPECIES: *D. magna*	SOURCE:	AGE: <24 Hours	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C (µmhos/cm) 0	Comments:
LAB Control	A	10	10	10	8.4	8.5	7.53	7.06	171	10 *D. magna* / replicate 250 mL beakers 100 mL / replicate
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
1%	A	10	10	10	8.4	8.2	7.62	7.35	172	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
10%	A	10	10	10	8.4	8.2	7.53	7.43	179	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
50%	A	10	10	10	8.6	8.3	7.22	7.81	202	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
100%	A	10	10	10	9.2	8.3	7.06	7.95	241	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
INC TEMP (°C)		25	25	25						
DATE		10/14/06	10/15	10/16	10/14/06	10/16				
TIME		1650	1455	1615	1445	1610				
INITIALS		BB	SJ	CS	BB	CS				

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061 -016

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -015

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
Effluent	<0.05						
Diluent	<0.05						

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
LAB CONTROL	A	10	9	9	8.4	7.8	7.6	7.53	7.44	7.33	24	24	24	171
	B	10	10	10	8.4	7.8	7.2							
	C	10	9	9	8.4	7.8	7.1							
	D	10	10	10	8.4	7.6	7.0							
1%	A	10	9	8	8.4	7.6	7.2	7.62	7.47	7.37	24	24	24	172
	B	10	7	7	8.4	7.6	7.1							
	C	10	8	8	8.4	7.6	7.0							
	D	10	9	9	8.4	7.6	7.0							
10%	A	10	9	8	8.4	7.7	6.9	7.53	7.55	7.36	24	24	24	179
	B	10	10	10	8.4	7.8	7.0							
	C	10	9	9	8.4	7.8	6.9							
	D	10	10	10	8.4	7.7	6.9							
50%	A	10	10	9	8.6	7.7	7.1	7.22	7.61	7.47	24	24	24	202
	B	10	10	9	8.6	7.7	7.0							
	C	10	10	10	8.6	7.7	6.8							
	D	10	9	9	8.6	7.3	7.0							
DATE		10/14/06	10/15	10/16	10/14/06	10/15	10/16							
TIME		1520	1515	1340	1445	1500	1330							
INITIALS		BB	SJ	m	BB	SJ	m							

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -016

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION						
DIL							

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
100%	A	10	8	7	9.2	7.5	7.2	7.06	7.81	7.65	24	24	24	241
	B	10	10	10	9.2	7.6	7.0							
	C	10	10	10	9.2	7.1	6.5							
	D	10	10	10	9.2	7.0	6.5							
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
DATE		10/14/06	10/15	10/16	10/14/06	10/15	10/16							
TIME		1520	1515	1340	1445	1500	1330							
INITIALS		BB	SJ	[illegible]	BB	SJ	[illegible]							

DAPHNID ACUTE DEFINITIVE ASSAY

STUDY: 15061	CLIENT: CH2M Hill	SAMPLE: -017	DILUENT: LAB
SPECIES: *D. magna*	SOURCE:	AGE: <24 Hours	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C (µmhos/cm) 0	Comments:
LAB Control	A	10	10	10	8.4	8.0	7.45	7.39	181	10 *D. magna* / replicate 250 mL beakers 100 mL / replicate
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
1%	A	10	10	10	8.4	8.2	7.58	7.54	183	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
10%	A	10	10	10	8.4	8.0	7.63	7.67	178	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
50%	A	10	10	10	8.6	8.0	7.49	7.70	152	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
100%	A	10	10	10	9.2	8.0	7.42	7.62	115	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
INC TEMP (°C)		25	25	25						
DATE		10/21/06	10/22	10/23	10/21	10/23				
TIME		1400	1610	1555	1500	1625				
INITIALS		[illegible]	[illegible]	[illegible]	[illegible]	CS				

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -017

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
Effluent	<0.05						
Diluent	<0.05						

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
LAB CONTROL	A	10	10	10	8.4	7.2	7.0	7.45	7.47	7.07	25	24	24	181
	B	10	10	10	8.4	7.1	5.9							
	C	10	10	10	8.4	7.1	5.9							
	D	10	10	10	8.5	7.3	6.2							
1%	A	10	10	10	8.4	7.2	6.4	7.58	7.22	7.12	25	24	24	183
	B	10	10	10	8.4	6.9	5.6							
	C	10	10	10	8.4	6.8	6.6							
	D	10	10	10	8.4	6.9	6.4							
10%	A	10	10	10	8.4	6.7	6.4	7.63	7.34	7.20	25	24	24	178
	B	10	10	10	8.4	6.8	6.5							
	C	10	10	10	8.4	6.7	6.6							
	D	10	10	10	8.4	6.7	6.5							
50%	A	10	10	10	8.6	6.9	6.5	7.49	7.19	7.24	25	24	24	152
	B	10	10	10	8.6	6.9	6.4							
	C	10	10	10	8.6	6.8	6.4							
	D	10	10	10	8.7	6.8	6.6							
DATE		10/21/06	10/22	10/23	10/21/06	10/22	10/23							
TIME		1520	1605	1525	1500	1735	1600							
INITIALS		EG	m	m	Yr	SJ	m							

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -017

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION.						
DIL							

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
100%	A	10	10	10	9.2	7.5	6.6	7.42	7.09	7.41	25	24	24	115
	B	10	10	10	9.2	7.2	6.6							
	C	10	10	10	9.1	7.3	6.6							
	D	10	10	10	9.1	7.4	6.7							
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
DATE		10/21	10/22	10/23	10/21/09	10/22	10/23							
TIME		1520	1605	1525	1500	1735	1600							
INITIALS		EG	~	~	yr	SJ	~							

DAPHNID ACUTE DEFINITIVE ASSAY FOR ADJUSTED LABORATORY WATER

STUDY: 15061	CLIENT: CH2M Hill	SAMPLE: -017	DILUENT: Lab
SPECIES: *C. dubia*	SOURCE:	AGE: <24 Hours	

ADJUSTMENT RECORD : ML Lab Water + 1 Drop NaOH A-1791

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C 0
LAB	A	10	10	10	8.4	8.2	8.96	7.98	192
	B	10	10	10					
	C	10	10	10					
	D	10	10	10					
INC TEMP (°C)		25	25	25					
DATE		10/21/06	10/22	10/23	10/21/06	10/23			
TIME		1600	1610	1535	1500	1630			
INITIALS		[illegible]	[illegible]	[illegible]	[illegible]	CS			

SAMPLE CHEMISTRIES	EFF	17	LAB
TRC			
ALK			
HARD			
AMM			

RECORD OF METERS USED

	Exposure (Hours) 0	24	48
Water Quality Station #	2		2
Initials / Date	[illegible] 10/21/06		CS 10/23

Water Quality Station #1		Water Quality Station #2	
DO meter #		DO meter #	19
DO probe #		DO probe #	12
pH meter #		pH meter #	476
pH probe #		pH probe #	48
S/C meter #		S/C meter #	YSI 30C
S/C probe #		S/C probe #	
Salinity meter #		Salinity meter #	

COMMENTS

ACUTE BIOASSAY DATA SUMMARY FOR ADJUSTED LABORATORY CONTROL

STUDY: 15061	SAMPLE RECEIVED:	"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES											
CLIENT: CH2M Hill	TEST ORGANISM: *P. promelas*		TRC	TS/S	AMM	TOC	ALK	HAR	SAL	pH	S/C	METALS	
SAMPLE: -017	ORGANISM SUPPLIER:	EFF											
DILUENT: Lab	ORGANISM BATCH/AGE:	DIL											

ADJUSTMENT RECORD : ML Lab Water + 1 Drop NaOH A-1791

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48			DISSOLVED OXYGEN (mg/L) 0	DO 24	DO 48			pH (SU) 0	pH 24	pH 48			TEMPERATURE (°C) 0	TEMP 24	TEMP 48		S/C (µmhos/cm) 0	SAL (ppt) 0
LAB	A	10	10	10			8.4	6.7	6.9			8.96		7.23			25	24	24		192	
	B	10	10	10			8.4	7.0	6.8													
	C	10	10	10			8.4	7.1	6.7													
	D	10	10	10			8.4	6.8	6.7													
DATE			10/22	10/23			10/21	10/22	10/23													
TIME			1605	1525			1500	1735	1600													
INITIALS								SJ														

RECORD OF METERS USED

	Exposure (Hours) 0	24	48
Water Quality Station #	2		1
Initials / Date	10/21/06		10/23

Water Quality Station #1		Water Quality Station #2	
DO meter #	3	DO meter #	
DO probe #	13	DO probe #	
pH meter #	1097	pH meter #	
pH probe #	44	pH probe #	
S/C meter #	YSI30C	S/C meter #	
S/C probe #		S/C probe #	
Salinity meter #		Salinity meter #	

COMMENTS

pH Eff 5.88 added 2 Drops

DAPHNID ACUTE DEFINITIVE ASSAY

STUDY: 15061	CLIENT: CH2M Hill	SAMPLE: -018	DILUENT: LAB
SPECIES: *D. magna*	SOURCE:	AGE: <24 Hours	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C (µmhos/cm) 0	Comments:
LAB Control	A	10	10	10	8.4	7.8	7.22	7.75	183	10 *D. magna* / replicate 250 mL beakers 100 mL / replicate
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
1%	A	10	10	10	8.3	7.8	7.61	7.76	182	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
10%	A	10	10	10	8.3	7.8	7.64	7.78	179	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
50%	A	10	10	10	8.5	7.8	7.50	7.80	155	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
100%	A	10	10	10	9.7	7.8	7.40	7.90	117	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
INC TEMP (°C)		25	25	25						
DATE		10/21/06	10/22	10/23	10/21	10/23				
TIME		1545	1620	1710	1515	1653				
INITIALS		[illegible]	[illegible]	CS	[illegible]	CP				

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -018

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
Effluent	<0.05						
Diluent	<0.05						

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) (23) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
LAB CONTROL	A	10	10	10	8.4	7.2	5/8 6.4	7.22	7.46	7.27	25	24	24	183
	B	10	10	10	8.4	7.1	5/8 6.4							
	C	10	10	10	8.4	7.1	5/8 6.4							
	D	10	10	10	8.4	7.2	5/8 6.6							
1%	A	10	10	10	8.3	7.2	5/8 6.5	7.61	7.33	7.31	25	24	24	182
	B	10	10	10	8.2	6.8	5/8 5.9							
	C	10	10	10	8.3	6.8	5/8 6.0							
	D	10	10	10	8.3	6.9	5/8 6.3							
10%	A	10	10	10	8.3	7.1	5/8 6.3	7.64	7.34	7.30	25	24	24	179
	B	10	10	10	8.3	7.0	5/8 6.5							
	C	10	10	10	8.3	6.9	5/8 6.4							
	D	10	10	10	8.3	6.8	6.4							
50%	A	10	10	10	8.5	6.8	6.4	7.50	7.42	7.36	25	24	24	155
	B	10	10	10	8.6	6.8	6.5							
	C	10	10	10	8.7	6.9	6.4							
	D	10	10	10	8.7	6.9	6.4							
DATE		10/21/06	10/22	10/23	10/21/06	10/22	10/23							
TIME		1530	1615	1700	1515	1725	1645							
INITIALS		EG	m	CP	[illegible]	SJ	CP							

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -018

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION						
DIL							

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
100%	A	10	10	10	9.7	7.2	6.9	7.40	7.42	7.48	25	24	24	117
	B	10	10	10	9.6	7.3	6.4							
	C	10	10	10	9.6	7.2	6.4							
	D	10	10	10	9.7	7.2	6.6							
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
DATE		10/21	10/22	10/23	10/21	10/22	10/23							
TIME		1530	1615	1700	1515	1725	1645							
INITIALS		EG	m	CP	VJV	SJ	CP							

DAPHNID ACUTE DE[redacted]

STUDY: 15061	CLIENT: CH2M Hill	SAMPLE: -019	DILUENT: LAB
SPECIES: *D. magna*	SOURCE:	AGE: <24 Hours	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C (µmhos/cm) 0	Comments:
LAB Control	A	10	10	10	8.5	8.0	7.30	7.21	181	10 *D. magna* / replicate 250 mL beakers 100 mL / replicate
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
1%	A	10	10	10	8.5	7.9	7.50	7.40	183	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
10%	A	10	10	10	8.5	8.1	7.63	7.45	179	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
50%	A	10	10	10	8.8	8.1	7.60	7.65	157	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
100%	A	10	10	10	9.4	8.1	7.54	7.70	124	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
INC TEMP (°C)		25	25	25						
DATE		10/21/06	10/22	10/23	10/21/06	10/23				
TIME		1610	1630	1650	1545	1705				
INITIALS		[illegible]	m	CS	[illegible]	CS				

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: <019

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
Effluent	<0.05						
Diluent	<0.05						

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
LAB CONTROL	A	10	9	9	8.5	6.0	6.2	7.29	7.23	7.19	25	24	24	181
	B	10	10	10	8.5	5.9	6.7							
	C	10	10	10	8.5	5.9	7.1							
	D	10	10	9	8.5	6.0	7.3							
1%	A	10	10	10	8.5	5.6	7.1	7.50	7.32	7.22	25	24	24	183
	B	10	10	10	8.4	5.6	7.1							
	C	10	10	10	8.5	5.7	7.1							
	D	10	10	10	8.5	5.7	7.2							
10%	A	10	10	10	8.5	5.6	7.1	7.64	7.35	7.25	25	24	24	179
	B	10	10	10	8.5	5.6	7.0							
	C	10	10	10	8.5	6.9	7.0							
	D	10	9	9	8.5	7.5	7.0							
50%	A	10	10	10	8.8	7.3	7.1	7.60	7.48	7.38	25	24	24	157
	B	10	10	10	8.8	7.2	7.2							
	C	10	10	10	8.8	7.1	6.5							
	D	10	10	10	8.8	6.9	6.1							
DATE		10/21	10/22	10/23	10/21/04	10/22	10/23							
TIME		1550	1625	1645	1540	1700								
INITIALS		EG	m	CS	Yr	m	CS							

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061	
CLIENT: CH2M Hill	TEST ORGANISM: *P. promelas*
SAMPLE: - 019	ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*
DILUENT: Lab	

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION						
DIL							

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
100%	A	10	9	9	9.4	7.4	6.5	7.54	7.64	7.65	25	24	24	124
	B	10	10	9	9.3	7.2	6.4							
	C	10	10	10	9.4	7.1	6.4							
	D	10	10	10	9.4	7.4	6.4							
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
DATE		10/21	10/22	10/23	10/21 100	10/22	10/23							
TIME		1550	1625	1700	1540	1700	1700							
INITIALS		EG	[illegible]	CS	[illegible]	[illegible]	CS							

DAPHNID ACUTE DEFINITIVE ASSAY

STUDY: 15061	CLIENT: CH2M Hill	SAMPLE: -020	DILUENT: LAB
SPECIES: *D. magna*	SOURCE:	AGE: <24 Hours	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C (µmhos/cm) 0	Comments:
LAB Control	A	10	10	10	8.4	8.3	7.40	7.41	180	10 *D. magna* / replicate 250 mL beakers 100 mL / replicate
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
1%	A	10	10	10	8.4	8.1	7.65	7.59	183	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
10%	A	10	10	10	8.5	8.0	7.63	7.69	179	
	B	10	10	9						
	C	10	9	9						
	D	10	9	9						
50%	A	10	10	10	9.0	8.0	7.47	7.64	161	
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
100%	A	10	10	10	10.2	7.9	7.33	7.81	131	
	B	10	10	10						
	C	10	10	10						
	D	10	9	9						
INC TEMP (°C)		25	25	25						
DATE		10/21/06	10/22	10/23	10/21/06	10/23				
TIME		1615	1620	1520	1450	1545				
INITIALS		YL	CP	m	YL	CS				

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

SAMPLE: -020

DILUENT: Lab

TEST ORGANISM: *P. promelas*

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
Effluent	<0.05						
Diluent	<0.05						

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
LAB CONTROL	A	10	10	10	8.4	7.6	5.7	7.40	7.14	7.12	24	24	24	180
	B	10	10	10	8.4	7.5	6.3							
	C	10	10	10	8.4	7.4	6.6							
	D	10	10	10	8.4	7.3	6.8							
1%	A	10	10	10	8.4	7.4	6.9	7.65	7.31	7.30	24	24	24	183
	B	10	10	10	8.4	7.3	5.6							
	C	10	10	10	8.4	7.3	6.0							
	D	10	10	10	8.4	7.2	6.1							
10%	A	10	10	10	8.5	7.2	5.1	7.63	7.33	7.32	24	24	24	179
	B	10	10	10	8.5	7.2	5.4							
	C	10	10	10	8.5	7.1	6.0							
	D	10	10	10	8.5	7.2	6.2							
50%	A	10	10	10	9.0	7.1	6.2	7.~~64~~ 47 (7.25)	7.42	7.39	24	24	24	161
	B	10	10	10	9.0	7.3	5.3							
	C	10	10	10	9.0	7.4	5.3							
	D	10	10	10	9.0	7.4	5.2							
DATE		10/21/06	10/22	10/23	10/21/06	10/22	10/23							
TIME		1510	1610 ~~1~~ (23)	1515	1455	1600	1530							
INITIALS		EG	CP	m	EG	CP	CS							

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: -020

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION						
DIL							

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
100%	A	10	10	7	10.2	7.5	5.2	7.33	7.63	7.29	24	24	24	131
	B	10	10	8	10.2	7.5	5.2							
	C	10	10	8	10.2	7.6	6.0							
	D	10	10	10	10.2	7.7	6.0							
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
DATE		10/20	10/22	10/23	10/21/06	10/22	10/23							
TIME		1510	1600	1515	1455	1600	1530							
INITIALS		EG	CP	[illegible]	EG	CP	CS							

DAPHNID ACUTE DEFINITIVE ASSAY

STUDY: 15061	CLIENT: CH2M Hill	SAMPLE: -049	DILUENT: LAB
SPECIES: *D. magna*	SOURCE:	AGE: <24 Hours	

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DO (mg/L) 0	DO (mg/L) 48	pH (SU) 0	pH (SU) 48	S/C (µmhos/cm) 0	Comments:
LAB Control	A	10	10	10	8.5	8.1	7.43	7.70	178	10 *D. magna* / replicate 250 mL beakers 100 mL / replicate
	B	10	10	10						
	C	10	10	10						
	D	10	10	10						
1%	A	10	10	10	8.5	8.0	7.52	7.69	187	
	B	10	9	8						
	C	10	10	10						
	D	10	10	10						
10%	A	10	10	10	8.5	8.1	7.69	7.74	260	
	B	10	10	10						
	C	10	10	10						
	D	10	9	9						
50%	A	10	~~8~~ 10	10	8.8	8.2	7.81	7.79	575	
	B	10	10	10						
	C	10	9	9						
	D	10	9	8						
100%	A	10	2	—	9.2	8.5	7.89	7.94	921	
	B	10	1	—						
	C	10	7	—						
	D	10	2	—						
INC TEMP (°C)		25	25	25						
DATE		10/30/06	10/31	11/1	10/30	11/1				
TIME		1440	1540	1350	1458	1330				
INITIALS		SJ	SJ	CS	[illegible]	CS				

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061

CLIENT: CH2M Hill

TEST ORGANISM: *P. promelas*

SAMPLE: - 049

ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*

DILUENT: Lab

"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
Effluent	<0.05						
Diluent	<0.05						

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
LAB CONTROL	A	10	10	10	8.5	6.1	6.3	7.43	~~7.28~~ (3)	7.16	24	24	24	178
	B	10	10	10	8.5	6.6	6.8		7.20					
	C	10	10	10	8.5	6.5	7.0							
	D	10	10	10	8.5	6.2	6.9							
1%	A	10	10	10	8.5	6.8	7.0	7.52	7.28	7.29	24	24	24	187
	B	10	10	10	8.5	6.9	7.0							
	C	10	10	9	8.5	7.0	7.0							
	D	10	10	10	8.5	6.0	7.1							
10%	A	10	10	10	8.5	6.4	7.1	7.69	7.33	7.23	24	24	24	260
	B	10	10	10	8.5	6.6	7.1							
	C	10	10	9	8.5	6.7	7.1							
	D	10	10	8	8.5	6.6	7.1							
50%	A	10	5	2	8.8	6.4	7.8	7.81	7.40	7.41	24	24	24	575
	B	10	1	–	8.8	6.3	7.1							
	C	10	4	2	8.8	6.2	7.1							
	D	10	1	1	8.8	6.1	7.1							
DATE		10/30	10/31	11/1	10.30	10/31	11/1							
TIME		1505	1555	1340	1455	1545	1320							
INITIALS		SJ	SJ	CS	[illegible]	SJ	CS							

ACUTE BIOASSAY DATA SUMMARY

STUDY: 15061		"AS RECEIVED" EFFLUENT AND DILUENT CHEMISTRIES	
CLIENT: CH2M Hill	TEST ORGANISM: *P. promelas*		
SAMPLE: -049	ORGANISM SUPPLIER/BATCH/AGE: *See Organism Culture Sheet*	EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION.
DILUENT: Lab		DIL	

	TRC	TS/S	ALK	HAR	AMM	TOC	METALS
EFF	SEE PAGE 1 FOR CHEMISTRY INFORMATION.						
DIL							

CONC	REP	SURVIVAL 0	SURVIVAL 24	SURVIVAL 48	DISSOLVED OXYGEN (mg/L) 0	DISSOLVED OXYGEN (mg/L) 24	DISSOLVED OXYGEN (mg/L) 48	pH (SU) 0	pH (SU) 24	pH (SU) 48	TEMPERATURE (°C) 0	TEMPERATURE (°C) 24	TEMPERATURE (°C) 48	S/C (µmhos/cm) 0
100%	A	10	0	—	9.2	6.2	—	7.89	7.60	—	24	24	—	941
	B	10	0	—	9.2	6.1	—							
	C	10	0	—	9.2	6.1	—							
	D	10	0	—	9.2	6.1	—							
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
	A													
	B													
	C													
	D													
DATE		10/30	10/31		10/30	10/31	11/1							
TIME		1505	1555		1455	1545	1340							
INITIALS		SJ	SJ		[illegible]	SJ	CS							

CETIS Test Summary

Report Date: 28 Nov-06 8:57 PM
Link: 19-6407-3108

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	04-8692-3001	Test Type:	Survival (48h)	Duration:	48h
Start Date:	03 Oct-06 03:40 PM	Protocol:	EPA/821/R-02-012 (2002)	Species:	Daphnia magna
Ending Date:	05 Oct-06 03:30 PM	Dil Water:	Reconstituted Water	Source:	In-House Culture
Setup Date:	03 Oct-06 03:40 PM	Brine:	Not Applicable		

Sample No:	07-5432-2197	Material:	Solid Sample - Sweeping	Client:	CH2M Hill
Sample Date:	01 Oct-06 02:40 PM	Code:	15061-002	Project:	Ecological Risk Assessment
Receive Date:	03 Oct-06 11:30 AM	Source:	Great Lakes Sweepings Characterizati		
Sample Age:	49h	Station:	DLHTV1-LS-1; 15061-002		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
07-7831-5359	24h Proportion Survived	50	100	70.711	9.07%	Steel's Many-One Rank
04-9051-0207	48h Proportion Survived	1	10	3.162	9.59%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
04-9311-8813	24h Proportion Survived	50	59.49562	52.24287	67.75525	Trimmed Spearman-Karber
12-0579-7914	48h Proportion Survived	50	4.93803	3.80959	6.40072	Trimmed Spearman-Karber

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
04-9051-0207	48h Proportion Survived	Control Response	0.975	0.9 - N/A	Passes acceptability criteria
12-0579-7914	48h Proportion Survived	Control Response	0.975	0.9 - N/A	Passes acceptability criteria

24h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	0.85000	0.70000	1.00000	0.06455	0.12910	15.19%
100		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	0.22500	0.10000	0.40000	0.06292	0.12583	55.92%
50		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%
100		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

24h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	0.80000	0.90000	0.70000
100		0.00000	0.00000	0.00000	0.00000

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	0.90000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		0.10000	0.20000	0.40000	0.20000
50		0.00000	0.00000	0.00000	0.00000
100		0.00000	0.00000	0.00000	0.00000

CETIS Test Summary

Report Date: 28 Nov-06 9:03 PM
Link: 15-8242-0450

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	04-8692-3001	Test Type:	Survival (48h)	Duration:	48h
Start Date:	03 Oct-06 03:40 PM	Protocol:	EPA/821/R-02-012 (2002)	Species:	Daphnia magna
Ending Date:	05 Oct-06 03:30 PM	Dil Water:	Reconstituted Water	Source:	In-House Culture
Setup Date:	03 Oct-06 03:40 PM	Brine:	Not Applicable		

Sample No:	10-0220-8253	Material:	Solid Sample - Sweeping	Client:	CH2M Hill
Sample Date:	03 Oct-06 12:00 PM	Code:	15061-003	Project:	Ecological Risk Assessment
Receive Date:	05 Oct-06 10:30 AM	Source:	Great Lakes Sweepings Characterizati		
Sample Age:	4h	Station:	DHLCV1-LS-1; 15061-003		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
11-3648-2562	48h Proportion Survived	100	> 100	N/A	12.60%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
07-6197-3282	48h Proportion Survived	50	481.50820	N/A	N/A	Nonlinear Regression

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
07-6197-3282	48h Proportion Survived	Control Response	0.95	0.9 - N/A	Passes acceptability criteria
11-3648-2562	48h Proportion Survived	Control Response	0.95	0.9 - N/A	Passes acceptability criteria

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	0.90000	0.80000	1.00000	0.04082	0.08165	9.07%
50		4	0.90000	0.80000	1.00000	0.04082	0.08165	9.07%
100		4	0.87500	0.80000	1.00000	0.04787	0.09574	10.94%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	0.90000	0.90000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		0.90000	1.00000	0.90000	0.80000
50		0.80000	0.90000	0.90000	1.00000
100		0.90000	1.00000	0.80000	0.80000

CETIS Test Summary

Report Date: 28 Nov-06 9:17 PM
Link: 09-5525-2586

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	12-8658-7807	Test Type:	Survival (48h)	Duration:	48h
Start Date:	09 Oct-06 02:10 PM	Protocol:	EPA/821/R-02-012 (2002)	Species:	Daphnia magna
Ending Date:	11 Oct-06 01:45 PM	Dil Water:	Reconstituted Water	Source:	In-House Culture
Setup Date:	09 Oct-06 02:10 PM	Brine:	Not Applicable		

Sample No:	02-0786-4811	Material:	Solid Sample - Sweeping	Client:	CH2M Hill
Sample Date:	04 Oct-06 11:00 PM	Code:	15061-006	Project:	Ecological Risk Assessment
Receive Date:	09 Oct-06 09:45 AM	Source:	Great Lakes Sweepings Characterizati		
Sample Age:	4d 15h	Station:	DLHCV2-LS-1; 15061-006		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
00-7306-1882	48h Proportion Survived	100	> 100	N/A	7.01%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
16-2922-1644	48h Proportion Survived	50	4067.52900	N/A	-157601.0000	Nonlinear Regression

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
00-7306-1882	48h Proportion Survived	Control Response	0.975	0.9 - N/A	Passes acceptability criteria
16-2922-1644	48h Proportion Survived	Control Response	0.975	0.9 - N/A	Passes acceptability criteria

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%
100		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	0.90000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	0.90000	0.90000
100		1.00000	0.90000	1.00000	1.00000

CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	09-5525-2586	09-5525-2586	28 Nov-06 9:16 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	7.01%

Test Acceptability

Attribute	Statistic	Acceptable Range	Decision
Control Response	0.975	0.9 - N/A	Passes acceptability criteria

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.75000	4.89321	0.19153	Equal Variances
Distribution	Shapiro-Wilk W	0.85319	0.86826	0.00516	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0185915	0.0046479	4	1.05	0.41460	Non-Significant Effect
Error	0.0663983	0.0044266	15			
Total	0.08498986	0.0090744	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	20	10	> 0.0500	1	Non-Significant Effect
		10	20	10	> 0.0500	1	Non-Significant Effect
		50	16	10	> 0.0500	2	Non-Significant Effect
		100	18	10	> 0.0500	2	Non-Significant Effect

Data Summary

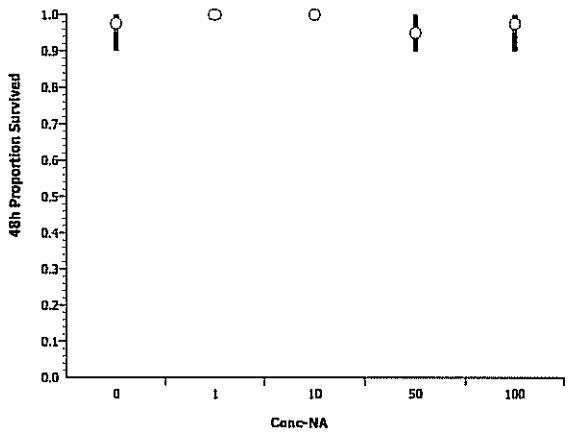
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	0.95000	0.90000	1.00000	0.05773	1.33053	1.24905	1.41202	0.09409
100		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149

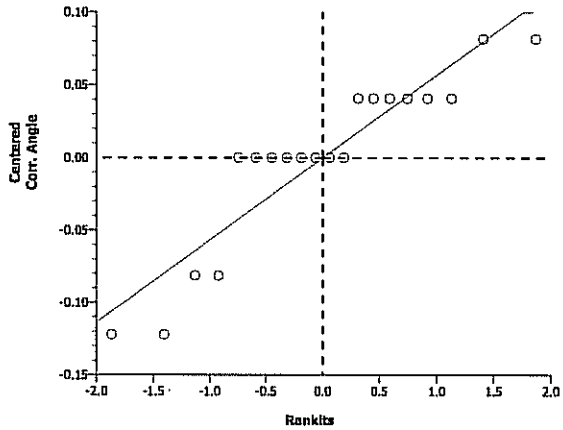
Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	0.90000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	0.90000	0.90000						
100		1.00000	0.90000	1.00000	1.00000						

CETIS Analysis Detail

Graphics





CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Nonlinear Regression	09-5525-2586	09-5525-2586	28 Nov-06 9:16 PM	CETISv1.026

Non-Linear Regression Options

X Transform	Y Transform	Model Function	Weighting Function	PTBS Function
None	None	Asymptotic [Y=1/(A+BX)]	No Weight [W = 1]	No Transform [None]

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P Level	Decision(0.05)
A	1.01228	0.01224	0.98656	1.03799	82.705	0.00000	Significant Parameter
B	0.00026	0.00025	-0.00027	0.00078	1.018	0.32216	Not Significant

Regression Summary

Iters	Log Likelihood	Psuedo R2	Opt Threshold	F Statistic	Critical	P Level	Decision(0.01)
3	54.93412	0.05414	No	1.05350	5.41697	0.39791	Non-Significant Lack of Fit

Residual Analysis

Attribute	Method	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	2.48889	5.29221	0.09753	Equal Variances
Distribution	Shapiro-Wilk W	0.85319	0.86826	0.00516	Non-normal Distribution

Test Acceptability

Attribute	Statistic	Acceptable Range	Decision
Control Response	0.975	0.9 - N/A	Passes acceptability criteria

Point Estimates

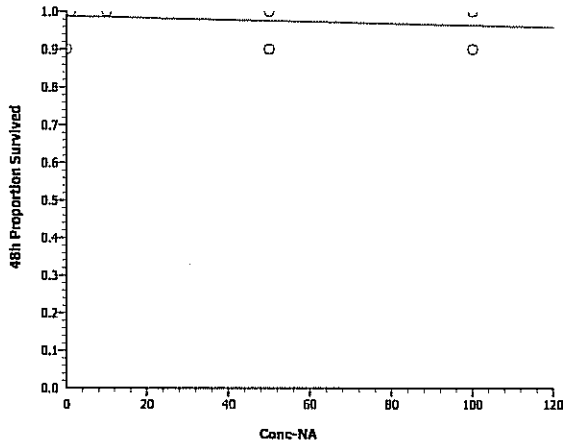
% Effect	Conc-NA	95% LCL	95% UCL
50	4067.52900	N/A	-157601.0000

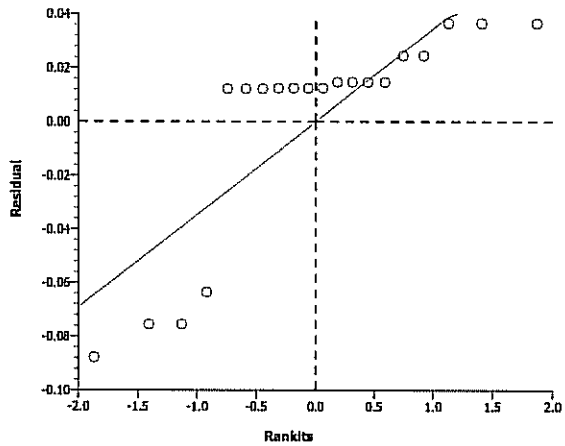
Data Summary

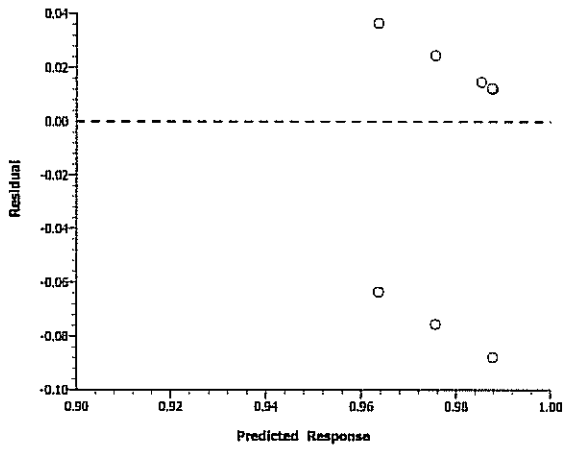
			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	0.95000	0.90000	1.00000	0.01179	0.05773	38	40
100		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40

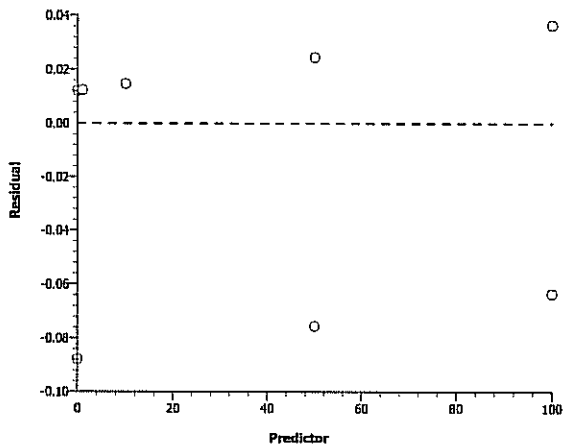
CETIS Analysis Detail

Graphics









CETIS Test Summary

Report Date: 28 Nov-06 9:24 PM
Link: 05-6214-9315

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	12-8658-7807	**Test Type:**	Survival (48h)	**Duration:**	48h
Start Date:	09 Oct-06 02:10 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Daphnia magna
Ending Date:	11 Oct-06 01:45 PM	**Dil Water:**	Reconstituted Water	**Source:**	In-House Culture
Setup Date:	09 Oct-06 02:10 PM	**Brine:**	Not Applicable		

Sample No:	15-5238-1836	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	03 Oct-06 01:00 PM	**Code:**	15061-009	**Project:**	Ecological Risk Assessment
Receive Date:	07 Oct-06 01:30 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	6d 1h	**Station:**	DLHTV2-LS-1; 15061-009		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
04-5999-2619	48h Proportion Survived	100	> 100	N/A	6.68%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
08-5009-7183	48h Proportion Survived	50	22442.12000	N/A	-32155.69000	Nonlinear Regression

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
04-5999-2619	48h Proportion Survived	Control Response	0.975	0.9 - N/A	Passes acceptability criteria
08-5009-7183	48h Proportion Survived	Control Response	0.975	0.9 - N/A	Passes acceptability criteria

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	0.90000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	0.90000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	0.90000

CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	05-6214-9315	05-6214-9315	28 Nov-06 9:24 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	6.68%

Test Acceptability

Attribute	Statistic	Acceptable Range	Decision
Control Response	0.975	0.9 - N/A	Passes acceptability criteria

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	0.50000	4.89321	0.73624	Equal Variances
Distribution	Shapiro-Wilk W	0.67489	0.86826	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0079678	0.001992	4	0.50	0.73624	Non-Significant Effect
Error	0.0597585	0.0039839	15			
Total	0.0677263	0.0059758	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	20	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	2	Non-Significant Effect
		50	20	10	> 0.0500	1	Non-Significant Effect
		100	18	10	> 0.0500	2	Non-Significant Effect

Data Summary

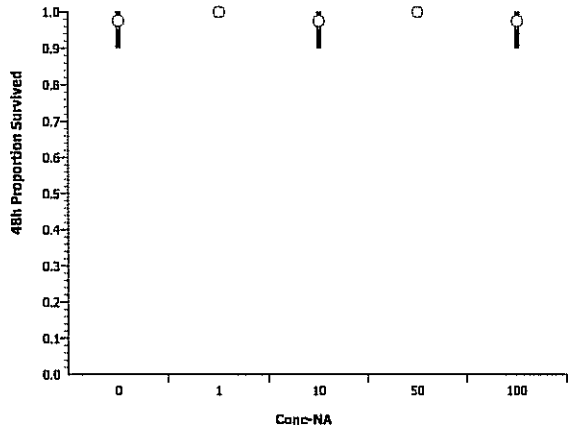
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149

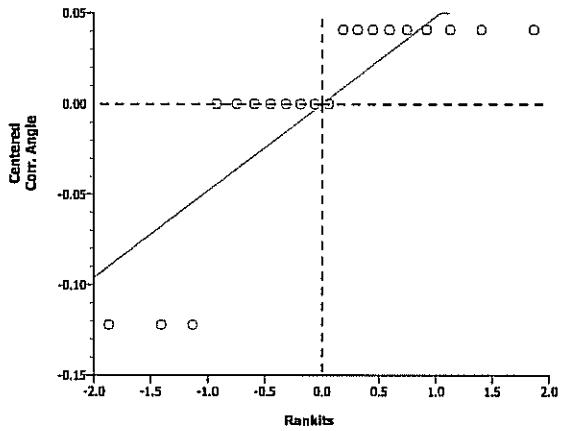
Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	0.90000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	0.90000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		1.00000	1.00000	1.00000	0.90000						

CETIS Analysis Detail

Graphics





CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Nonlinear Regression	05-6214-9315	05-6214-9315	28 Nov-06 9:24 PM	CETISv1.026

Non-Linear Regression Options

X Transform	Y Transform	Model Function	Weighting Function	PTBS Function
None	None	Asymptotic [Y=1/(A+BX)]	No Weight [W = 1]	No Transform [None]

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P Level	Decision(0.05)
A	1.01374	0.01161	0.98935	1.03813	87.326	0.00000	Significant Parameter
B	0.00005	0.00023	-0.00044	0.00053	0.199	0.84458	Not Significant

Regression Summary

Iters	Log Likelihood	Psuedo R2	Opt Threshold	F Statistic	Critical	P Level	Decision(0.01)
3	56.67165	0.00235	No	0.65333	5.41697	0.59316	Non-Significant Lack of Fit

Residual Analysis

Attribute	Method	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	0.71111	5.29221	0.55944	Equal Variances
Distribution	Shapiro-Wilk W	0.67489	0.86826	0.00000	Non-normal Distribution

Test Acceptability

Attribute	Statistic	Acceptable Range	Decision
Control Response	0.975	0.9 - N/A	Passes acceptability criteria

Point Estimates

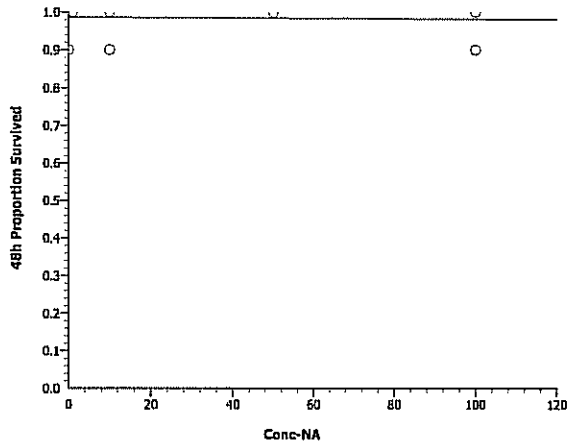
% Effect	Conc-NA	95% LCL	95% UCL
50	22442.12000	N/A	-32155.69000

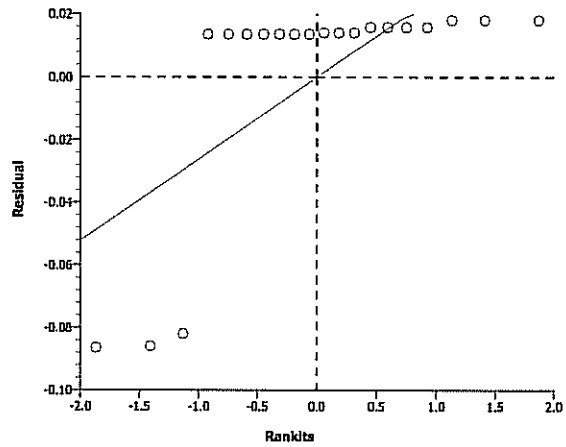
Data Summary

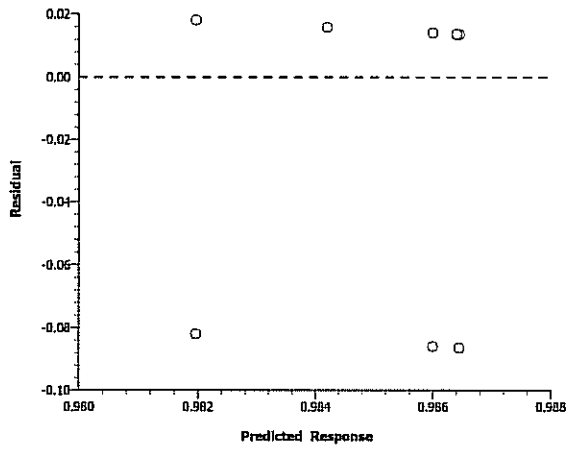
			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40

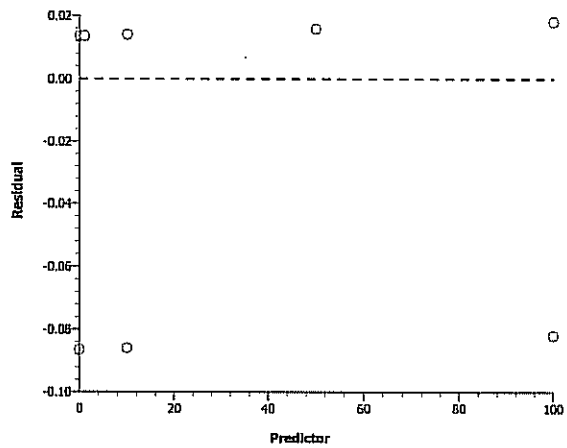
CETIS Analysis Detail

Graphics









CETIS Test Summary

Report Date: 28 Nov-06 9:29 PM
Link: 04-4667-8269

Daphnia magna 48-h Acute Survival Test — **EnviroSystems, Inc.**

Test No:	12-5683-3385	**Test Type:**	Survival (48h)	**Duration:**	46h
Start Date:	11 Oct-06 04:00 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Daphnia magna
Ending Date:	13 Oct-06 02:30 PM	**Dil Water:**	Reconstituted Water	**Source:**	In-House Culture
Setup Date:	28 Nov-06 09:27 PM	**Brine:**	Not Applicable		

Sample No:	01-2727-2781	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	10 Oct-06 07:00 AM	**Code:**	15061-012	**Project:**	Ecological Risk Assessment
Receive Date:	09 Oct-06 09:45 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	49d 14h	**Station:**	CLELV1-LS-1; 15061-012		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
16-9985-2196	48h Proportion Survived	100	> 100	N/A	4.23%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
09-6913-3674	48h Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
09-6913-3674	48h Proportion Survived	Control Response	0.975	0.9 - N/A	Passes acceptability criteria
16-9985-2196	48h Proportion Survived	Control Response	0.975	0.9 - N/A	Passes acceptability criteria

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	0.90000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000

CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	04-4667-8269	04-4667-8269	28 Nov-06 9:29 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	4.23%

Test Acceptability

Attribute	Statistic	Acceptable Range	Decision
Control Response	0.975	0.9 - N/A	Passes acceptability criteria

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.00000	4.89321	0.43800	Equal Variances
Distribution	Shapiro-Wilk W	0.50890	0.86826	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0053119	0.001328	4	1.00	0.43800	Non-Significant Effect
Error	0.0199195	0.001328	15			
Total	0.02523136	0.0026559	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	20	10	> 0.0500	1	Non-Significant Effect
		10	20	10	> 0.0500	1	Non-Significant Effect
		50	20	10	> 0.0500	1	Non-Significant Effect
		100	20	10	> 0.0500	1	Non-Significant Effect

Data Summary

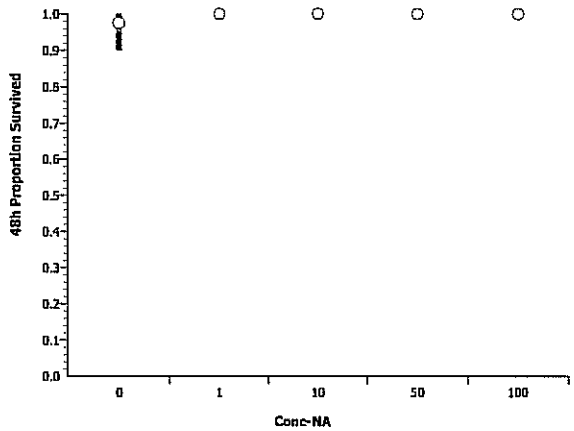
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027

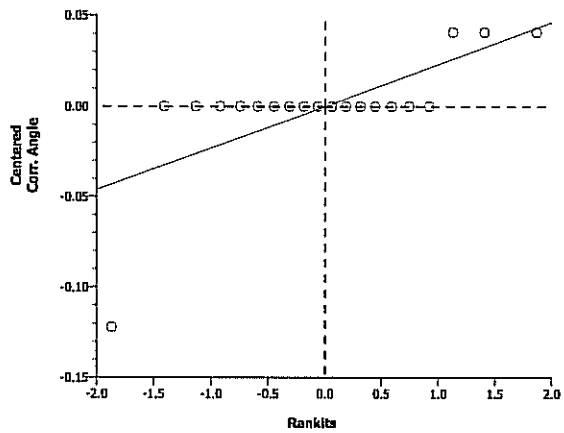
Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	0.90000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		1.00000	1.00000	1.00000	1.00000						

CETIS Analysis Detail

Graphics





CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	04-4667-8269	04-4667-8269	28 Nov-06 9:29 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	5334240	200	Yes	Two-Point Interpolation

Test Acceptability

Attribute	Statistic	Acceptable Range	Decision
Control Response	0.975	0.9 - N/A	Passes acceptability criteria

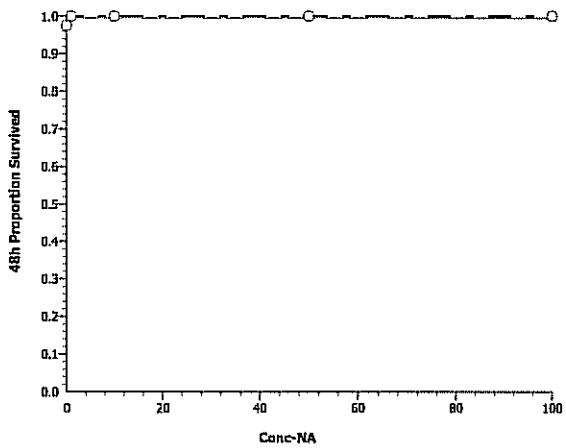
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

Graphics



CETIS Test Summary

Report Date: 28 Nov-06 9:34 PM
Link: 20-0394-1220

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	04-8326-5026	Test Type:	Survival (48h)	Duration:	47h
Start Date:	14 Oct-06 04:40 PM	Protocol:	EPA/821/R-02-012 (2002)	Species:	Daphnia magna
Ending Date:	16 Oct-06 04:06 PM	Dil Water:	Reconstituted Water	Source:	In-House Culture
Setup Date:	14 Oct-06 04:40 PM	Brine:	Not Applicable		

Sample No:	12-1798-1035	Material:	Solid Sample - Sweeping	Client:	CH2M Hill
Sample Date:	13 Oct-06 01:15 PM	Code:	15061-013	Project:	Ecological Risk Assessment
Receive Date:	14 Oct-06 01:30 PM	Source:	Great Lakes Sweepings Characterizati		
Sample Age:	27h	Station:	WCOAL LKE (-1); 15061-013		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
16-1333-8489	48h Proportion Survived	100	> 100	N/A	7.10%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
06-8766-3746	48h Proportion Survived	50	3443.56000	110.19030	81110.57000	Nonlinear Regression

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
06-8766-3746	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria
16-1333-8489	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
10		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	0.90000	1.00000	1.00000
10		0.90000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		0.90000	0.90000	1.00000	1.00000

CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	20-0394-1220	20-0394-1220	28 Nov-06 9:34 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	7.10%

Test Acceptability

Attribute	Statistic	Acceptable Range	Decision
Control Response	1	0.9 - N/A	Passes acceptability criteria

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.75000	4.89321	0.19153	Equal Variances
Distribution	Shapiro-Wilk W	0.85319	0.86826	0.00516	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0185915	0.0046479	4	1.05	0.41460	Non-Significant Effect
Error	0.0663983	0.0044266	15			
Total	0.08498986	0.0090744	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	16	10	> 0.0500	1	Non-Significant Effect
		10	16	10	> 0.0500	1	Non-Significant Effect
		50	18	10	> 0.0500	1	Non-Significant Effect
		100	14	10	> 0.0500	2	Non-Significant Effect

Data Summary

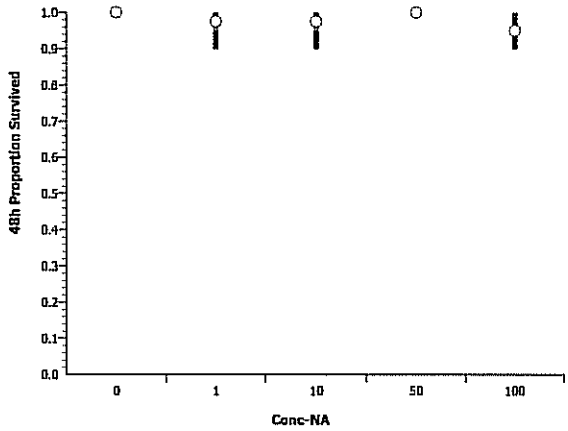
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
10		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	0.95000	0.90000	1.00000	0.05773	1.33053	1.24905	1.41202	0.09409

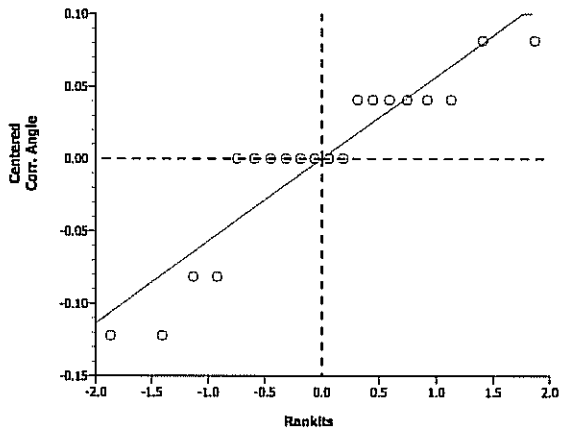
Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	0.90000	1.00000	1.00000						
10		0.90000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		0.90000	0.90000	1.00000	1.00000						

CETIS Analysis Detail

Graphics





CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Nonlinear Regression	20-0394-1220	20-0394-1220	28 Nov-06 9:34 PM	CETISv1.026

Non-Linear Regression Options

X Transform	Y Transform	Model Function	Weighting Function	PTBS Function
None	None	Asymptotic [Y=1/(A+BX)]	No Weight [W = 1]	No Transform [None]

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P Level	Decision(0.05)
A	1.01128	0.01222	0.98560	1.03696	82.747	0.00000	Significant Parameter
B	0.00029	0.00025	-0.00024	0.00082	1.142	0.26845	Not Significant

Regression Summary

Iters	Log Likelihood	Psuedo R2	Opt Threshold	F Statistic	Critical	P Level	Decision(0.01)
3	55.10522	0.07019	No	0.95081	5.41697	0.44111	Non-Significant Lack of Fit

Residual Analysis

Attribute	Method	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	2.48889	5.29221	0.09753	Equal Variances
Distribution	Shapiro-Wilk W	0.85319	0.86826	0.00516	Non-normal Distribution

Test Acceptability

Attribute	Statistic	Acceptable Range	Decision
Control Response	1	0.9 - N/A	Passes acceptability criteria

Point Estimates

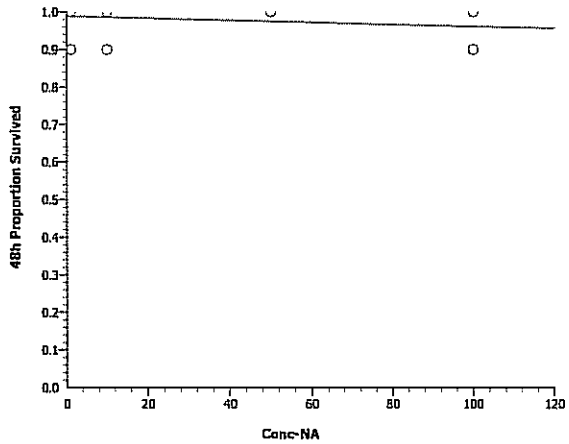
% Effect	Conc-NA	95% LCL	95% UCL
50	3443.56000	110.19030	81110.57000

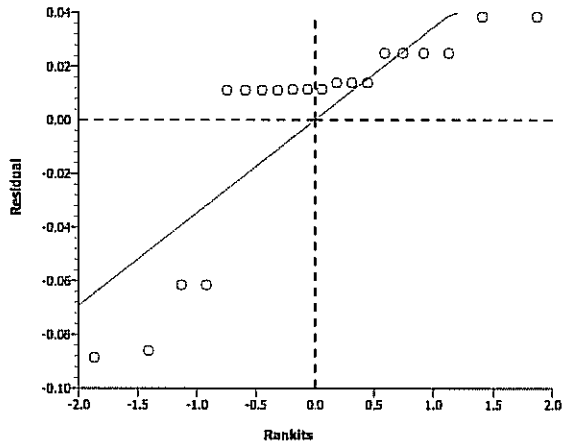
Data Summary

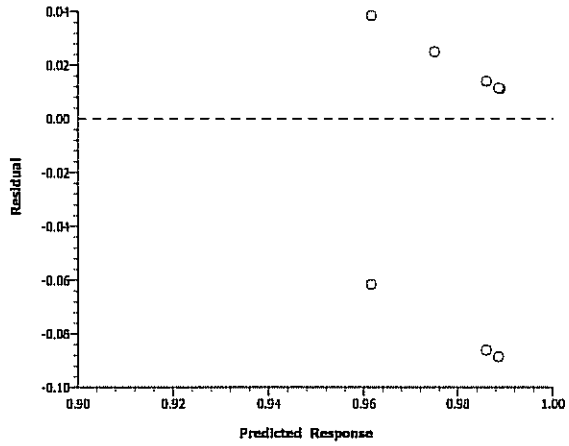
			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
10		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	0.95000	0.90000	1.00000	0.01179	0.05773	38	40

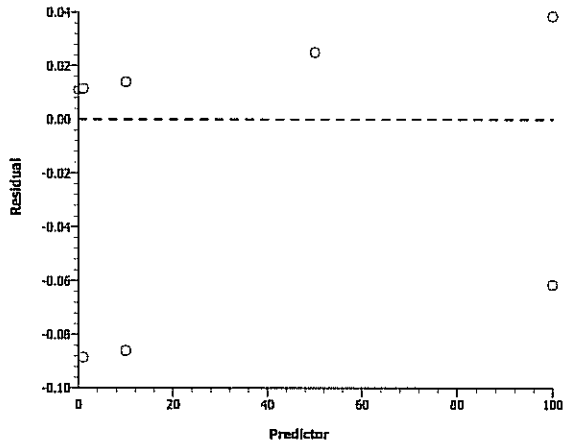
CETIS Analysis Detail

Graphics









CETIS Test Summary

Report Date: 28 Nov-06 9:38 PM
Link: 10-3221-3653

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	04-8326-5026	**Test Type:**	Survival (48h)	**Duration:**	47h
Start Date:	14 Oct-06 04:40 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Daphnia magna
Ending Date:	16 Oct-06 04:06 PM	**Dil Water:**	Reconstituted Water	**Source:**	In-House Culture
Setup Date:	14 Oct-06 04:40 PM	**Brine:**	Not Applicable		

Sample No:	11-3575-5529	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	13 Oct-06 01:20 PM	**Code:**	15161-014	**Project:**	Ecological Risk Assessment
Receive Date:	14 Oct-06 01:30 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	27h	**Station:**	ECOAL LKE (-1); 15061-014		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
10-9280-6630	48h Proportion Survived	100	> 100	N/A	4.75%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
03-0006-1112	48h Proportion Survived	50	4336.08000	1059.94100	17835.99000	Nonlinear Regression

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
03-0006-1112	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria
10-9280-6630	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	0.90000	1.00000

CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	10-3221-3653	10-3221-3653	28 Nov-06 9:38 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	4.75%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.00000	4.89321	0.43800	Equal Variances
Distribution	Shapiro-Wilk W	0.50890	0.86826	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0053119	0.001328	4	1.00	0.43800	Non-Significant Effect
Error	0.0199195	0.001328	15			
Total	0.02523136	0.0026559	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	1	Non-Significant Effect
		50	18	10	> 0.0500	1	Non-Significant Effect
		100	16	10	> 0.0500	1	Non-Significant Effect

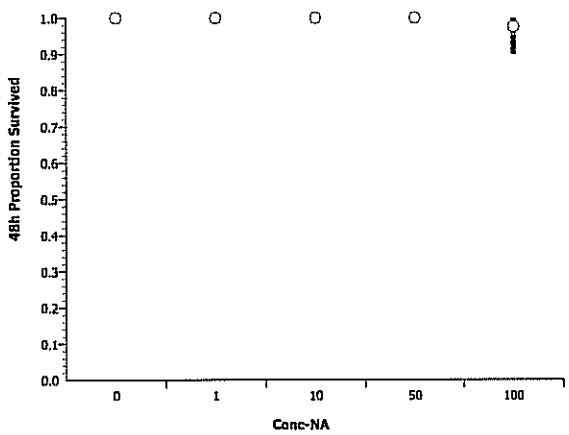
Data Summary

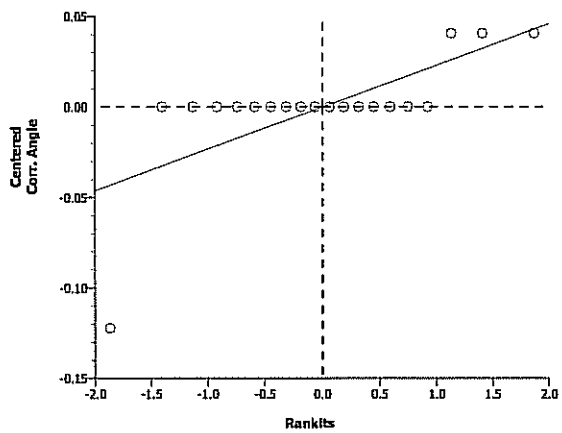
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		1.00000	1.00000	0.90000	1.00000						

Graphics





CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Nonlinear Regression	10-3221-3653	10-3221-3653	28 Nov-06 9:38 PM	CETISv1.026

Non-Linear Regression Options

X Transform	Y Transform	Model Function	Weighting Function	PTBS Function
None	None	Asymptotic [Y=1/(A+BX)]	No Weight [W = 1]	No Transform [None]

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P Level	Decision(0.05)
A	0.99766	0.00651	0.98398	1.01134	153.257	0.00000	Significant Parameter
B	0.00023	0.00013	-0.00005	0.00051	1.736	0.09960	Not Significant

Regression Summary

Iters	Log Likelihood	Psuedo R2	Opt Threshold	F Statistic	Critical	P Level	Decision(0.01)
3	68.29065	0.16211	No	0.30663	5.41697	0.82021	Non-Significant Lack of Fit

Residual Analysis

Attribute	Method	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.42222	5.29221	0.27302	Equal Variances
Distribution	Shapiro-Wilk W	0.50890	0.86826	0.00000	Non-normal Distribution

Point Estimates

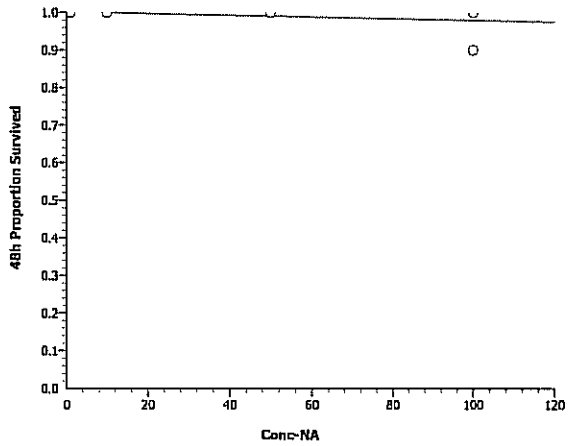
% Effect	Conc-NA	95% LCL	95% UCL
50	4336.08000	1059.94100	17835.99000

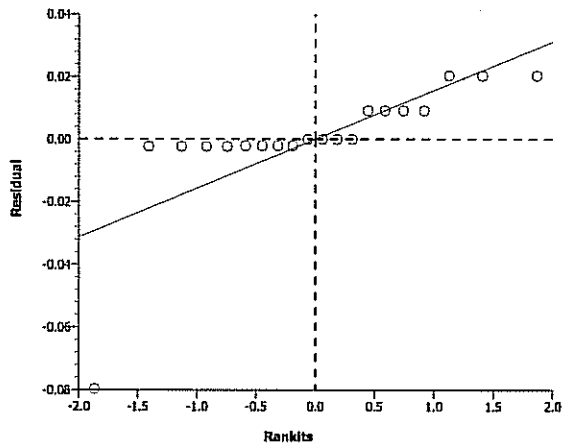
Data Summary

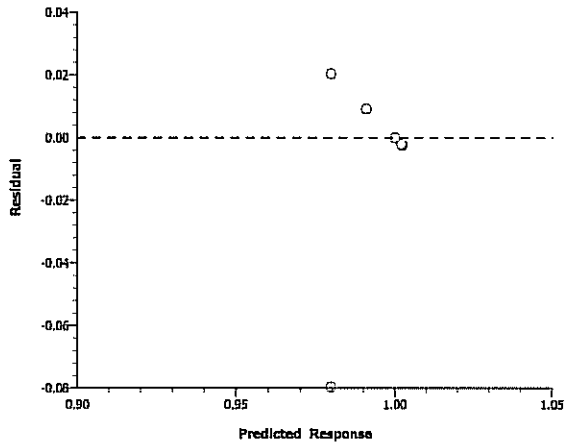
			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40

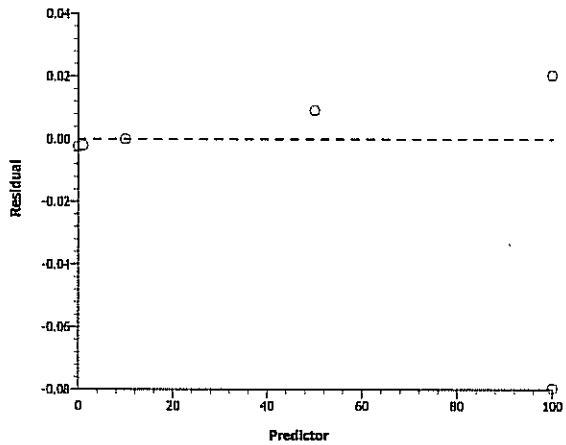
CETIS Analysis Detail

Graphics









CETIS Test Summary

Report Date: 28 Nov-06 9:42 PM
Link: 04-9845-6789

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	04-8326-5026	**Test Type:**	Survival (48h)	**Duration:**	47h
Start Date:	14 Oct-06 04:40 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Daphnia magna
Ending Date:	16 Oct-06 04:06 PM	**Dil Water:**	Reconstituted Water	**Source:**	In-House Culture
Setup Date:	14 Oct-06 04:40 PM	**Brine:**	Not Applicable		

Sample No:	02-6048-4231	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	13 Oct-06 01:25 PM	**Code:**	15061-015	**Project:**	Ecological Risk Assessment
Receive Date:	14 Oct-06 01:30 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	27h	**Station:**	LIME LKE (-1); 15061-015		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
16-0124-9066	48h Proportion Survived	100	> 100	N/A	2.50%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
05-7689-4663	48h Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
05-7689-4663	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria
16-0124-9066	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000

CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	04-9845-6789	04-9845-6789	28 Nov-06 9:42 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	2.50%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	65535.00000	4.89321	0.00000	Unequal Variances

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	4	65535.0	0.00000	Significant Effect
Error	0	0	15			
Total	0	0	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	1	Non-Significant Effect
		50	18	10	> 0.0500	1	Non-Significant Effect
		100	18	10	> 0.0500	1	Non-Significant Effect

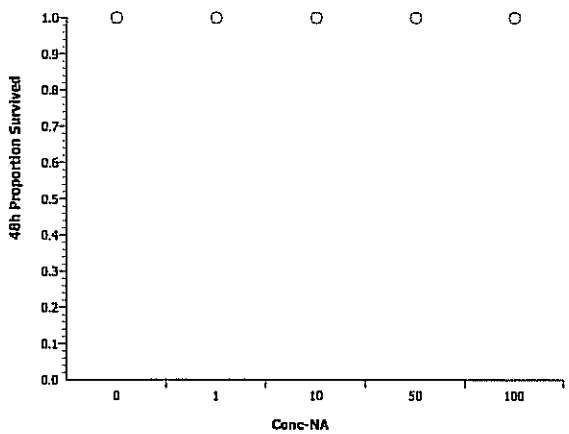
Data Summary

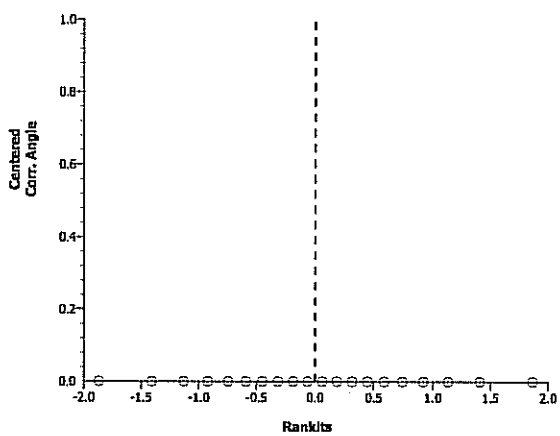
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		1.00000	1.00000	1.00000	1.00000						

Graphics





CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	04-9845-6789	04-9845-6789	28 Nov-06 9:42 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	2895624	200	Yes	Two-Point Interpolation

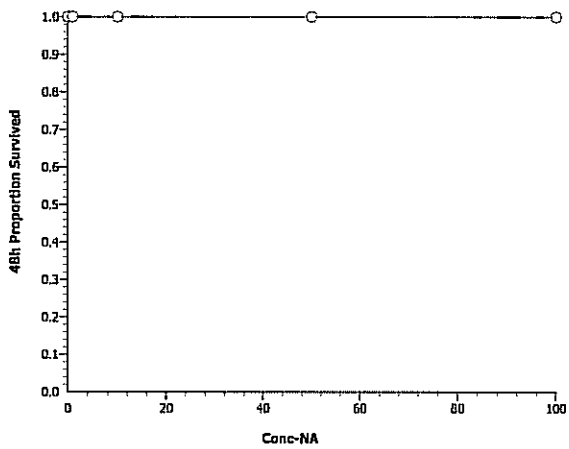
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

Graphics



CETIS Test Summary

Report Date: 28 Nov-06 9:48 PM
Link: 03-3346-2406

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	11-1127-2540	Test Type:	Survival (48h)	Duration:	47h
Start Date:	14 Oct-06 04:50 PM	Protocol:	EPA/821/R-02-012 (2002)	Species:	Daphnia magna
Ending Date:	16 Oct-06 04:15 PM	Dil Water:	Reconstituted Water	Source:	In-House Culture
Setup Date:	14 Oct-06 04:50 PM	Brine:	Not Applicable		

Sample No:	11-1063-6278	Material:	Solid Sample - Sweeping	Client:	CH2M Hill
Sample Date:	13 Oct-06 01:30 PM	Code:	15061-016	Project:	Ecological Risk Assessment
Receive Date:	14 Oct-06 01:30 PM	Source:	Great Lakes Sweepings Characterizati		
Sample Age:	27h	Station:	IRON LKE (-1); 15061-016		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
14-3108-7154	48h Proportion Survived	100	> 100	N/A	2.50%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
12-2680-4749	48h Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
12-2680-4749	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria
14-3108-7154	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000

CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	03-3346-2406	03-3346-2406	28 Nov-06 9:47 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	2.50%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	65535.00000	4.89321	0.00000	Unequal Variances

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	4	65535.0	0.00000	Significant Effect
Error	0	0	15			
Total	0	0	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	1	Non-Significant Effect
		50	18	10	> 0.0500	1	Non-Significant Effect
		100	18	10	> 0.0500	1	Non-Significant Effect

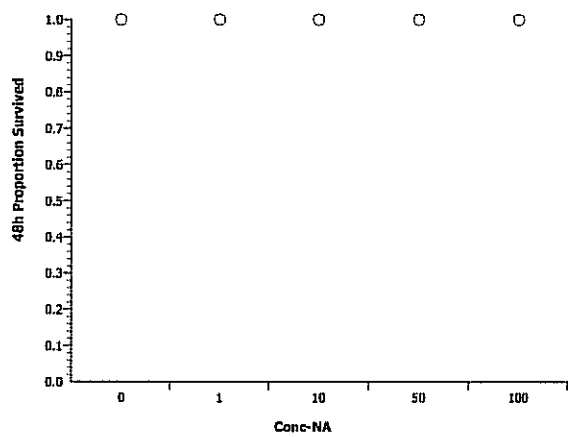
Data Summary

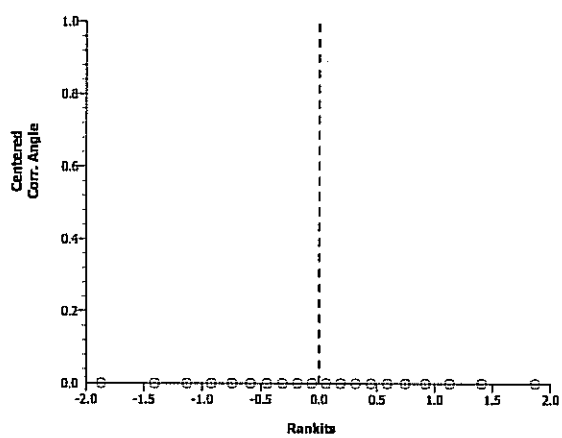
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		1.00000	1.00000	1.00000	1.00000						

Graphics





CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	03-3346-2406	03-3346-2406	28 Nov-06 9:47 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	3019480	200	Yes	Two-Point Interpolation

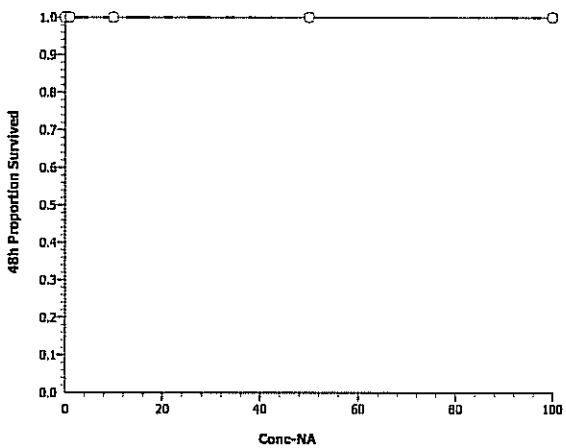
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

Graphics



CETIS Test Summary

Report Date: 28 Nov-06 9:54 PM
Link: 09-4211-3255

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	03-1185-9663	**Test Type:**	Survival (48h)	**Duration:**	50h
Start Date:	21 Oct-06 02:00 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Daphnia magna
Ending Date:	23 Oct-06 03:35 PM	**Dil Water:**	Reconstituted Water	**Source:**	In-House Culture
Setup Date:	21 Oct-06 02:00 PM	**Brine:**	Not Applicable		

Sample No:	07-6309-2563	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	20 Oct-06 11:30 AM	**Code:**	15061-017	**Project:**	Ecological Risk Assessment
Receive Date:	21 Oct-06 01:30 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	27h	**Station:**	WCOAL LKE (-2); 15061-017		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
08-5435-3001	48h Proportion Survived	100	> 100	N/A	2.50%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
00-4860-9811	48h Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
00-4860-9811	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria
08-5435-3001	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000

CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	09-4211-3255	09-4211-3255	28 Nov-06 9:54 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	2.50%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	65535.00000	4.89321	0.00000	Unequal Variances

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	4	65535.0	0.00000	Significant Effect
Error	0	0	15			
Total	0	0	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	1	Non-Significant Effect
		50	18	10	> 0.0500	1	Non-Significant Effect
		100	18	10	> 0.0500	1	Non-Significant Effect

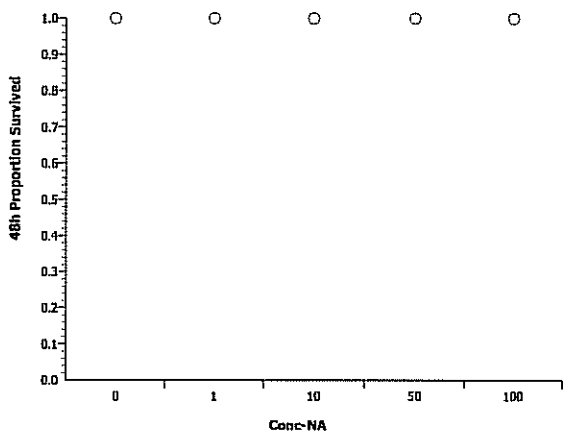
Data Summary

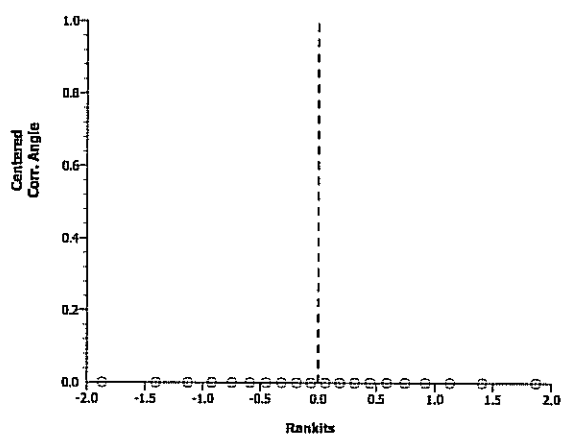
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		1.00000	1.00000	1.00000	1.00000						

Graphics





CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	09-4211-3255	09-4211-3255	28 Nov-06 9:54 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	140176	200	Yes	Two-Point Interpolation

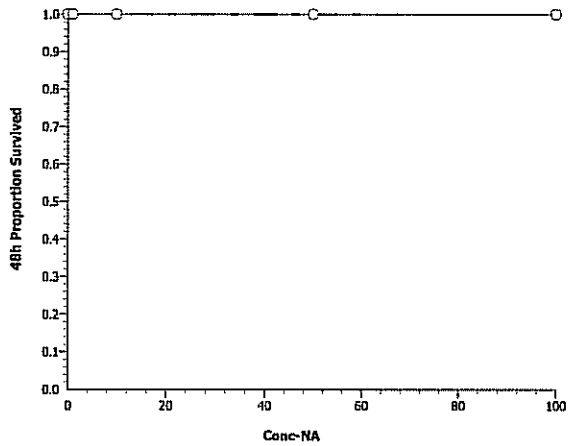
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

Graphics



CETIS Test Summary

Report Date: 28 Nov-06 9:57 PM
Link: 05-0334-4613

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	03-1185-9663	**Test Type:**	Survival (48h)	**Duration:**	50h
Start Date:	21 Oct-06 02:00 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Daphnia magna
Ending Date:	23 Oct-06 03:35 PM	**Dil Water:**	Reconstituted Water	**Source:**	In-House Culture
Setup Date:	21 Oct-06 02:00 PM	**Brine:**	Not Applicable		

Sample No:	04-8288-8374	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	20 Oct-06 11:30 AM	**Code:**	15061-018	**Project:**	Ecological Risk Assessment
Receive Date:	21 Oct-06 01:30 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	27h	**Station:**	ECOAL LKE (-2); 15061-018		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
04-9025-8825	48h Proportion Survived	100	> 100	N/A	2.50%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
10-9557-7774	48h Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
04-9025-8825	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria
10-9557-7774	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000

CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	05-0334-4613	05-0334-4613	28 Nov-06 9:57 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	2.50%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	65535.00000	4.89321	0.00000	Unequal Variances

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	4	65535.0	0.00000	Significant Effect
Error	0	0	15			
Total	0	0	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	1	Non-Significant Effect
		50	18	10	> 0.0500	1	Non-Significant Effect
		100	18	10	> 0.0500	1	Non-Significant Effect

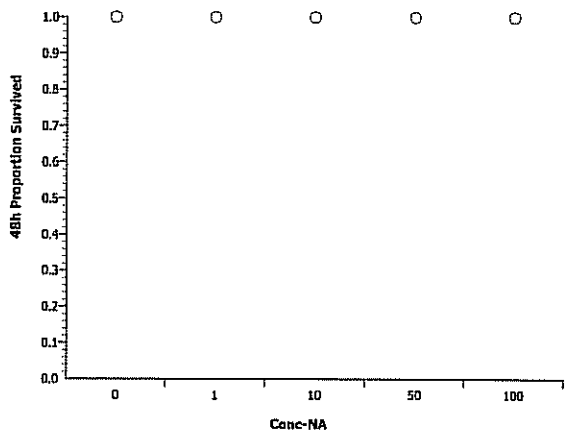
Data Summary

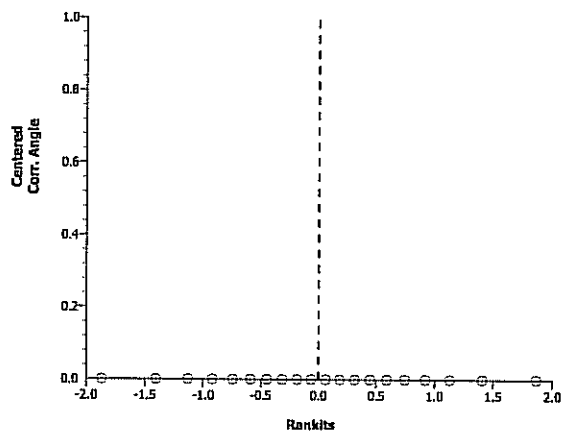
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		1.00000	1.00000	1.00000	1.00000						

Graphics





CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	05-0334-4613	05-0334-4613	28 Nov-06 9:57 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	8144900	200	Yes	Two-Point Interpolation

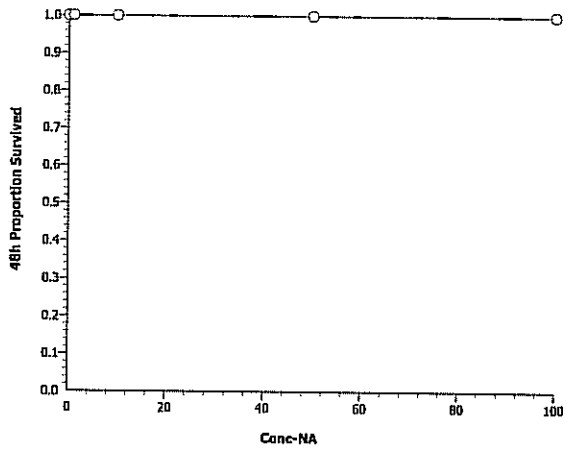
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

Graphics



CETIS Test Summary

Report Date: 28 Nov-06 10:00 PM
Link: 18-1784-0936

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	03-1185-9663	Test Type:	Survival (48h)	Duration:	50h
Start Date:	21 Oct-06 02:00 PM	Protocol:	EPA/821/R-02-012 (2002)	Species:	Daphnia magna
Ending Date:	23 Oct-06 03:35 PM	Dil Water:	Reconstituted Water	Source:	In-House Culture
Setup Date:	21 Oct-06 02:00 PM	Brine:	Not Applicable		

Sample No:	08-4171-7832	Material:	Solid Sample - Sweeping	Client:	CH2M Hill
Sample Date:	20 Oct-06 11:30 AM	Code:	15061-019	Project:	Ecological Risk Assessment
Receive Date:	21 Oct-06 01:30 PM	Source:	Great Lakes Sweepings Characterizati		
Sample Age:	27h	Station:	LIME LKE (-2); 15061-019		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
05-8799-0337	48h Proportion Survived	100	> 100	N/A	2.50%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
10-8552-9503	48h Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
05-8799-0337	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria
10-8552-9503	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000

CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	18-1784-0936	18-1784-0936	28 Nov-06 9:59 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	2.50%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	65535.00000	4.89321	0.00000	Unequal Variances

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	4	65535.0	0.00000	Significant Effect
Error	0	0	15			
Total	0	0	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	1	Non-Significant Effect
		50	18	10	> 0.0500	1	Non-Significant Effect
		100	18	10	> 0.0500	1	Non-Significant Effect

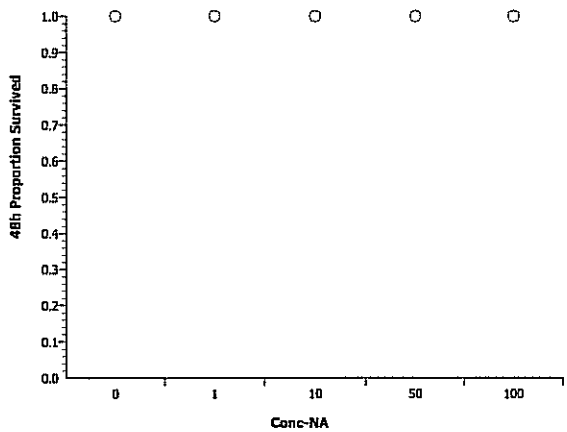
Data Summary

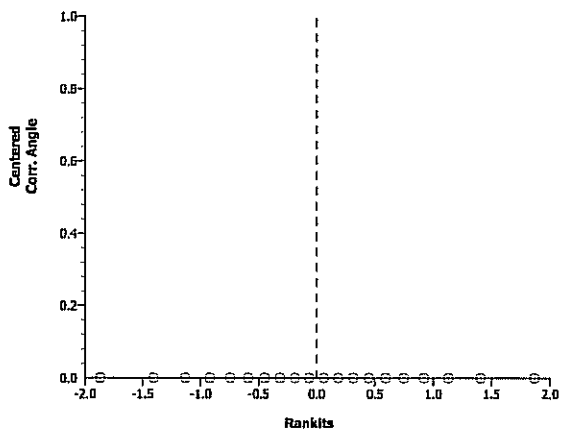
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		1.00000	1.00000	1.00000	1.00000						

Graphics





CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	18-1784-0936	18-1784-0936	28 Nov-06 10:00 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	453527	200	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

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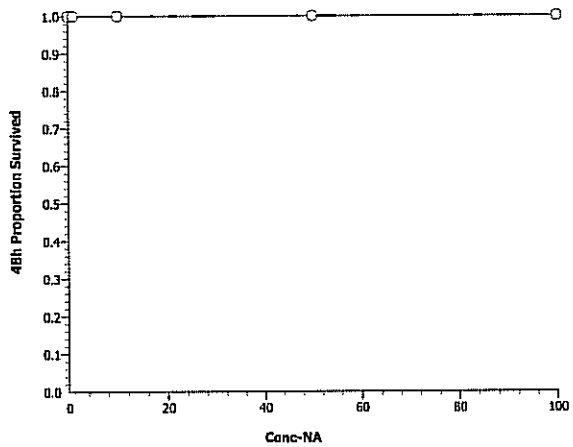


CETIS Test Summary

Report Date: 28 Nov-06 10:04 PM
Link: 09-1314-6132

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	03-1185-9663	**Test Type:**	Survival (48h)	**Duration:**	50h
Start Date:	21 Oct-06 02:00 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Daphnia magna
Ending Date:	23 Oct-06 03:35 PM	**Dil Water:**	Reconstituted Water	**Source:**	In-House Culture
Setup Date:	21 Oct-06 02:00 PM	**Brine:**	Not Applicable		

Sample No:	11-9695-5160	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	20 Oct-06 11:30 AM	**Code:**	15061-020	**Project:**	Ecological Risk Assessment
Receive Date:	21 Oct-06 10:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	27h	**Station:**	IRON LKE (-2); 15061-020		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
05-8248-6278	48h Proportion Survived	100	> 100	N/A	5.87%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
08-6177-9982	48h Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
05-8248-6278	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria
08-6177-9982	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	0.92500	0.90000	1.00000	0.02500	0.05000	5.41%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		0.90000	0.90000	0.90000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	0.90000

CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	09-1314-6132	09-1314-6132	28 Nov-06 10:04 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	5.87%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	0.75000	4.89321	0.57322	Equal Variances
Distribution	Shapiro-Wilk W	0.81129	0.86826	0.00083	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0451509	0.0112877	4	4.25	0.01697	Significant Effect
Error	0.039839	0.0026559	15			
Total	0.08498986	0.0139436	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	12	10	> 0.0500	2	Non-Significant Effect
		50	18	10	> 0.0500	1	Non-Significant Effect
		100	16	10	> 0.0500	1	Non-Significant Effect

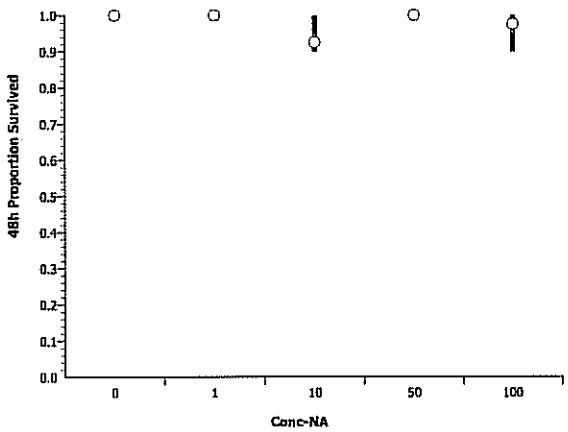
Data Summary

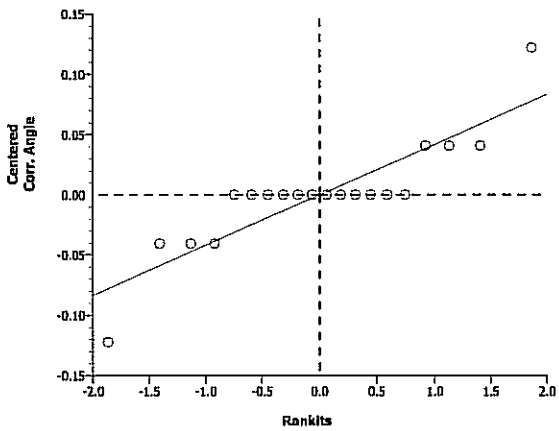
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	0.92500	0.90000	1.00000	0.05000	1.28979	1.24905	1.41202	0.08149
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		0.90000	0.90000	0.90000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		1.00000	1.00000	1.00000	0.90000						

Graphics





CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	09-1314-6132	09-1314-6132	28 Nov-06 10:04 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	4140326	200	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	0.92500	0.90000	1.00000	0.01021	0.05000	37	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40

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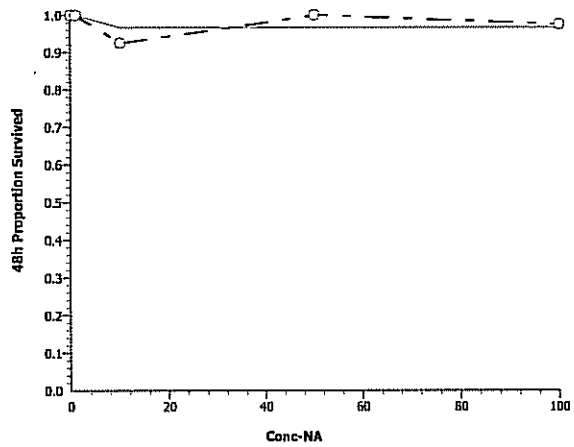

CETIS Test Summary

Report Date: 28 Nov-06 10:12 PM
Link: 08-7697-5227

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	08-7708-9425	**Test Type:**	Survival (48h)	**Duration:**	47h
Start Date:	30 Oct-06 02:40 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Daphnia magna
Ending Date:	01 Nov-06 01:50 PM	**Dil Water:**	Reconstituted Water	**Source:**	In-House Culture
Setup Date:	30 Oct-06 02:40 PM	**Brine:**	Not Applicable		

Sample No:	11-1161-6791	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	27 Oct-06 07:00 AM	**Code:**	15061-049	**Project:**	Ecological Risk Assessment
Receive Date:	30 Oct-06 12:00 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	80h	**Station:**	CLELV2-DS-1; 15061-049		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
02-4466-2926	24h Proportion Survived	50	100	70.711	15.55%	Steel's Many-One Rank
08-8134-8028	48h Proportion Survived	50	100	70.711	11.28%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
13-1347-7230	24h Proportion Survived	50	80.79330	72.42458	90.12905	Trimmed Spearman-Karber
02-5215-0380	48h Proportion Survived	50	66.58251	59.28696	74.77581	Trimmed Spearman-Karber

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
02-5215-0380	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria
08-8134-8028	48h Proportion Survived	Control Response	1	0.9 - N/A	Passes acceptability criteria

24h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
10		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
50		4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%
100		4	0.30000	0.10000	0.70000	0.13540	0.27080	90.27%

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	0.95000	0.80000	1.00000	0.05000	0.10000	10.53%
10		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
50		4	0.92500	0.80000	1.00000	0.04787	0.09574	10.35%
100		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

24h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	0.90000	1.00000	1.00000
10		1.00000	1.00000	1.00000	0.90000
50		1.00000	1.00000	0.90000	0.90000
100		0.20000	0.10000	0.70000	0.20000

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	0.80000	1.00000	1.00000
10		1.00000	1.00000	1.00000	0.90000
50		1.00000	1.00000	0.90000	0.80000
100		0.00000	0.00000	0.00000	0.00000

CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
24h Proportion Survived	Comparison	08-7697-5227	08-7697-5227	28 Nov-06 10:11 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		50	100	2.00	70.711	15.55%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.07048	4.89321	0.40536	Equal Variances
Distribution	Shapiro-Wilk W	0.82401	0.86826	0.00145	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	2.119144	0.5297861	4	24.26	0.00000	Significant Effect
Error	0.3276247	0.0218417	15			
Total	2.44676888	0.5516277	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	16	10	> 0.0500	1	Non-Significant Effect
		10	16	10	> 0.0500	1	Non-Significant Effect
		50	14	10	> 0.0500	2	Non-Significant Effect
		100	10	10	<= 0.0500	2	Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
10		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
50		4	0.95000	0.90000	1.00000	0.05773	1.33053	1.24905	1.41202	0.09409
100		4	0.30000	0.10000	0.70000	0.27080	0.56005	0.32175	0.99116	0.29509

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	0.90000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	0.90000						
50		1.00000	1.00000	0.90000	0.90000						
100		0.20000	0.10000	0.70000	0.20000						

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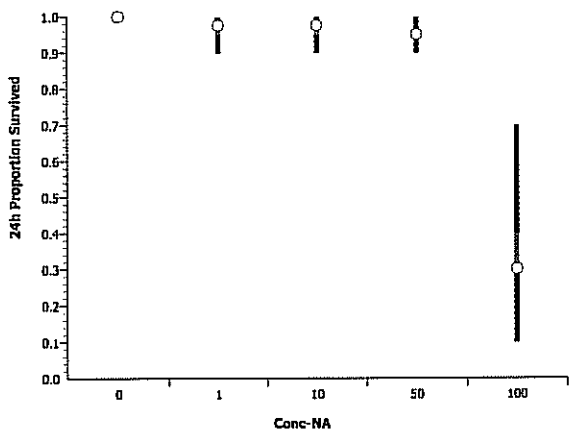
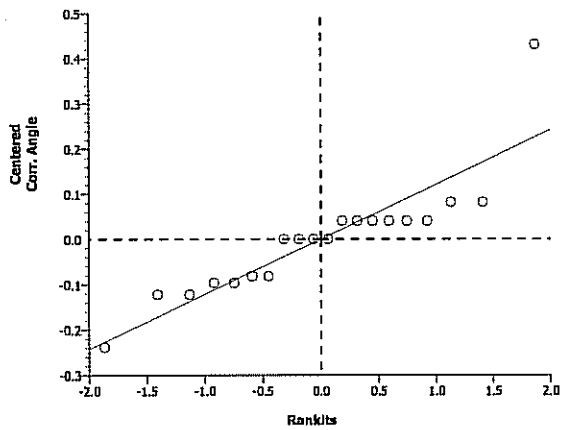




CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	08-7697-5227	08-7697-5227	28 Nov-06 10:11 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		50	100	2.00	70.711	11.28%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.14108	5.95254	0.37197	Equal Variances
Distribution	Shapiro-Wilk W	0.87278	0.84420	0.02919	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0298759	0.0099586	3	0.77	0.53063	Non-Significant Effect
Error	0.154413	0.0128678	12			
Total	0.18428888	0.0228264	15			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	MSD	Decision(0.05)
Lab Water		1	0.9502	2.29	> 0.0500	0.18368	Non-Significant Effect
		10	0.50794	2.29	> 0.0500	0.18368	Non-Significant Effect
		50	1.45814	2.29	> 0.0500	0.18368	Non-Significant Effect

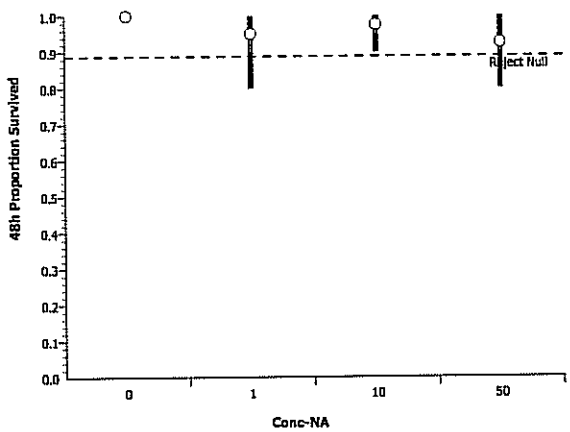
Data Summary

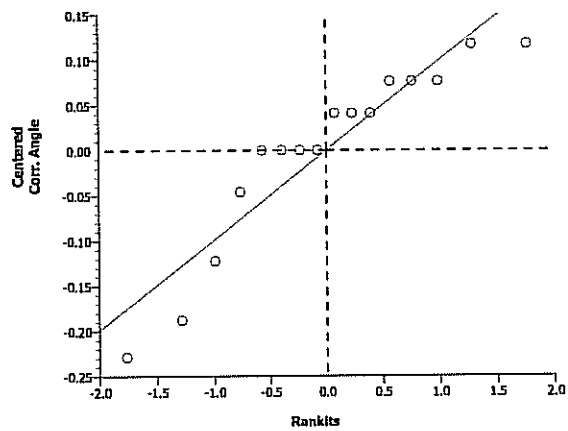
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	0.95000	0.80000	1.00000	0.10000	1.33580	1.10715	1.41202	0.15243
10		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
50		4	0.92500	0.80000	1.00000	0.09574	1.29506	1.10715	1.41202	0.14695

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	0.80000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	0.90000						
50		1.00000	1.00000	0.90000	0.80000						

Graphics





CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Trimmed Spearman-Karber	08-7697-5227	08-7697-5227	28 Nov-06 10:11 PM	CETISv1.026

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim Level	Mu	Sigma
Control Threshold	0	3.75%	1.82336	0.02520048

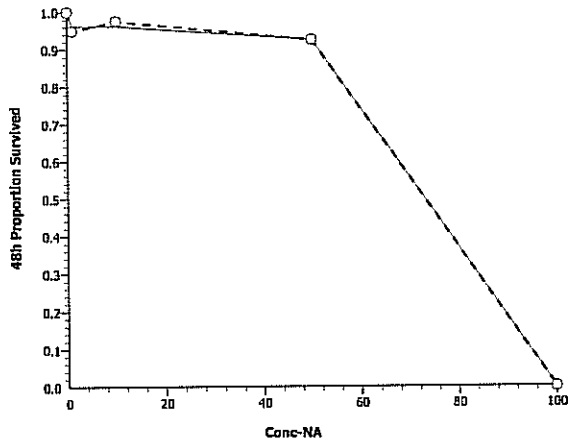
Point Estimates

EC50/LC50	95% LCL	95% UCL
66.58251	59.28696	74.77581

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	0.95000	0.80000	1.00000	0.02041	0.10000	38	40
10		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
50		4	0.92500	0.80000	1.00000	0.01954	0.09574	37	40
100		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40

Graphics



CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
24h Proportion Survived	Trimmed Spearman-Karber	08-7697-5227	08-7697-5227	28 Nov-06 10:11 PM	CETISv1.026

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim Level	Mu	Sigma
Control Threshold	0	30.00%	1.907375	0.02374471

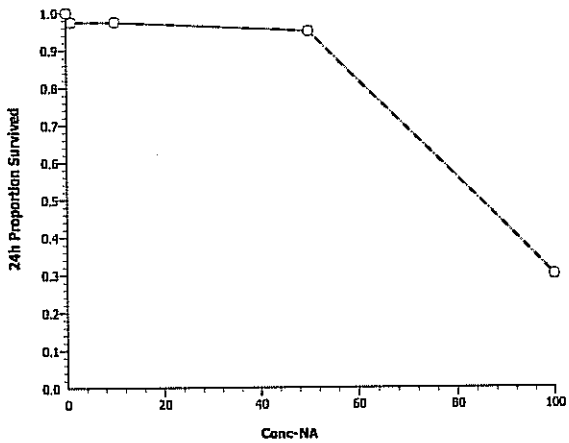
Point Estimates

EC50/LC50	95% LCL	95% UCL
80.79330	72.42458	90.12905

Data Summary

Conc-NA	Control Type	Count	Calculated Variate(A/B) Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
10		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
50		4	0.95000	0.90000	1.00000	0.01179	0.05773	38	40
100		4	0.30000	0.10000	0.70000	0.05528	0.27080	12	40

Graphics



CETIS Test Summary

Report Date: 28 Nov-06 9:09 PM
Link: 07-1007-0104

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	06-5262-9100	Test Type:	Survival (48h)	Duration:	47h
Start Date:	03 Oct-06 04:10 PM	Protocol:	EPA/821/R-02-012 (2002)	Species:	Pimephales promelas
Ending Date:	05 Oct-06 03:38 PM	Dil Water:	Reconstituted Water	Source:	ARO - Aquatic Research Organisms, N
Setup Date:	03 Oct-06 04:10 PM	Brine:	Not Applicable		

Sample No:	07-5432-2197	Material:	Solid Sample - Sweeping	Client:	CH2M Hill
Sample Date:	01 Oct-06 02:40 PM	Code:	15061-002	Project:	Ecological Risk Assessment
Receive Date:	03 Oct-06 11:30 AM	Source:	Great Lakes Sweepings Characterizati		
Sample Age:	50h	Station:	DLHTV1-LS-1; 15061-002		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
13-2769-7357	24h Proportion Survived	10	50	22.361	10.85%	Steel's Many-One Rank
07-0164-8305	48h Proportion Survived	10	50	22.361	10.85%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
16-3126-8876	24h Proportion Survived	50	18.38808	15.27381	22.13735	Trimmed Spearman-Karber
21-2394-2655	48h Proportion Survived	50	18.38808	15.27381	22.13735	Trimmed Spearman-Karber

24h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	0.90000	0.70000	1.00000	0.07071	0.14142	15.71%
50		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%
100		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	0.90000	0.70000	1.00000	0.07071	0.14142	15.71%
50		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%
100		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

24h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	0.70000	1.00000	0.90000
50		0.00000	0.00000	0.00000	0.00000
100		0.00000	0.00000	0.00000	0.00000

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	0.70000	1.00000	0.90000
50		0.00000	0.00000	0.00000	0.00000
100		0.00000	0.00000	0.00000	0.00000

CETIS Test Summary

Report Date: 28 Nov-06 9:12 PM
Link: 08-4824-3246

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	15-5120-5087	**Test Type:**	Survival (48h)	**Duration:**	46h
Start Date:	05 Oct-06 03:00 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	07 Oct-06 01:20 PM	**Dil Water:**	Reconstituted Water	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	05 Oct-06 03:00 PM	**Brine:**	Not Applicable		

Sample No:	10-0220-8253	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	03 Oct-06 12:00 PM	**Code:**	15061-003	**Project:**	Ecological Risk Assessment
Receive Date:	05 Oct-06 10:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	51h	**Station:**	DHLCV1-LS-1; 15061-003		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
19-6201-7595	48h Proportion Survived	100	> 100	N/A	8.98%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
08-3245-2675	48h Proportion Survived	50	3669.32000	N/A	-29517.65000	Nonlinear Regression

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	0.95000	0.80000	1.00000	0.05000	0.10000	10.53%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	0.90000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		0.90000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		0.80000	1.00000	1.00000	1.00000

CETIS Test Summary

Report Date: 28 Nov-06 9:19 PM
Link: 04-8307-9012

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	16-9632-4607	**Test Type:**	Survival (48h)	**Duration:**	48h
Start Date:	09 Oct-06 02:00 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	11 Oct-06 02:00 PM	**Dil Water:**	Reconstituted Water	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Oct-06 02:00 PM	**Brine:**	Not Applicable		

Sample No:	02-0786-4811	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	04 Oct-06 11:00 PM	**Code:**	15061-006	**Project:**	Ecological Risk Assessment
Receive Date:	09 Oct-06 09:45 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	4d 15h	**Station:**	DLHCV2-LS-1; 15061-006		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
02-1382-6145	48h Proportion Survived	100	>100	N/A	8.84%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
15-3882-1830	48h Proportion Survived	50	1268.45100	434.07840	3776.46000	Nonlinear Regression

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
1		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
100		4	0.90000	0.80000	1.00000	0.04082	0.08165	9.07%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	0.90000	1.00000	1.00000
1		1.00000	0.90000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	0.90000	1.00000
100		0.90000	0.80000	0.90000	1.00000

CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	04-8307-9012	04-8307-9012	28 Nov-06 9:18 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	8.84%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	0.52505	4.89321	0.71901	Equal Variances
Distribution	Shapiro-Wilk W	0.82193	0.86826	0.00132	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0567107	0.0141777	4	2.00	0.14627	Non-Significant Effect
Error	0.1063416	0.0070894	15			
Total	0.16305224	0.0212671	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	2	Non-Significant Effect
		10	20	10	> 0.0500	1	Non-Significant Effect
		50	18	10	> 0.0500	2	Non-Significant Effect
		100	13.5	10	> 0.0500	2	Non-Significant Effect

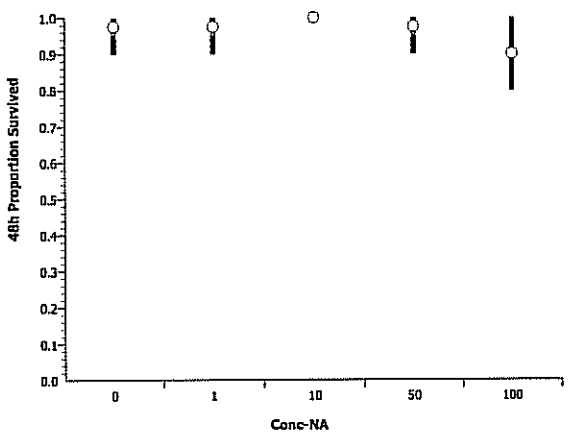
Data Summary

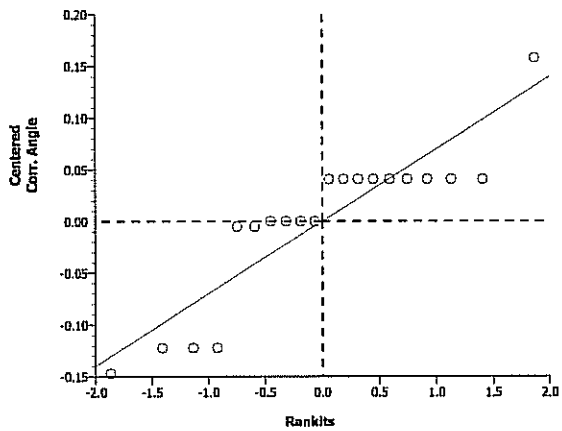
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
1		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
100		4	0.90000	0.80000	1.00000	0.08165	1.25431	1.10715	1.41202	0.12461

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	0.90000	1.00000	1.00000						
1		1.00000	0.90000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	0.90000	1.00000						
100		0.90000	0.80000	0.90000	1.00000						

Graphics





CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Nonlinear Regression	04-8307-9012	04-8307-9012	28 Nov-06 9:19 PM	CETISv1.026

Non-Linear Regression Options

X Transform	Y Transform	Model Function	Weighting Function	PTBS Function
None	None	Asymptotic [Y=1/(A+BX)]	No Weight [W = 1]	No Transform [None]

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P Level	Decision(0.05)
A	1.01078	0.01604	0.97708	1.04448	63.014	0.00000	Significant Parameter
B	0.00082	0.00035	0.00008	0.00156	2.343	0.03083	Significant Parameter

Regression Summary

Iters	Log Likelihood	Psuedo R2	Opt Threshold	F Statistic	Critical	P Level	Decision(0.01)
3	50.17756	0.25645	No	0.72971	5.41697	0.55011	Non-Significant Lack of Fit

Residual Analysis

Attribute	Method	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	0.82051	5.29221	0.50141	Equal Variances
Distribution	Shapiro-Wilk W	0.81889	0.86826	0.00116	Non-normal Distribution

Point Estimates

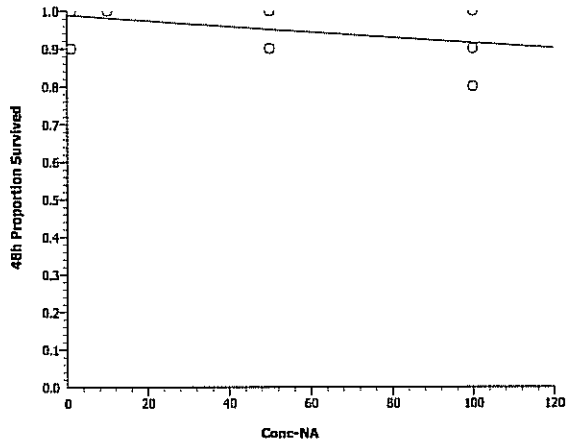
% Effect	Conc-NA	95% LCL	95% UCL
50	1268.45100	434.07840	3776.46000

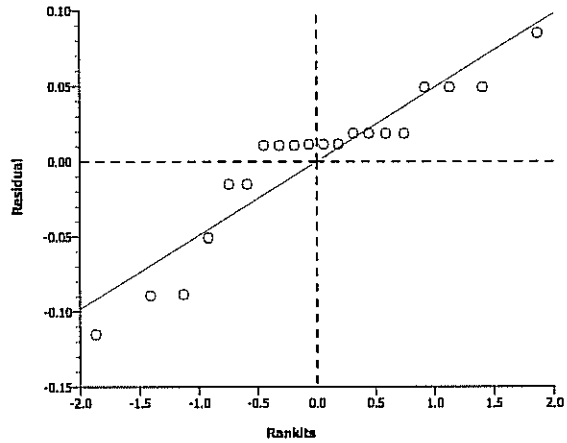
Data Summary

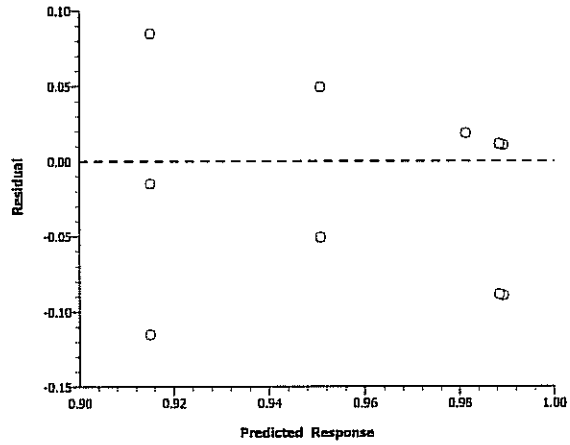
			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
1		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
100		4	0.90000	0.80000	1.00000	0.01667	0.08165	36	40

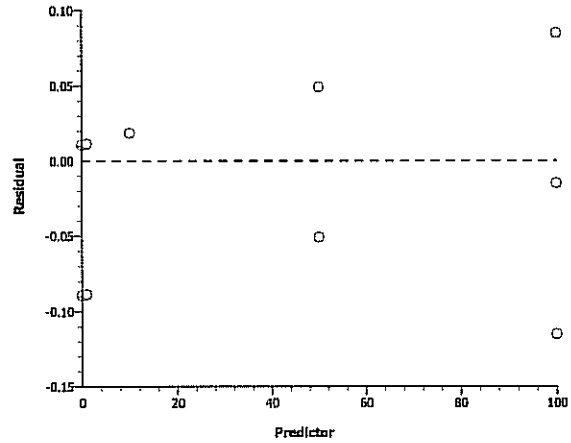
CETIS Analysis Detail

Graphics









CETIS Test Summary

Report Date: 28 Nov-06 9:26 PM
Link: 13-5974-3908

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	16-9632-4607	**Test Type:**	Survival (48h)	**Duration:**	48h
Start Date:	09 Oct-06 02:00 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	11 Oct-06 02:00 PM	**Dil Water:**	Reconstituted Water	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Oct-06 02:00 PM	**Brine:**	Not Applicable		

Sample No:	15-5238-1836	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	03 Oct-06 01:00 PM	**Code:**	15061-009	**Project:**	Ecological Risk Assessment
Receive Date:	07 Oct-06 01:30 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	6d 1h	**Station:**	DLHTV2-LS-1; 15061-009		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
15-3539-6203	48h Proportion Survived	100	> 100	N/A	2.50%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
13-1023-8422	48h Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000

CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	13-5974-3908	13-5974-3908	28 Nov-06 9:25 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	2.50%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	65535.00000	4.89321	0.00000	Unequal Variances

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	4	65535.0	0.00000	Significant Effect
Error	0	0	15			
Total	0	0	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	1	Non-Significant Effect
		50	18	10	> 0.0500	1	Non-Significant Effect
		100	18	10	> 0.0500	1	Non-Significant Effect

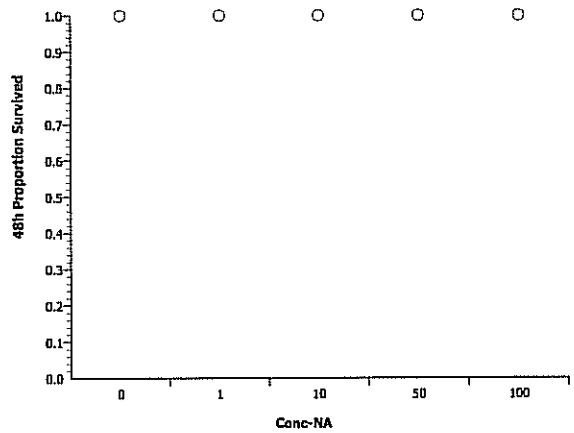
Data Summary

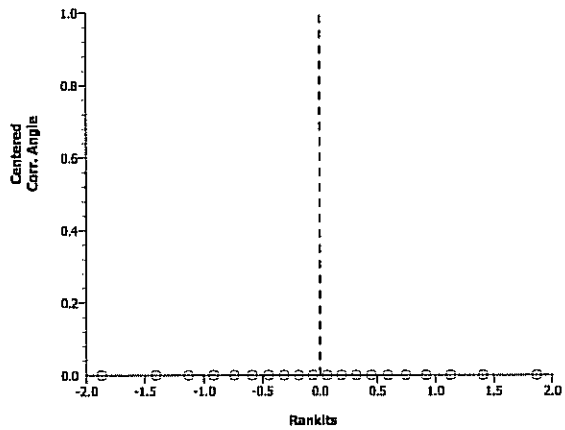
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		1.00000	1.00000	1.00000	1.00000						

Graphics





CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	13-5974-3908	13-5974-3908	28 Nov-06 9:26 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7055475	200	Yes	Two-Point Interpolation

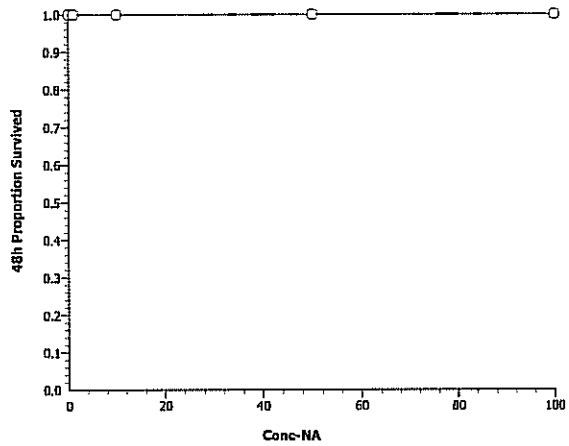
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

Graphics



CETIS Test Summary

Report Date: 28 Nov-06 9:30 PM
Link: 10-2320-2327

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Test No:	08-0613-7915	**Test Type:**	Survival (48h)	**Duration:**	46h
Start Date:	11 Oct-06 04:00 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	13 Oct-06 02:30 PM	**Dil Water:**	Reconstituted Water	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	11 Oct-06 04:00 PM	**Brine:**	Not Applicable		

Sample No:	01-2727-2781	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	10 Oct-06 07:00 AM	**Code:**	15061-012	**Project:**	Ecological Risk Assessment
Receive Date:	09 Oct-06 09:45 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	33h	**Station:**	CLELV1-LS-1; 15061-012		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
08-7172-9371	48h Proportion Survived	100	> 100	N/A	2.50%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
07-0064-8691	48h Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000

CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	10-2320-2327	10-2320-2327	28 Nov-06 9:30 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	2.50%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	65535.00000	4.89321	0.00000	Unequal Variances

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	4	65535.0	0.00000	Significant Effect
Error	0	0	15			
Total	0	0	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	1	Non-Significant Effect
		50	18	10	> 0.0500	1	Non-Significant Effect
		100	18	10	> 0.0500	1	Non-Significant Effect

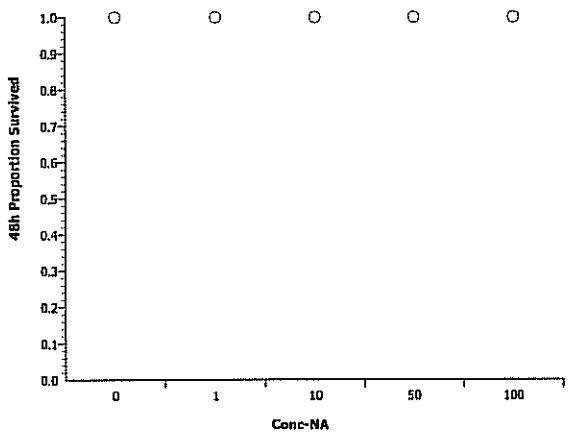
Data Summary

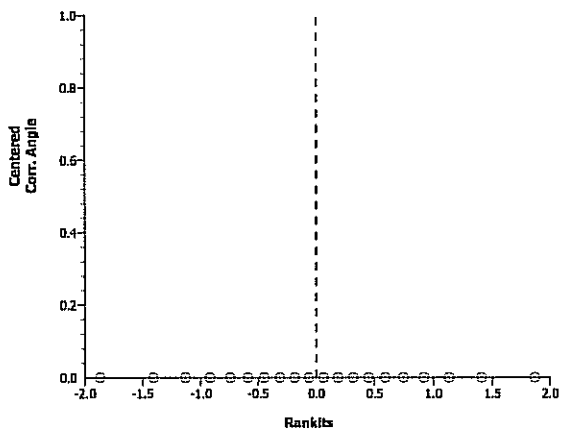
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		1.00000	1.00000	1.00000	1.00000						

Graphics





CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	10-2320-2327	10-2320-2327	28 Nov-06 9:30 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	5795186	200	Yes	Two-Point Interpolation

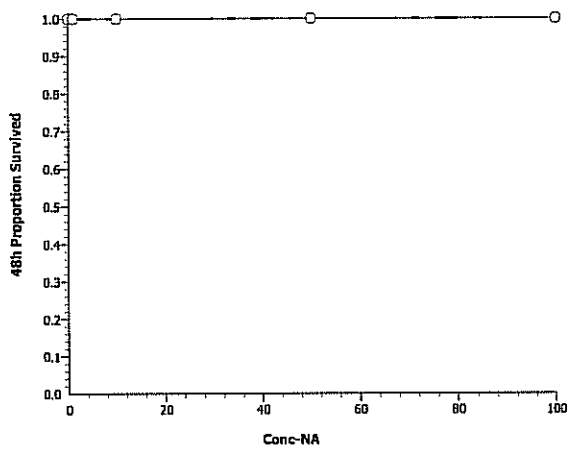
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

Graphics



CETIS Test Summary

Report Date: 28 Nov-06 9:36 PM
Link: 13-8276-0426

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Test No:	10-7542-2232	**Test Type:**	Survival (48h)	**Duration:**	48h
Start Date:	14 Oct-06 04:00 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	16 Oct-06 04:00 PM	**Dil Water:**	Reconstituted Water	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	14 Oct-06 04:00 PM	**Brine:**	Not Applicable		

Sample No:	12-1798-1035	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	13 Oct-06 01:15 PM	**Code:**	15061-013	**Project:**	Ecological Risk Assessment
Receive Date:	14 Oct-06 01:30 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	27h	**Station:**	WCOAL LKE (-1); 15061-013		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
10-8384-0025	48h Proportion Survived	100	> 100	N/A	10.20%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
16-2444-2357	48h Proportion Survived	50	1422.46400	309.02590	6466.47400	Nonlinear Regression

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
1		4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%
10		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
50		4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%
100		4	0.90000	0.80000	1.00000	0.04082	0.08165	9.07%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	0.90000	1.00000	1.00000	1.00000
1		0.90000	0.90000	1.00000	1.00000
10		1.00000	0.90000	1.00000	1.00000
50		0.90000	1.00000	1.00000	0.90000
100		0.90000	1.00000	0.90000	0.80000

CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	13-8276-0426	13-8276-0426	28 Nov-06 9:36 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		100	>100	1.00	N/A	10.20%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	0.69140	13.27671	0.95239	Equal Variances
Distribution	Shapiro-Wilk W	0.91511	0.86826	0.07993	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0364935	0.0091234	4	0.98	0.44734	Non-Significant Effect
Error	0.1395407	0.0093027	15			
Total	0.17603424	0.0184261	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	MSD	Decision(0.05)
Lab Water		1	0.59739	2.36	> 0.0500	0.16095	Non-Significant Effect
		10	0	2.36	> 0.0500	0.16095	Non-Significant Effect
		50	0.59739	2.36	> 0.0500	0.16095	Non-Significant Effect
		100	1.71493	2.36	> 0.0500	0.16095	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
1		4	0.95000	0.90000	1.00000	0.05773	1.33053	1.24905	1.41202	0.09409
10		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
50		4	0.95000	0.90000	1.00000	0.05773	1.33053	1.24905	1.41202	0.09409
100		4	0.90000	0.80000	1.00000	0.08165	1.25431	1.10715	1.41202	0.12461

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	0.90000	1.00000	1.00000	1.00000						
1		0.90000	0.90000	1.00000	1.00000						
10		1.00000	0.90000	1.00000	1.00000						
50		0.90000	1.00000	1.00000	0.90000						
100		0.90000	1.00000	0.90000	0.80000						

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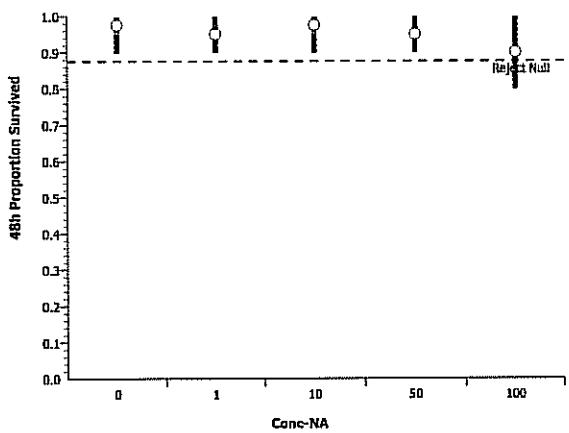
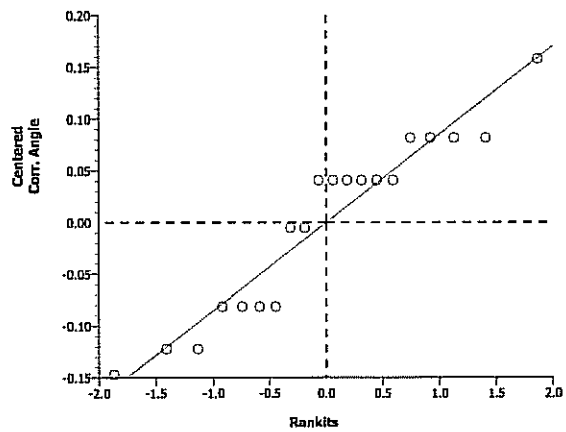




CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Nonlinear Regression	13-8276-0426	13-8276-0426	28 Nov-06 9:36 PM	CETISv1.026

Non-Linear Regression Options

X Transform	Y Transform	Model Function	Weighting Function	PTBS Function
None	None	Asymptotic [Y=1/(A+BX)]	No Weight [W = 1]	No Transform [None]

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P Level	Decision(0.05)
A	1.03022	0.01893	0.99046	1.06999	54.435	0.00000	Significant Parameter
B	0.00072	0.00041	-0.00014	0.00157	1.760	0.09541	Not Significant

Regression Summary

Iters	Log Likelihood	Psuedo R2	Opt Threshold	F Statistic	Critical	P Level	Decision(0.01)
3	48.43726	0.17199	No	0.26914	5.41697	0.84664	Non-Significant Lack of Fit

Residual Analysis

Attribute	Method	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	0.64000	5.29221	0.60026	Equal Variances
Distribution	Shapiro-Wilk W	0.92066	0.86826	0.10220	Normal Distribution

Point Estimates

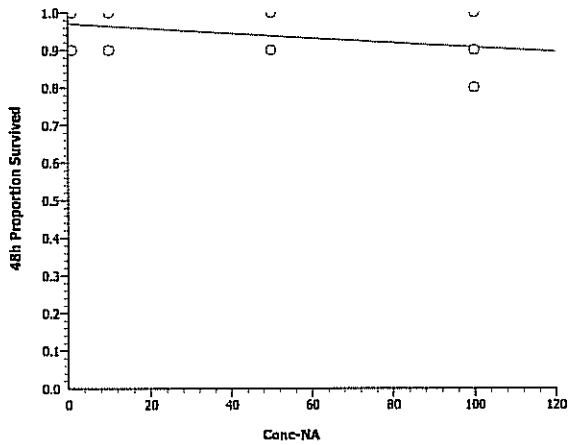
% Effect	Conc-NA	95% LCL	95% UCL
50	1422.46400	309.02590	6466.47400

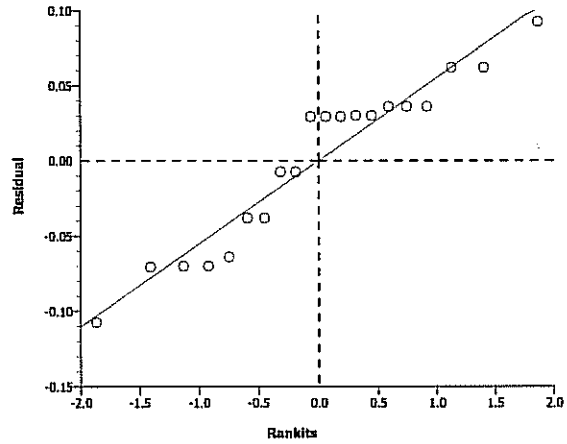
Data Summary

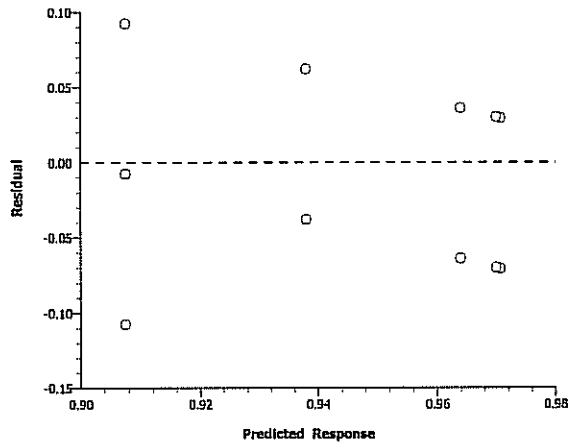
			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
1		4	0.95000	0.90000	1.00000	0.01179	0.05773	38	40
10		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
50		4	0.95000	0.90000	1.00000	0.01179	0.05773	38	40
100		4	0.90000	0.80000	1.00000	0.01667	0.08165	36	40

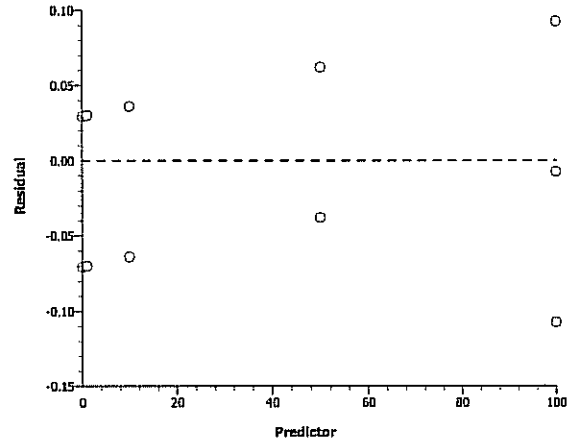
CETIS Analysis Detail

Graphics









CETIS Test Summary

Report Date: 28 Nov-06 9:40 PM
Link: 19-8121-6924

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	10-7542-2232	**Test Type:**	Survival (48h)	**Duration:**	48h
Start Date:	14 Oct-06 04:00 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	16 Oct-06 04:00 PM	**Dil Water:**	Reconstituted Water	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	14 Oct-06 04:00 PM	**Brine:**	Not Applicable		

Sample No:	11-3575-5529	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	13 Oct-06 01:20 PM	**Code:**	15161-014	**Project:**	Ecological Risk Assessment
Receive Date:	14 Oct-06 01:30 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	27h	**Station:**	ECOAL LKE (-1); 15061-014		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
14-4900-9937	48h Proportion Survived	100	> 100	N/A	5.57%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
10-6411-7094	48h Proportion Survived	50	8589.56300	N/A	-33791.99000	Nonlinear Regression

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	0.90000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	0.90000	1.00000

CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	19-8121-6924	19-8121-6924	28 Nov-06 9:40 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	5.57%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	0.75000	4.89321	0.57322	Equal Variances
Distribution	Shapiro-Wilk W	0.64846	0.86826	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0079678	0.001992	4	0.75	0.57322	Non-Significant Effect
Error	0.039839	0.0026559	15			
Total	0.0478068	0.0046479	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	20	10	> 0.0500	1	Non-Significant Effect
		10	20	10	> 0.0500	1	Non-Significant Effect
		50	20	10	> 0.0500	1	Non-Significant Effect
		100	18	10	> 0.0500	2	Non-Significant Effect

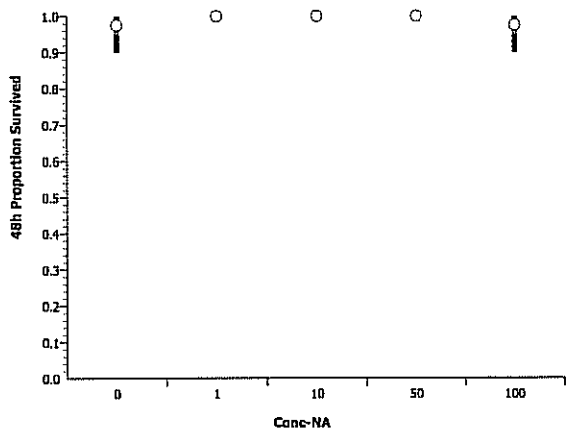
Data Summary

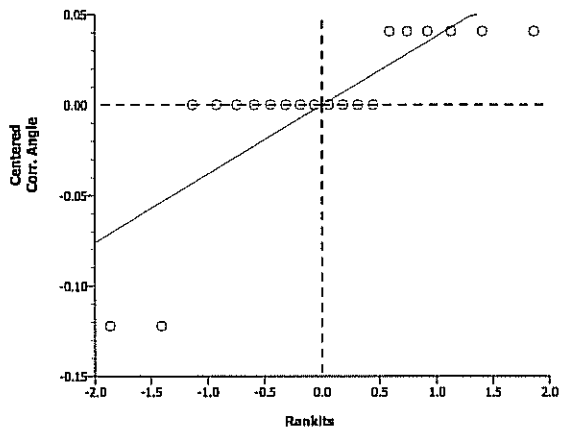
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	0.90000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		1.00000	1.00000	0.90000	1.00000						

Graphics





CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Nonlinear Regression	19-8121-6924	19-8121-6924	28 Nov-06 9:40 PM	CETISv1.026

Non-Linear Regression Options

X Transform	Y Transform	Model Function	Weighting Function	PTBS Function
None	None	Asymptotic [Y=1/(A+BX)]	No Weight [W = 1]	No Transform [None]

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P Level	Decision(0.05)
A	1.00620	0.00935	0.98656	1.02585	107.629	0.00000	Significant Parameter
B	0.00012	0.00019	-0.00028	0.00052	0.644	0.52745	Not Significant

Regression Summary

Iters	Log Likelihood	Psuedo R2	Opt Threshold	F Statistic	Critical	P Level	Decision(0.01)
3	60.36888	0.02349	No	0.85905	5.41697	0.48360	Non-Significant Lack of Fit

Residual Analysis

Attribute	Method	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.06667	5.29221	0.39091	Equal Variances
Distribution	Shapiro-Wilk W	0.64846	0.86826	0.00000	Non-normal Distribution

Point Estimates

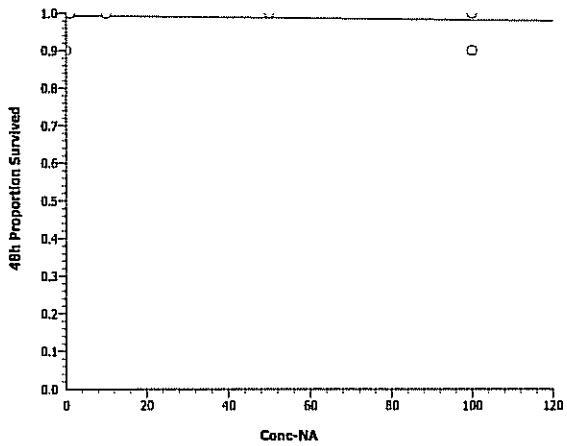
% Effect	Conc-NA	95% LCL	95% UCL
50	8589.56300	N/A	-33791.99000

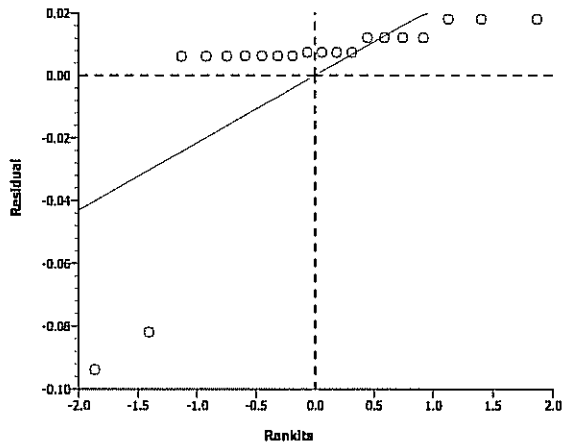
Data Summary

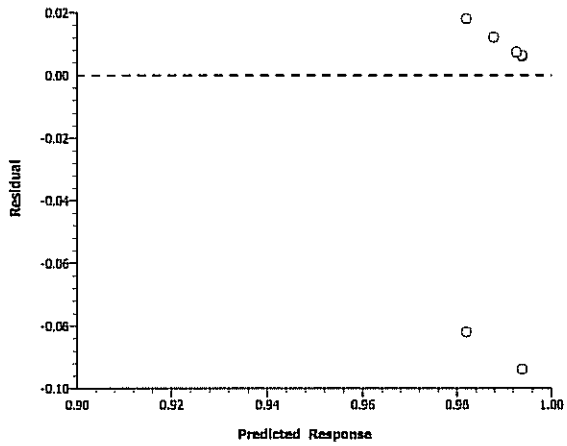
			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40

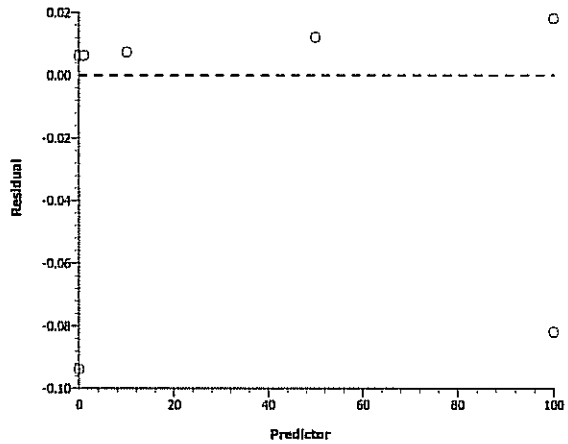
CETIS Analysis Detail

Graphics









CETIS Test Summary

Report Date: 28 Nov-06 9:44 PM
Link: 11-6199-5600

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	10-7542-2232	**Test Type:**	Survival (48h)	**Duration:**	48h
Start Date:	14 Oct-06 04:00 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	16 Oct-06 04:00 PM	**Dil Water:**	Reconstituted Water	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	14 Oct-06 04:00 PM	**Brine:**	Not Applicable		

Sample No:	02-6048-4231	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	13 Oct-06 01:25 PM	**Code:**	15061-015	**Project:**	Ecological Risk Assessment
Receive Date:	14 Oct-06 01:30 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	27h	**Station:**	LIME LKE (-1); 15061-015		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
12-3944-8272	48h Proportion Survived	100	> 100	N/A	5.87%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
04-1369-4096	48h Proportion Survived	50	1270.06000	694.35600	2326.74400	Nonlinear Regression

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
100		4	0.92500	0.90000	1.00000	0.02500	0.05000	5.41%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	0.90000	1.00000
100		1.00000	0.90000	0.90000	0.90000

CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	11-6199-5600	11-6199-5600	28 Nov-06 9:44 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	5.87%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	0.75000	4.89321	0.57322	Equal Variances
Distribution	Shapiro-Wilk W	0.81129	0.86826	0.00083	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0451509	0.0112877	4	4.25	0.01697	Significant Effect
Error	0.039839	0.0026559	15			
Total	0.08498986	0.0139436	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	1	Non-Significant Effect
		50	16	10	> 0.0500	1	Non-Significant Effect
		100	12	10	> 0.0500	2	Non-Significant Effect

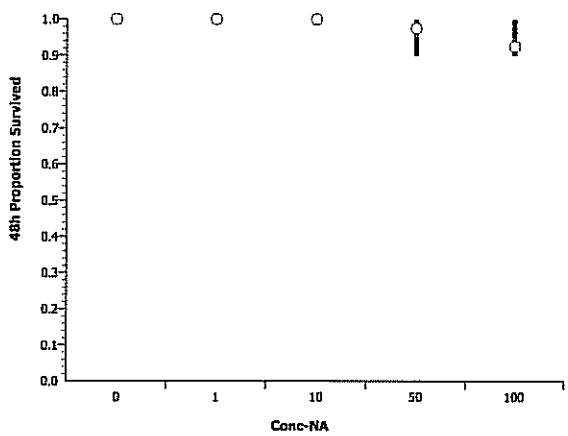
Data Summary

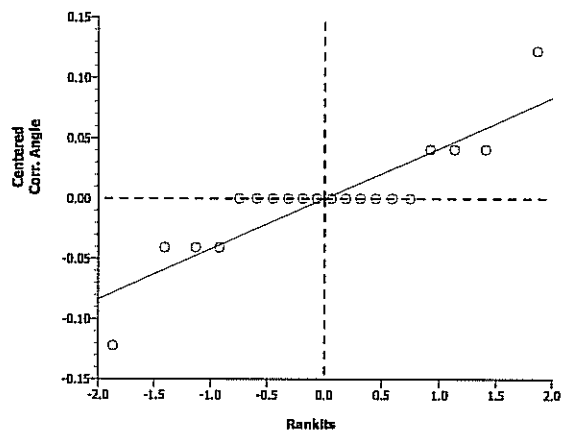
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
100		4	0.92500	0.90000	1.00000	0.05000	1.28979	1.24905	1.41202	0.08149

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	0.90000	1.00000						
100		1.00000	0.90000	0.90000	0.90000						

Graphics





CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Nonlinear Regression	11-6199-5600	11-6199-5600	28 Nov-06 9:44 PM	CETISv1.026

Non-Linear Regression Options

X Transform	Y Transform	Model Function	Weighting Function	PTBS Function
None	None	Asymptotic [Y=1/(A+BX)]	No Weight [W = 1]	No Transform [None]

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P Level	Decision(0.05)
A	0.99583	0.00925	0.97640	1.01526	107.688	0.00000	Significant Parameter
B	0.00079	0.00020	0.00037	0.00121	3.925	0.00099	Significant Parameter

Regression Summary

Iters	Log Likelihood	Psuedo R2	Opt Threshold	F Statistic	Critical	P Level	Decision(0.01)
3	61.54926	0.51187	No	0.20672	5.41697	0.89015	Non-Significant Lack of Fit

Residual Analysis

Attribute	Method	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.06667	5.29221	0.39091	Equal Variances
Distribution	Shapiro-Wilk W	0.81129	0.86826	0.00083	Non-normal Distribution

Point Estimates

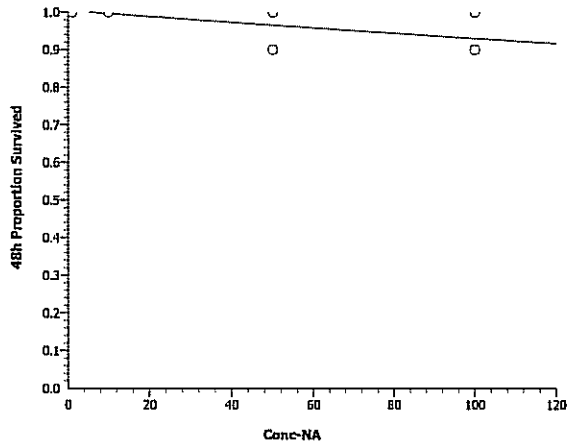
% Effect	Conc-NA	95% LCL	95% UCL
50	1270.06000	694.35600	2326.74400

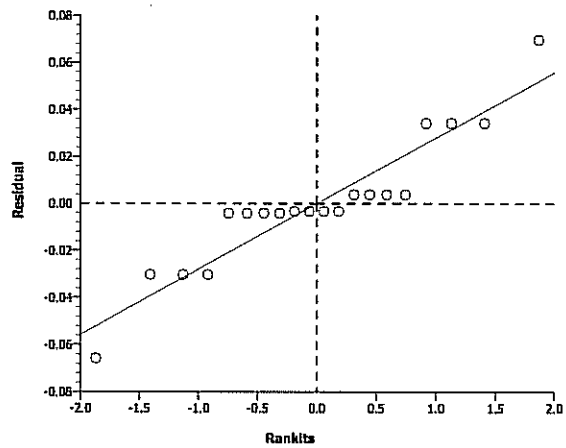
Data Summary

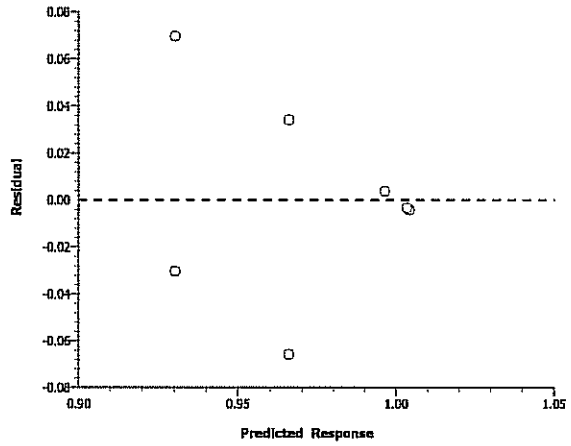
			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
100		4	0.92500	0.90000	1.00000	0.01021	0.05000	37	40

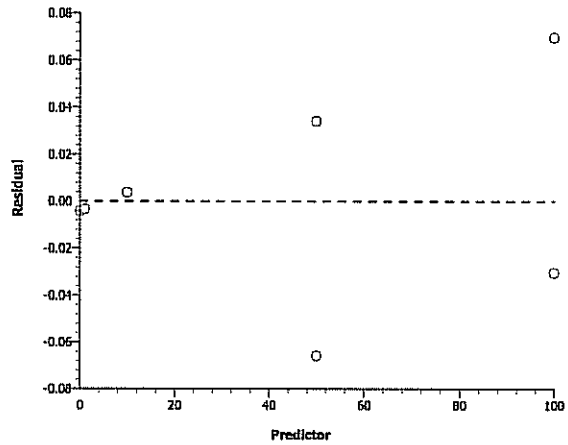
CETIS Analysis Detail

Graphics









CETIS Test Summary

Report Date: 28 Nov-06 9:49 PM
Link: 13-7290-8688

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	17-1785-3641	**Test Type:**	Survival (48h)	**Duration:**	46h
Start Date:	14 Oct-06 03:20 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	16 Oct-06 01:40 PM	**Dil Water:**	Reconstituted Water	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	14 Oct-06 03:20 PM	**Brine:**	Not Applicable		

Sample No:	11-1063-6278	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	13 Oct-06 01:30 PM	**Code:**	15061-016	**Project:**	Ecological Risk Assessment
Receive Date:	14 Oct-06 01:30 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	26h	**Station:**	IRON LKE (-1); 15061-016		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
09-0881-1015	48h Proportion Survived	100	> 100	N/A	16.09%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
09-3236-7733	48h Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%
1		4	0.80000	0.70000	0.90000	0.04082	0.08165	10.21%
10		4	0.92500	0.80000	1.00000	0.04787	0.09574	10.35%
50		4	0.92500	0.90000	1.00000	0.02500	0.05000	5.41%
100		4	0.92500	0.70000	1.00000	0.07500	0.15000	16.22%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	0.90000	1.00000	0.90000	1.00000
1		0.80000	0.70000	0.80000	0.90000
10		0.80000	1.00000	0.90000	1.00000
50		0.90000	0.90000	1.00000	0.90000
100		0.70000	1.00000	1.00000	1.00000

CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	13-7290-8688	13-7290-8688	28 Nov-06 9:49 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		100	>100	1.00	N/A	16.09%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	3.28738	13.27671	0.51093	Equal Variances
Distribution	Shapiro-Wilk W	0.88715	0.86826	0.02305	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.1218023	0.0304506	4	1.65	0.21463	Non-Significant Effect
Error	0.2775275	0.0185018	15			
Total	0.39932981	0.0489524	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	MSD	Decision(0.05)
Lab Water		1	2.25517	2.36	> 0.0500	0.22699	Non-Significant Effect
		10	0.36883	2.36	> 0.0500	0.22699	Non-Significant Effect
		50	0.42360	2.36	> 0.0500	0.22699	Non-Significant Effect
		100	0.24672	2.36	> 0.0500	0.22699	Non-Significant Effect

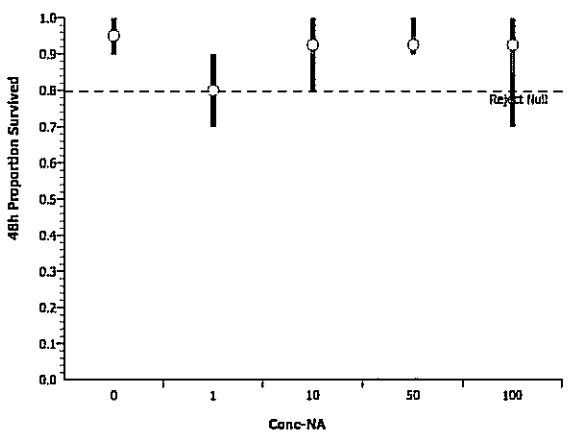
Data Summary

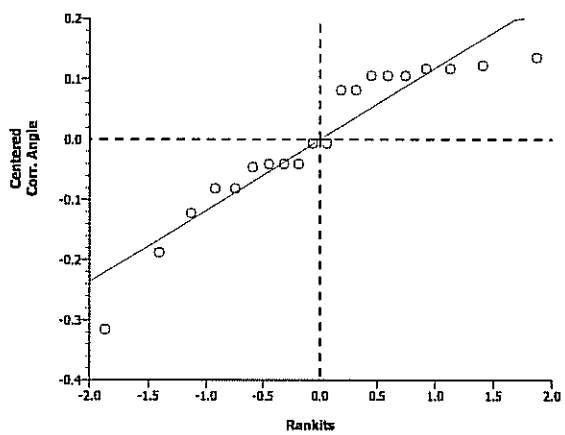
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	0.95000	0.90000	1.00000	0.05773	1.33053	1.24905	1.41202	0.09409
1		4	0.80000	0.70000	0.90000	0.08165	1.11362	0.99116	1.24905	0.10555
10		4	0.92500	0.80000	1.00000	0.09574	1.29506	1.10715	1.41202	0.14695
50		4	0.92500	0.90000	1.00000	0.05000	1.28979	1.24905	1.41202	0.08149
100		4	0.92500	0.70000	1.00000	0.15000	1.30680	0.99116	1.41202	0.21043

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	0.90000	1.00000	0.90000	1.00000						
1		0.80000	0.70000	0.80000	0.90000						
10		0.80000	1.00000	0.90000	1.00000						
50		0.90000	0.90000	1.00000	0.90000						
100		0.70000	1.00000	1.00000	1.00000						

Graphics





CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	13-7290-8688	13-7290-8688	28 Nov-06 9:49 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7747400	200	Yes	Two-Point Interpolation

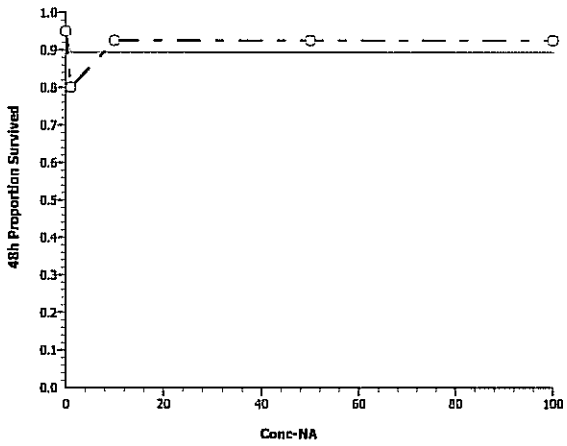
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	0.95000	0.90000	1.00000	0.01179	0.05773	38	40
1		4	0.80000	0.70000	0.90000	0.01667	0.08165	32	40
10		4	0.92500	0.80000	1.00000	0.01954	0.09574	37	40
50		4	0.92500	0.90000	1.00000	0.01021	0.05000	37	40
100		4	0.92500	0.70000	1.00000	0.03062	0.15000	37	40

Graphics



CETIS Test Summary

Report Date: 28 Nov-06 9:55 PM
Link: 03-5203-9137

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Test No:	09-4429-4254	**Test Type:**	Survival (48h)	**Duration:**	48h
Start Date:	21 Oct-06 03:20 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	23 Oct-06 03:25 PM	**Dil Water:**	Reconstituted Water	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	21 Oct-06 03:20 PM	**Brine:**	Not Applicable		

Sample No:	07-6309-2563	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	20 Oct-06 11:30 AM	**Code:**	15061-017	**Project:**	Ecological Risk Assessment
Receive Date:	21 Oct-06 01:30 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	28h	**Station:**	WCOAL LKE (-2); 15061-017		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
02-5472-5990	48h Proportion Survived	100	> 100	N/A	2.50%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
12-2120-1787	48h Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000

CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	03-5203-9137	03-5203-9137	28 Nov-06 9:55 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	2.50%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	65535.00000	4.89321	0.00000	Unequal Variances

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	4	65535.0	0.00000	Significant Effect
Error	0	0	15			
Total	0	0	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	1	Non-Significant Effect
		50	18	10	> 0.0500	1	Non-Significant Effect
		100	18	10	> 0.0500	1	Non-Significant Effect

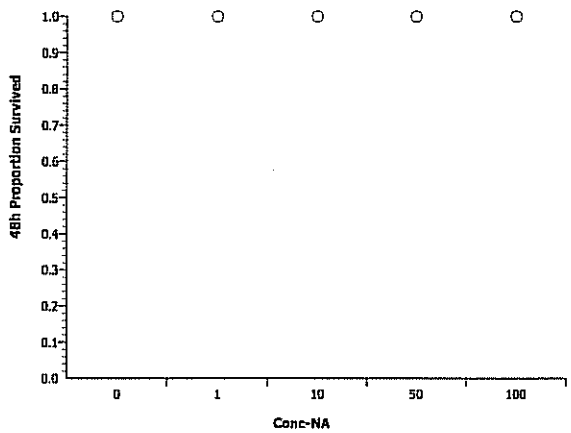
Data Summary

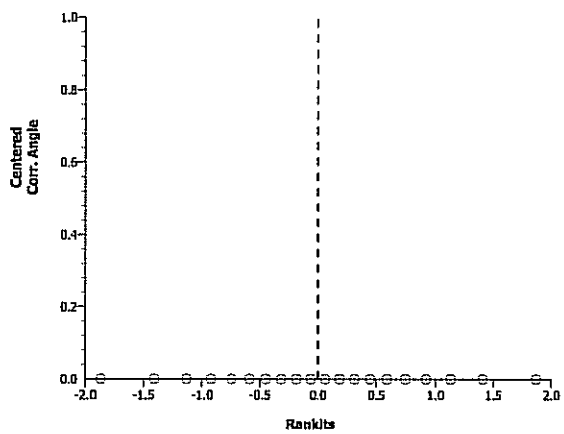
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		1.00000	1.00000	1.00000	1.00000						

Graphics





CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	03-5203-9137	03-5203-9137	28 Nov-06 9:55 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7607235	200	Yes	Two-Point Interpolation

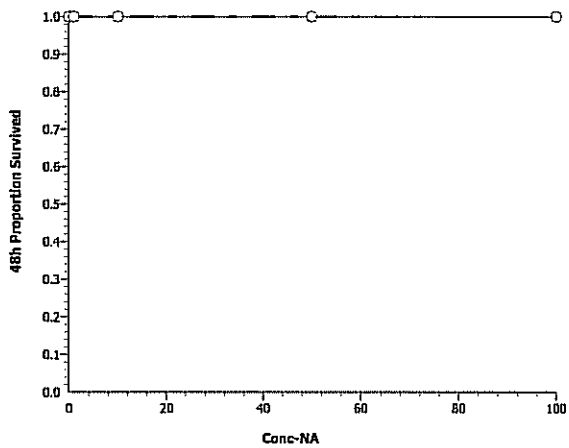
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

Graphics



CETIS Test Summary

Report Date: 28 Nov-06 9:58 PM
Link: 07-4207-7453

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Test No:	09-4429-4254	**Test Type:**	Survival (48h)	**Duration:**	48h
Start Date:	21 Oct-06 03:20 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	23 Oct-06 03:25 PM	**Dil Water:**	Reconstituted Water	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	21 Oct-06 03:20 PM	**Brine:**	Not Applicable		

Sample No:	04-8288-8374	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	20 Oct-06 11:30 AM	**Code:**	15061-018	**Project:**	Ecological Risk Assessment
Receive Date:	21 Oct-06 01:30 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	28h	**Station:**	ECOAL LKE (-2); 15061-018		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
06-3515-2295	48h Proportion Survived	100	> 100	N/A	2.50%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
13-1636-2007	48h Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000

CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	07-4207-7453	07-4207-7453	28 Nov-06 9:58 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	2.50%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	65535.00000	4.89321	0.00000	Unequal Variances

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	4	65535.0	0.00000	Significant Effect
Error	0	0	15			
Total	0	0	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	1	Non-Significant Effect
		50	18	10	> 0.0500	1	Non-Significant Effect
		100	18	10	> 0.0500	1	Non-Significant Effect

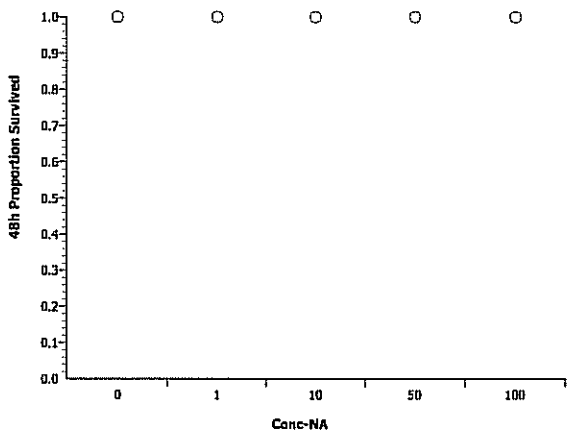
Data Summary

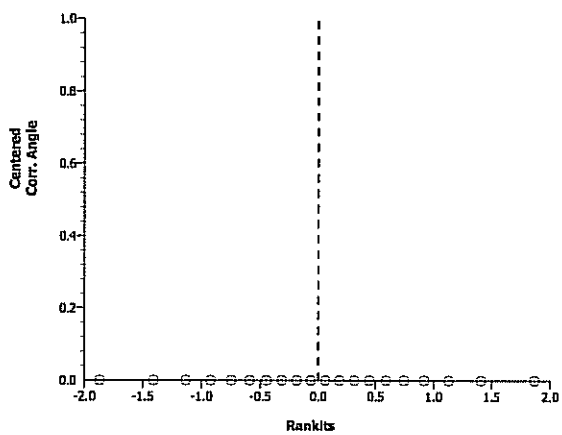
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		1.00000	1.00000	1.00000	1.00000						

Graphics





CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Interpolation	07-4207-7453	07-4207-7453	28 Nov-06 9:58 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7090378	200	Yes	Two-Point Interpolation

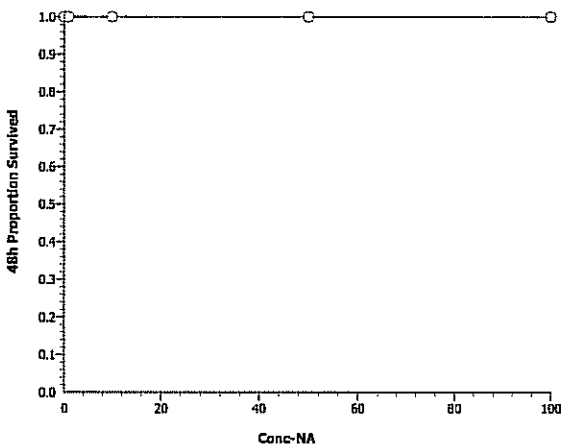
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40

Graphics



CETIS Test Summary

Report Date: 28 Nov-06 10:01 PM
Link: 04-4538-0157

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Test No:	09-4429-4254	**Test Type:**	Survival (48h)	**Duration:**	48h
Start Date:	21 Oct-06 03:20 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	23 Oct-06 03:25 PM	**Dil Water:**	Reconstituted Water	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	21 Oct-06 03:20 PM	**Brine:**	Not Applicable		

Sample No:	08-4171-7832	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	20 Oct-06 11:30 AM	**Code:**	15061-019	**Project:**	Ecological Risk Assessment
Receive Date:	21 Oct-06 01:30 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	28h	**Station:**	LIME LKE (-2); 15061-019		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
08-2373-3182	48h Proportion Survived	100	> 100	N/A	7.01%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
01-8971-9643	48h Proportion Survived	50	3669.24200	136.89650	151220.80000	Nonlinear Regression

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	0.90000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	0.90000
50		1.00000	1.00000	1.00000	1.00000
100		0.90000	0.90000	1.00000	1.00000

CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	04-4538-0157	04-4538-0157	28 Nov-06 10:01 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	7.01%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.75000	4.89321	0.19153	Equal Variances
Distribution	Shapiro-Wilk W	0.85319	0.86826	0.00516	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0185915	0.0046479	4	1.05	0.41460	Non-Significant Effect
Error	0.0663983	0.0044266	15			
Total	0.08498986	0.0090744	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	20	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	2	Non-Significant Effect
		50	20	10	> 0.0500	1	Non-Significant Effect
		100	16	10	> 0.0500	2	Non-Significant Effect

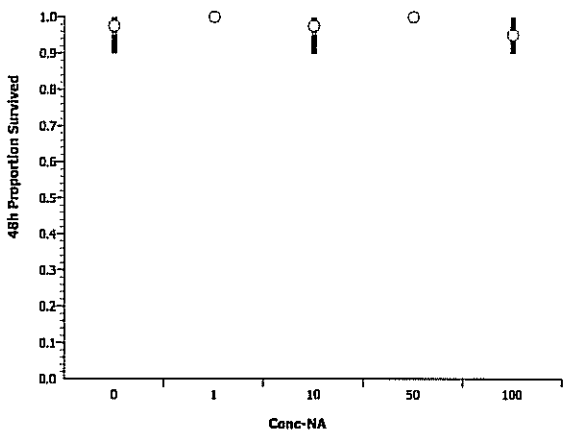
Data Summary

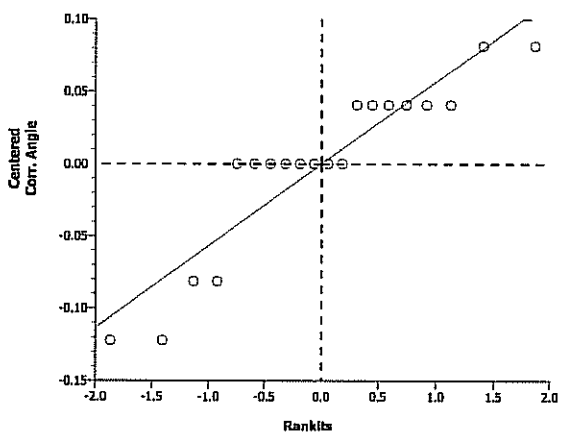
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	0.95000	0.90000	1.00000	0.05773	1.33053	1.24905	1.41202	0.09409

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	0.90000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	0.90000						
50		1.00000	1.00000	1.00000	1.00000						
100		0.90000	0.90000	1.00000	1.00000						

Graphics





CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Nonlinear Regression	04-4538-0157	04-4538-0157	28 Nov-06 10:01 PM	CETISv1.026

Non-Linear Regression Options

X Transform	Y Transform	Model Function	Weighting Function	PTBS Function
None	None	Asymptotic [Y=1/(A+BX)]	No Weight [W = 1]	No Transform [None]

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P Level	Decision(0.05)
A	1.01140	0.01222	0.98572	1.03708	82.742	0.00000	Significant Parameter
B	0.00028	0.00025	-0.00024	0.00081	1.127	0.27437	Not Significant

Regression Summary

Iters	Log Likelihood	Psuedo R2	Opt Threshold	F Statistic	Critical	P Level	Decision(0.01)
3	55.08649	0.06844	No	0.96197	5.41697	0.43620	Non-Significant Lack of Fit

Residual Analysis

Attribute	Method	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	2.48889	5.29221	0.09753	Equal Variances
Distribution	Shapiro-Wilk W	0.85319	0.86826	0.00516	Non-normal Distribution

Point Estimates

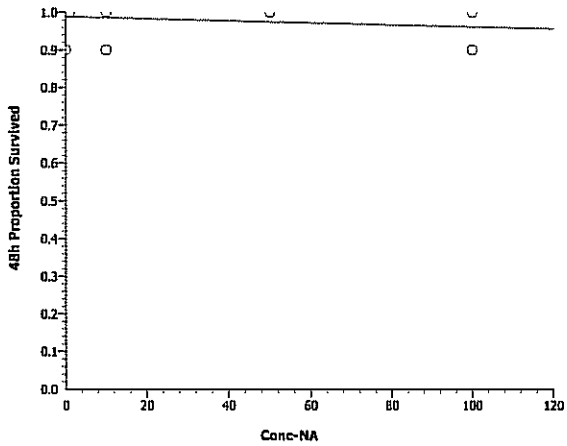
% Effect	Conc-NA	95% LCL	95% UCL
50	3669.24200	136.89650	151220.80000

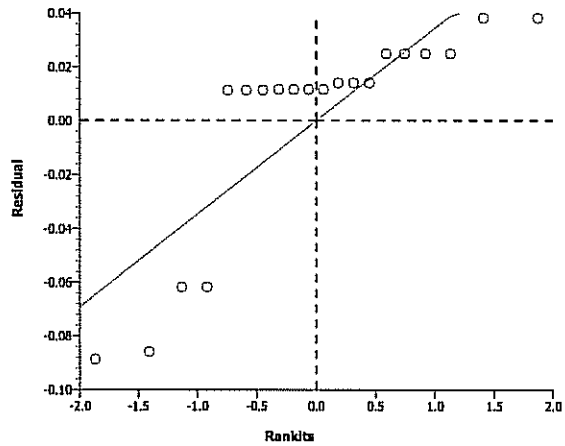
Data Summary

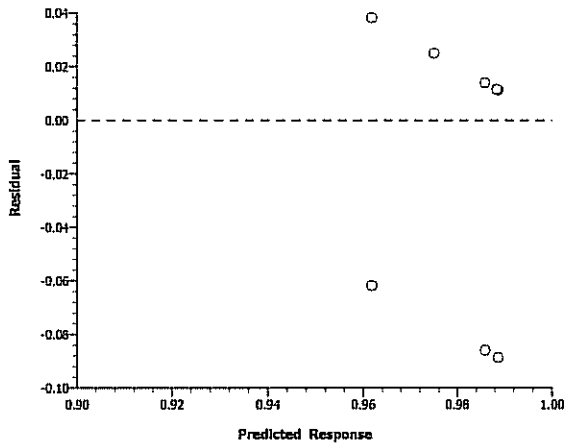
			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	0.95000	0.90000	1.00000	0.01179	0.05773	38	40

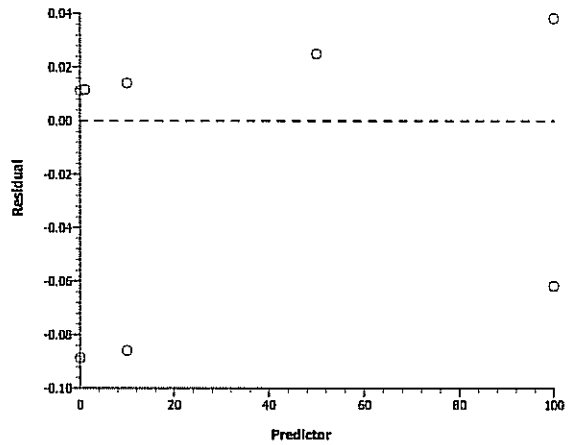
CETIS Analysis Detail

Graphics









CETIS Test Summary

Report Date: 28 Nov-06 10:05 PM
Link: 15-8657-4473

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Test No:	09-4429-4254	**Test Type:**	Survival (48h)	**Duration:**	48h
Start Date:	21 Oct-06 03:20 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	23 Oct-06 03:25 PM	**Dil Water:**	Reconstituted Water	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	21 Oct-06 03:20 PM	**Brine:**	Not Applicable		

Sample No:	11-9695-5160	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	20 Oct-06 11:30 AM	**Code:**	15061-020	**Project:**	Ecological Risk Assessment
Receive Date:	21 Oct-06 10:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	28h	**Station:**	IRON LKE (-2); 15061-020		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
05-4496-0268	48h Proportion Survived	100	> 100	N/A	8.36%	Steel's Many-One Rank

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
16-2657-4343	48h Proportion Survived	50	586.35070	298.36120	1160.93100	Nonlinear Regression

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		4	0.82500	0.70000	1.00000	0.06292	0.12583	15.25%

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		1.00000	1.00000	1.00000	1.00000
100		0.70000	0.80000	0.80000	1.00000

CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	15-8657-4473	15-8657-4473	28 Nov-06 10:05 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	8.36%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	2.13856	4.89321	0.12623	Equal Variances
Distribution	Shapiro-Wilk W	0.52633	0.86826	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.2124249	0.0531062	4	8.17	0.00105	Significant Effect
Error	0.0974798	0.0064987	15			
Total	0.30990477	0.0596049	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	1	Non-Significant Effect
		50	18	10	> 0.0500	1	Non-Significant Effect
		100	12	10	> 0.0500	2	Non-Significant Effect

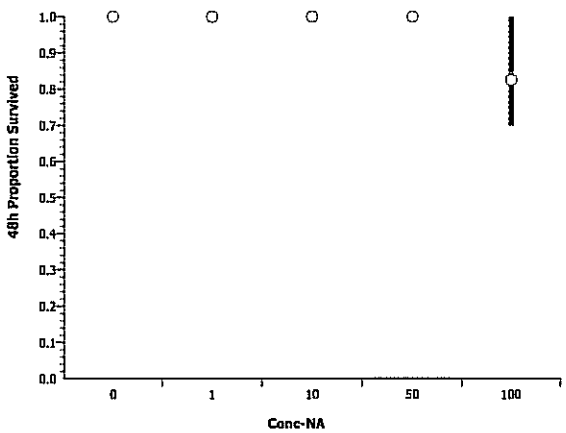
Data Summary

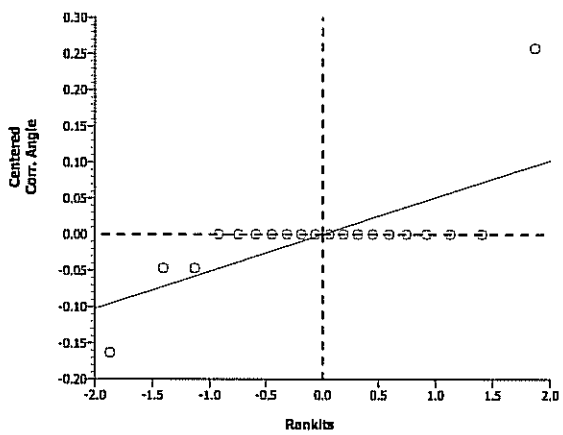
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	0.82500	0.70000	1.00000	0.12583	1.15437	0.99116	1.41202	0.18026

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		0.70000	0.80000	0.80000	1.00000						

Graphics





CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Nonlinear Regression	15-8657-4473	15-8657-4473	28 Nov-06 10:05 PM	CETISv1.026

Non-Linear Regression Options

X Transform	Y Transform	Model Function	Weighting Function	PTBS Function
None	None	Asymptotic [Y=1/(A+BX)]	No Weight [W = 1]	No Transform [None]

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P Level	Decision(0.05)
A	0.98447	0.01629	0.95025	1.01869	60.440	0.00000	Significant Parameter
B	0.00173	0.00039	0.00090	0.00256	4.394	0.00035	Significant Parameter

Regression Summary

Iters	Log Likelihood	Psuedo R2	Opt Threshold	F Statistic	Critical	P Level	Decision(0.01)
4	46.14046	0.49879	No	2.67639	5.41697	0.08461	Non-Significant Lack of Fit

Residual Analysis

Attribute	Method	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	3.49091	5.29221	0.04036	Equal Variances
Distribution	Shapiro-Wilk W	0.51536	0.86826	0.00000	Non-normal Distribution

Point Estimates

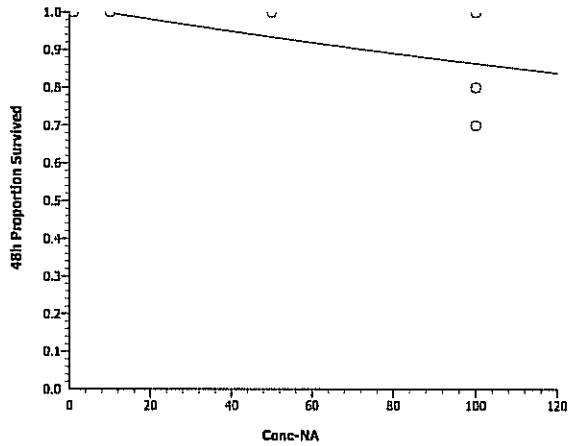
% Effect	Conc-NA	95% LCL	95% UCL
50	586.35070	298.36120	1160.93100

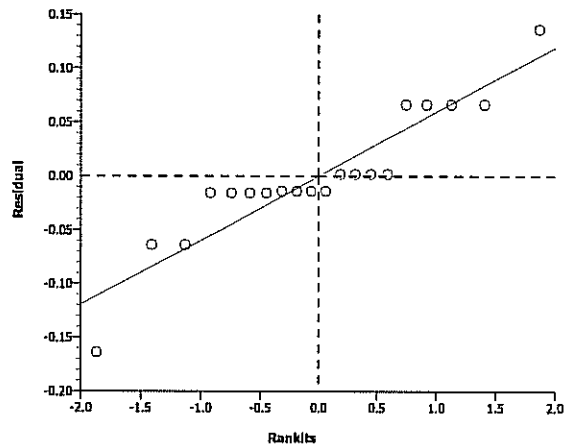
Data Summary

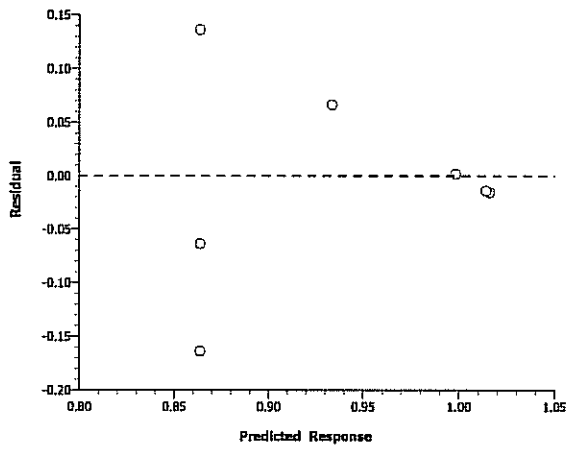
			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	0.82500	0.70000	1.00000	0.02569	0.12583	33	40

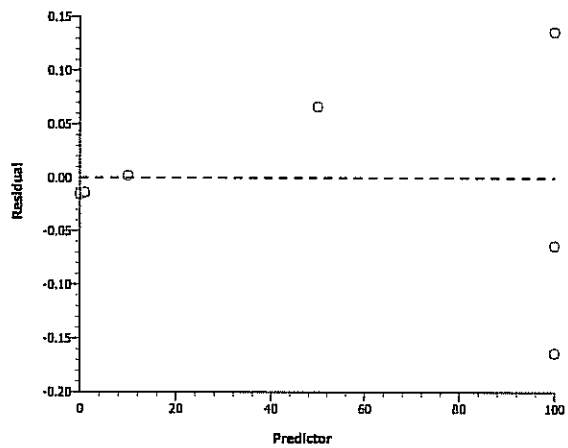
CETIS Analysis Detail

Graphics









CETIS Test Summary

Report Date: 28 Nov-06 10:14 PM
Link: 10-8966-9540

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Test No:	14-8572-3617	**Test Type:**	Survival (48h)	**Duration:**	47h
Start Date:	30 Oct-06 03:05 PM	**Protocol:**	EPA/821/R-02-012 (2002)	**Species:**	Pimephales promelas
Ending Date:	01 Nov-06 01:40 PM	**Dil Water:**	Reconstituted Water	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	30 Oct-06 03:05 PM	**Brine:**	Not Applicable		

Sample No:	11-1161-6791	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	27 Oct-06 07:00 AM	**Code:**	15061-049	**Project:**	Ecological Risk Assessment
Receive Date:	30 Oct-06 12:00 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	80h	**Station:**	CLELV2-DS-1; 15061-049		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
00-2668-6196	24h Proportion Survived	10	50	22.361	12.07%	Steel's Many-One Rank
03-3557-0009	48h Proportion Survived	10	50	22.361	11.03%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
17-8449-0819	24h Proportion Survived	50	30.68916	26.08464	36.10648	Trimmed Spearman-Karber
07-8192-8466	48h Proportion Survived	50	22.60675	18.13126	28.18696	Trimmed Spearman-Karber

24h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
50		4	0.27500	0.10000	0.50000	0.10308	0.20616	74.97%
100		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

48h Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		4	0.97500	0.90000	1.00000	0.02500	0.05000	5.13%
10		4	0.92500	0.80000	1.00000	0.04787	0.09574	10.35%
50		4	0.12500	0.00000	0.20000	0.04787	0.09574	76.59%
100		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

24h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000
10		1.00000	1.00000	1.00000	1.00000
50		0.50000	0.10000	0.40000	0.10000
100		0.00000	0.00000	0.00000	0.00000

48h Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	0.90000	1.00000
10		1.00000	1.00000	0.90000	0.80000
50		0.20000	0.00000	0.20000	0.10000
100		0.00000	0.00000	0.00000	0.00000

CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
24h Proportion Survived	Comparison	10-8966-9540	10-8966-9540	28 Nov-06 10:14 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		10	50	10.00	22.361	12.07%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	67.41095	5.95254	0.00000	Unequal Variances
Distribution	Shapiro-Wilk W	0.71180	0.84420	0.00006	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	2.342308	0.7807693	3	53.27	0.00000	Significant Effect
Error	0.1758917	0.0146576	12			
Total	2.51819955	0.7954269	15			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	1	Non-Significant Effect
		50	10	10	<= 0.0500	2	Significant Effect

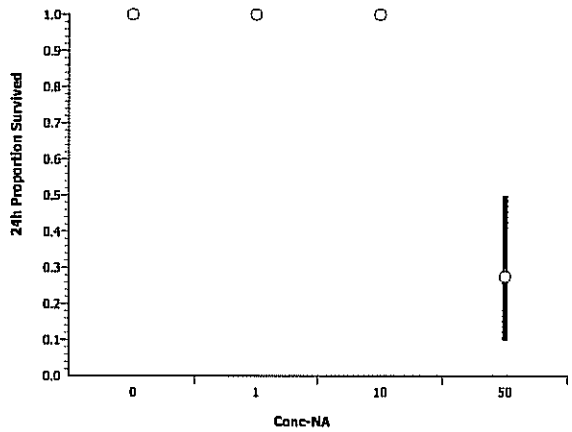
Data Summary

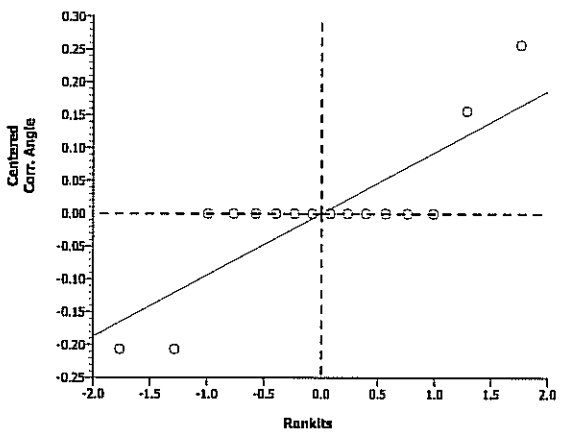
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	0.27500	0.10000	0.50000	0.20616	0.52840	0.32175	0.78540	0.24214

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		0.50000	0.10000	0.40000	0.10000						

Graphics





CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	10-8966-9540	10-8966-9540	28 Nov-06 10:14 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		10	50	10.00	22.361	11.03%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	2.81651	5.95254	0.08421	Equal Variances
Distribution	Shapiro-Wilk W	0.89315	0.84420	0.06246	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	3.07332	1.02444	3	83.13	0.00000	Significant Effect
Error	0.1478842	0.0123237	12			
Total	3.22120412	1.0367637	15			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	MSD	Decision(0.05)
Lab Water		1	0.51903	2.29	> 0.0500	0.17976	Non-Significant Effect
		10	1.48998	2.29	> 0.0500	0.17976	Non-Significant Effect
		50	13.5044	2.29	<= 0.0500	0.17976	Significant Effect

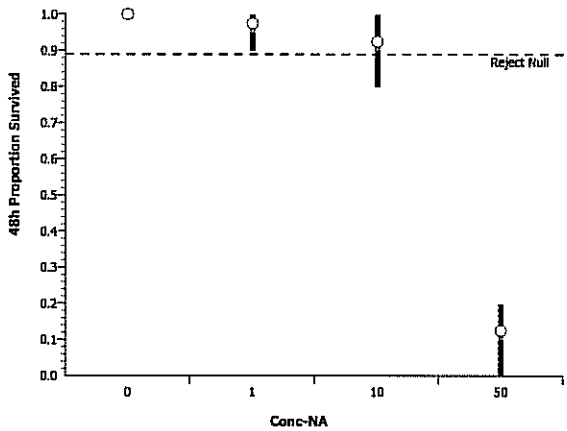
Data Summary

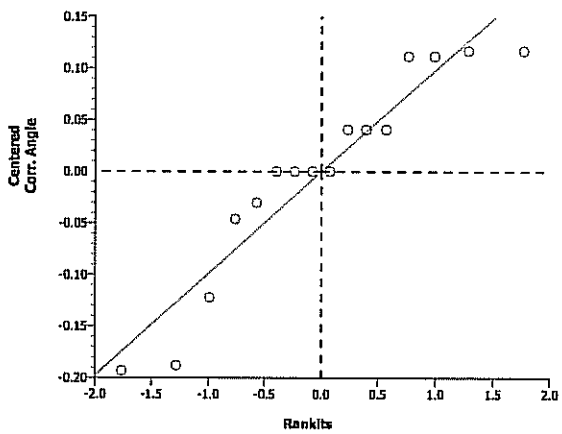
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
10		4	0.92500	0.80000	1.00000	0.09574	1.29506	1.10715	1.41202	0.14695
50		4	0.12500	0.00000	0.20000	0.09574	0.35196	0.15878	0.46365	0.14512

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	0.90000	1.00000						
10		1.00000	1.00000	0.90000	0.80000						
50		0.20000	0.00000	0.20000	0.10000						

Graphics





CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Trimmed Spearman-Karber	10-8966-9540	10-8966-9540	28 Nov-06 10:14 PM	CETISv1.026

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim Level	Mu	Sigma
Control Threshold	0	2.50%	1.354238	0.04790505

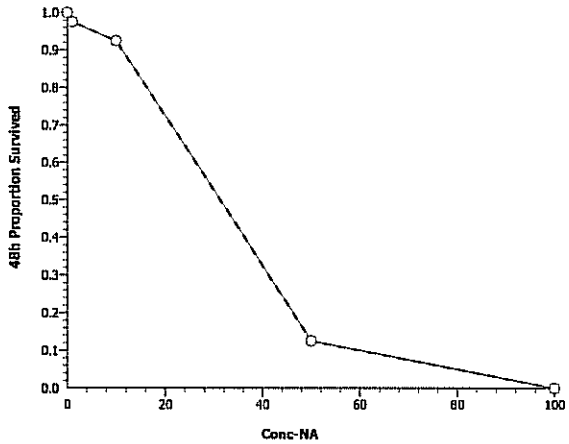
Point Estimates

EC50/LC50	95% LCL	95% UCL
22.60675	18.13126	28.18696

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
10		4	0.92500	0.80000	1.00000	0.01954	0.09574	37	40
50		4	0.12500	0.00000	0.20000	0.01954	0.09574	5	40
100		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40

Graphics



CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
24h Proportion Survived	Trimmed Spearman-Karber	10-8966-9540	10-8966-9540	28 Nov-06 10:14 PM	CETISv1.026

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim Level	Mu	Sigma
Control Threshold	0	0.00%	1.486985	0.03530005

Point Estimates

EC50/LC50	95% LCL	95% UCL
30.68916	26.08464	36.10648

Data Summary

Conc-NA	Control Type	Count	Calculated Variate(A/B) Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	0.27500	0.10000	0.50000	0.04208	0.20616	11	40
100		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40

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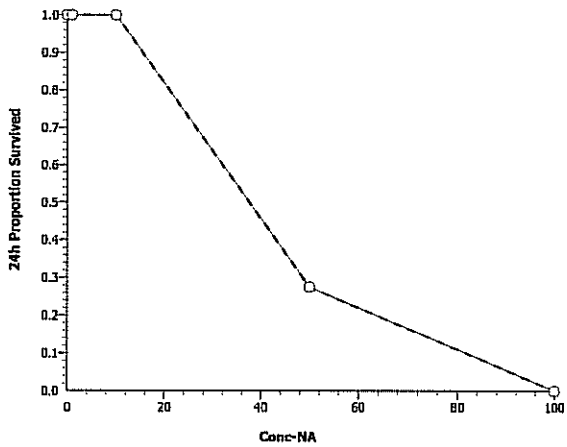

CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	19-6407-3108	19-6407-3108	28 Nov-06 8:57 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		1	10	100.00	3.162	9.59%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.32816	8.02152	0.31229	Equal Variances
Distribution	Shapiro-Wilk W	0.87655	0.80465	0.08301	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	2.202877	1.101438	2	113.47	0.00000	Significant Effect
Error	0.0873598	0.0097066	9			
Total	2.29023634	1.1111449	11			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	MSD	Decision(0.05)
Lab Water		1	-0.5848	2.18	> 0.0500	0.15187	Non-Significant Effect
		10	12.7442	2.18	<= 0.0500	0.15187	Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	0.22500	0.10000	0.40000	0.12583	0.48344	0.32175	0.68472	0.14993

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	0.90000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		0.10000	0.20000	0.40000	0.20000						

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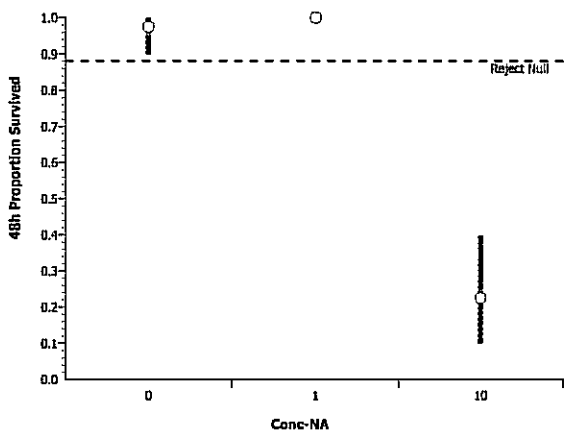

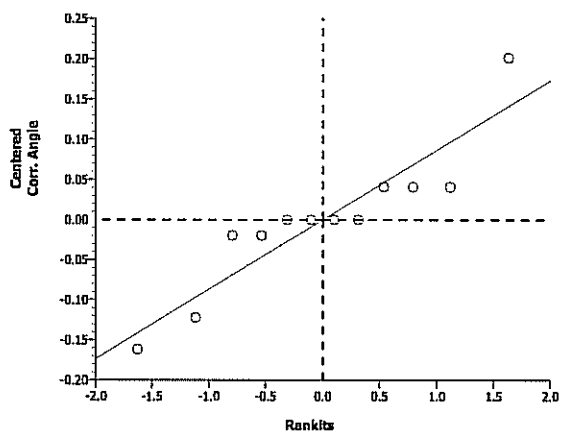

CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
24h Proportion Survived	Comparison	19-6407-3108	19-6407-3108	28 Nov-06 8:57 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		50	100	2.00	70.711	9.07%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	11.55344	5.95254	0.00075	Unequal Variances
Distribution	Shapiro-Wilk W	0.67881	0.84420	0.00002	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.1480843	0.0493614	3	5.97	0.00989	Significant Effect
Error	0.0991805	0.0082650	12			
Total	0.24726478	0.0576265	15			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	1	Non-Significant Effect
		50	12	10	> 0.0500	1	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
50		4	0.85000	0.70000	1.00000	0.12910	1.18984	0.99116	1.41202	0.18182

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	1.00000	1.00000	1.00000						
50		1.00000	0.80000	0.90000	0.70000						

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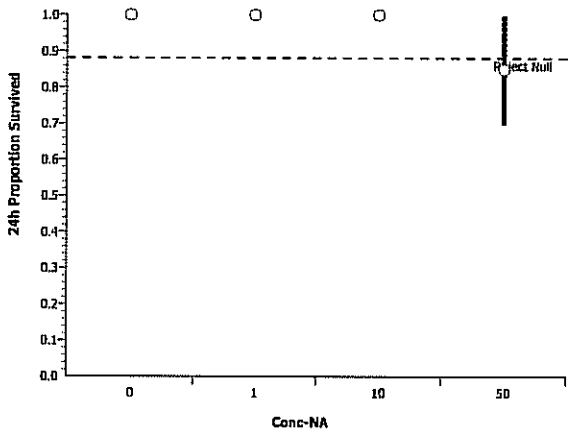
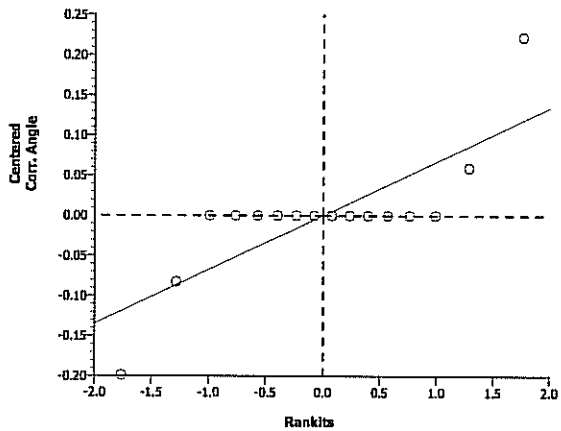




CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
24h Proportion Survived	Trimmed Spearman-Karber	19-6407-3108	19-6407-3108	28 Nov-06 8:57 PM	CETISv1.026

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim Level	Mu	Sigma
Control Threshold	0	0.00%	1.774485	0.02822897

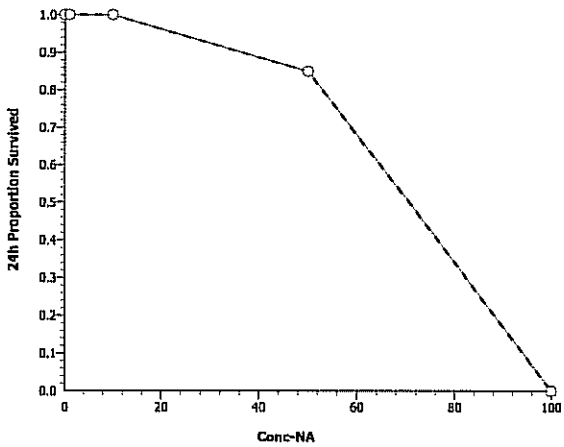
Point Estimates

EC50/LC50	95% LCL	95% UCL
59.49562	52.24287	67.75525

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
50		4	0.85000	0.70000	1.00000	0.02635	0.12910	34	40
100		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40

Graphics



CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Trimmed Spearman-Karber	19-6407-3108	19-6407-3108	28 Nov-06 8:56 PM	CETISv1.026

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim Level	Mu	Sigma
Control Threshold	0.025	0.00%	0.6935536	0.05633779

Point Estimates

EC50/LC50	95% LCL	95% UCL
4.93803	3.80959	6.40072

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	0.22500	0.10000	0.40000	0.02569	0.12583	9	40
50		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40
100		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40

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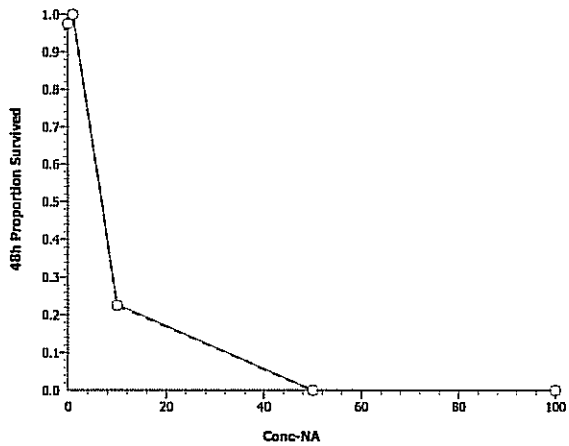


CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	07-1007-0104	07-1007-0104	28 Nov-06 9:08 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		10	50	10.00	22.361	10.85%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	5.12515	8.02152	0.03267	Equal Variances
Distribution	Shapiro-Wilk W	0.68375	0.80465	0.00020	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0568096	0.0284048	2	2.16	0.17157	Non-Significant Effect
Error	0.1184677	0.0131631	9			
Total	0.17527729	0.0415679	11			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	11	> 0.0500	1	Non-Significant Effect
		10	14	11	> 0.0500	1	Non-Significant Effect

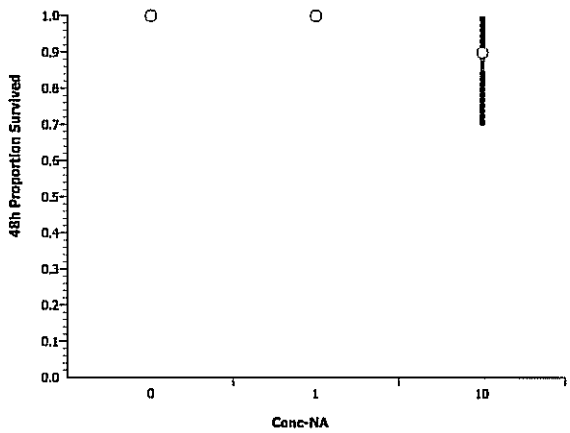
Data Summary

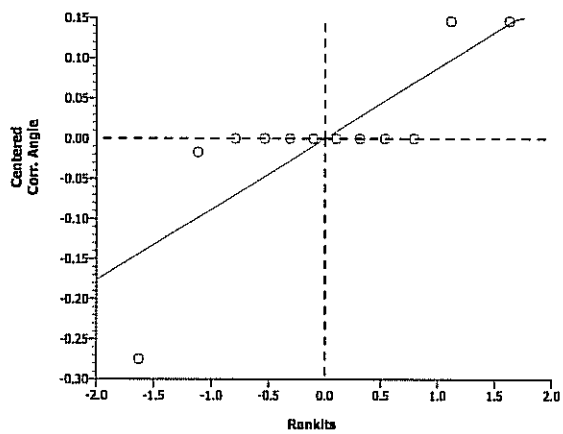
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	0.90000	0.70000	1.00000	0.14142	1.26606	0.99116	1.41202	0.19872

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	0.70000	1.00000	0.90000						

Graphics





CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
24h Proportion Survived	Comparison	07-1007-0104	07-1007-0104	28 Nov-06 9:08 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		10	50	10.00	22.361	10.85%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	5.12515	8.02152	0.03267	Equal Variances
Distribution	Shapiro-Wilk W	0.68375	0.80465	0.00020	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0568096	0.0284048	2	2.16	0.17157	Non-Significant Effect
Error	0.1184677	0.0131631	9			
Total	0.17527729	0.0415679	11			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	18	11	> 0.0500	1	Non-Significant Effect
		10	14	11	> 0.0500	1	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	0.90000	0.70000	1.00000	0.14142	1.26606	0.99116	1.41202	0.19872

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	1.00000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		1.00000	0.70000	1.00000	0.90000						

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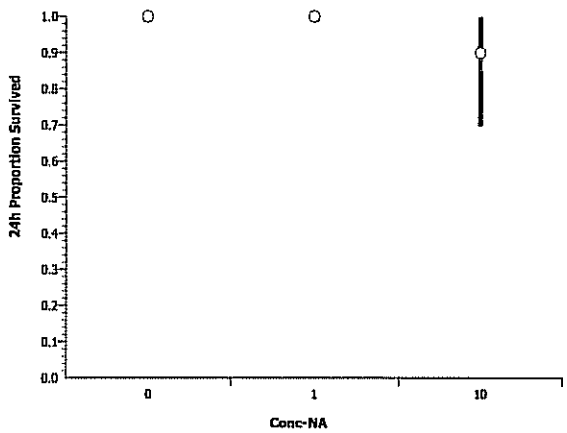
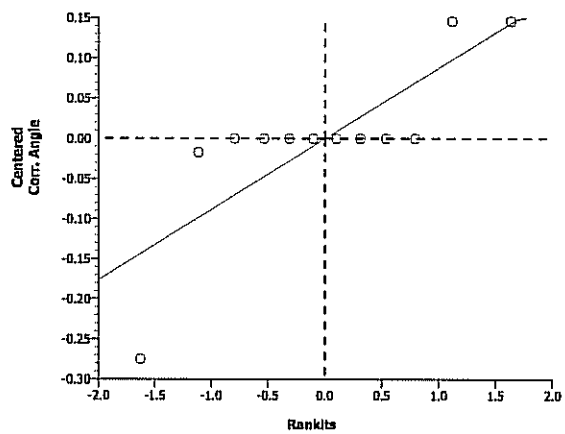




CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
24h Proportion Survived	Trimmed Spearman-Karber	07-1007-0104	07-1007-0104	28 Nov-06 9:08 PM	CETISv1.026

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim Level	Mu	Sigma
Control Threshold	0	0.00%	1.264536	0.04029461

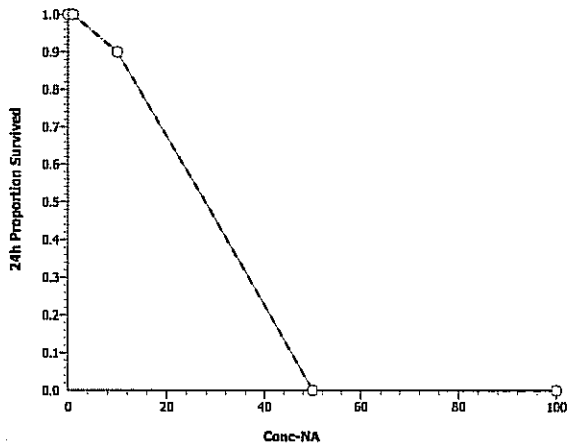
Point Estimates

EC50/LC50	95% LCL	95% UCL
18.38808	15.27381	22.13735

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	0.90000	0.70000	1.00000	0.02887	0.14142	36	40
50		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40
100		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40

Graphics



CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Trimmed Spearman-Karber	07-1007-0104	07-1007-0104	28 Nov-06 9:08 PM	CETISv1.026

Spearman-Karber Options

Threshold Option	Lower Threshold	Trim Level	Mu	Sigma
Control Threshold	0	0.00%	1.264536	0.04029461

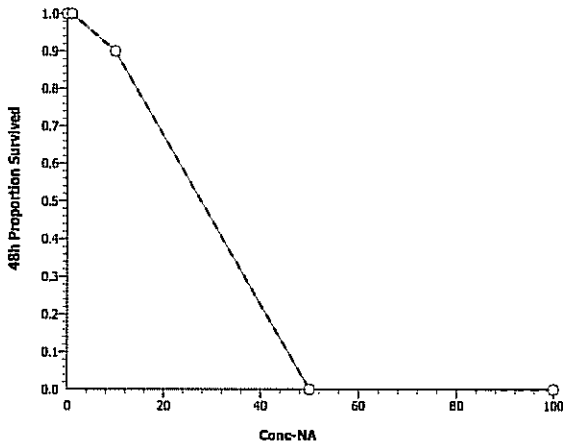
Point Estimates

EC50/LC50	95% LCL	95% UCL
18.38808	15.27381	22.13735

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	0.90000	0.70000	1.00000	0.02887	0.14142	36	40
50		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40
100		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40

Graphics



CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	15-8242-0450	15-8242-0450	28 Nov-06 9:02 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		100	>100	1.00	N/A	12.60%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.53589	4.89321	0.24220	Equal Variances
Distribution	Shapiro-Wilk W	0.92790	0.86826	0.14059	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0962452	0.0240613	4	1.97	0.15049	Non-Significant Effect
Error	0.1829048	0.0121937	15			
Total	0.27915000	0.036255	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	MSD	Decision(0.05)
Lab Water		1	-1.0436	2.36	> 0.0500	0.18427	Non-Significant Effect
		10	0.97611	2.36	> 0.0500	0.18427	Non-Significant Effect
		50	0.97611	2.36	> 0.0500	0.18427	Non-Significant Effect
		100	1.43043	2.36	> 0.0500	0.18427	Non-Significant Effect

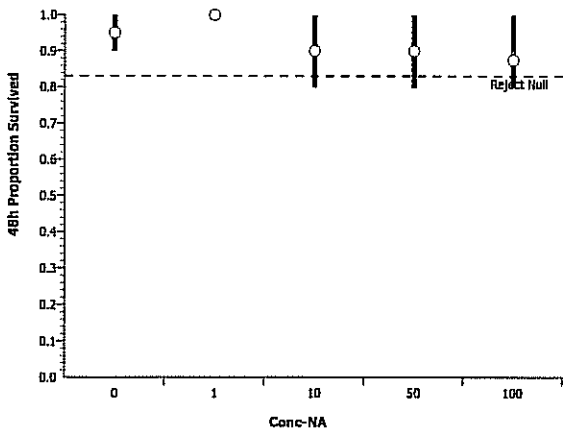
Data Summary

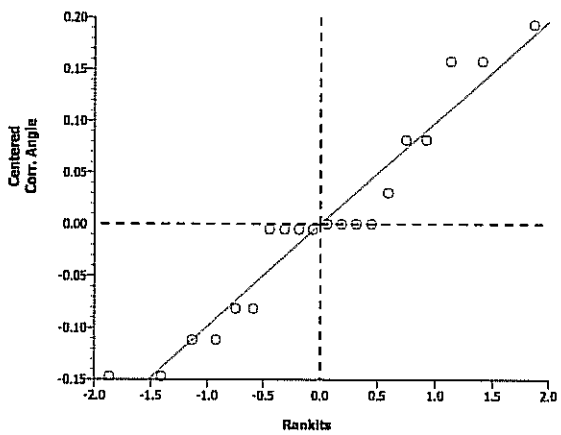
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	0.95000	0.90000	1.00000	0.05773	1.33053	1.24905	1.41202	0.09409
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	0.90000	0.80000	1.00000	0.08165	1.25431	1.10715	1.41202	0.12461
50		4	0.90000	0.80000	1.00000	0.08165	1.25431	1.10715	1.41202	0.12461
100		4	0.87500	0.80000	1.00000	0.09574	1.21884	1.10715	1.41202	0.14512

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	0.90000	0.90000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		0.90000	1.00000	0.90000	0.80000						
50		0.80000	0.90000	0.90000	1.00000						
100		0.90000	1.00000	0.80000	0.80000						

Graphics





CETIS Analysis Detail

Daphnia magna 48-h Acute Survival Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Nonlinear Regression	15-8242-0450	15-8242-0450	28 Nov-06 9:03 PM	CETISv1.026

Non-Linear Regression Options

X Transform	Y Transform	Model Function	Weighting Function	PTBS Function
None	None	3 Parameter Logistic [Y=A/(1+Exp(-C(X-D)))]	No Weight [W = 1]	No Transform [None]

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P Level	Decision(0.05)
A	1.02269	4569.68200	-9640.16400	9642.21000	0.000	0.99982	Not Significant
C	0.04674	11.60322	-24.43392	24.52739	0.004	0.99683	Not Significant
D	484.55510	95606.73000	-201228.000	202197.10000	0.005	0.99602	Not Significant

Regression Summary

Iters	Log Likelihood	Psuedo R2	Opt Threshold	F Statistic	Critical	P Level	Decision(0.01)
2	-8.50920	-145.63830	No	1659.91900	6.35887	0.00000	Significant Lack of Fit

Residual Analysis

Attribute	Method	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	2.32727	5.29221	0.11333	Equal Variances
Distribution	Shapiro-Wilk W	0.93057	0.86826	0.15798	Normal Distribution

Point Estimates

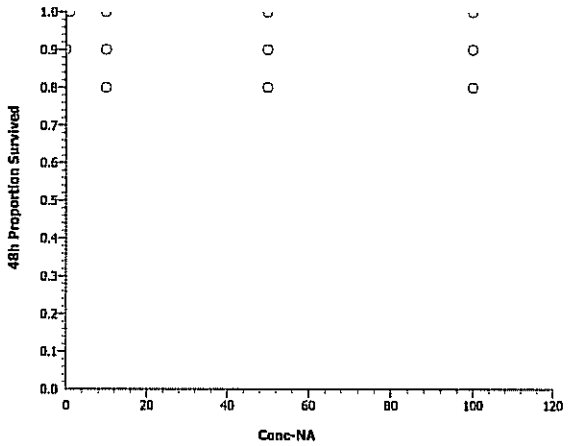
% Effect	Conc-NA	95% LCL	95% UCL
50	481.50820	N/A	N/A

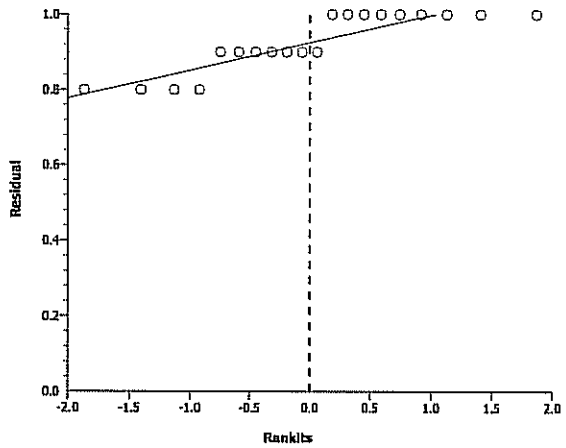
Data Summary

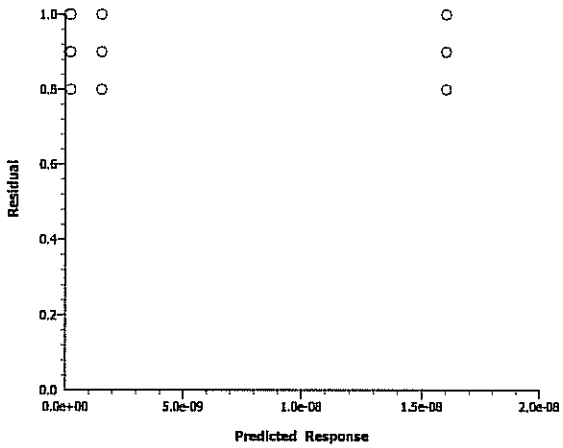
			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	0.95000	0.90000	1.00000	0.01179	0.05773	38	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	0.90000	0.80000	1.00000	0.01667	0.08165	36	40
50		4	0.90000	0.80000	1.00000	0.01667	0.08165	36	40
100		4	0.87500	0.80000	1.00000	0.01954	0.09574	35	40

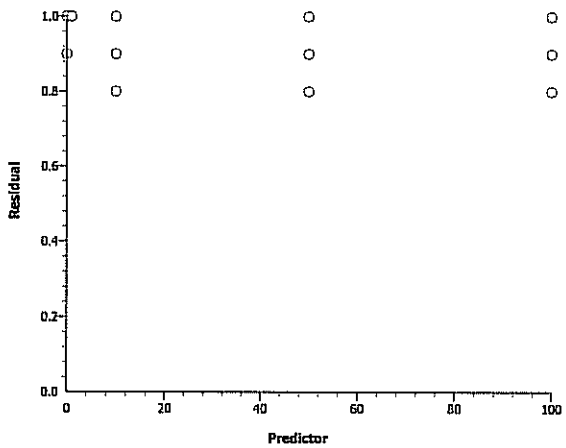
CETIS Analysis Detail

Graphics









CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Comparison	08-4824-3246	08-4824-3246	28 Nov-06 9:12 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Steel's Many-One Rank	C > T	Angular (Corrected)		100	>100	1.00	N/A	8.98%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	0.56893	4.89321	0.68917	Equal Variances
Distribution	Shapiro-Wilk W	0.75972	0.86826	0.00009	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0166198	0.0041549	4	0.57	0.68917	Non-Significant Effect
Error	0.1095471	0.0073031	15			
Total	0.12616685	0.0114581	19			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Lab Water		1	20	10	> 0.0500	1	Non-Significant Effect
		10	18	10	> 0.0500	2	Non-Significant Effect
		50	20	10	> 0.0500	1	Non-Significant Effect
		100	17.5	10	> 0.0500	1	Non-Significant Effect

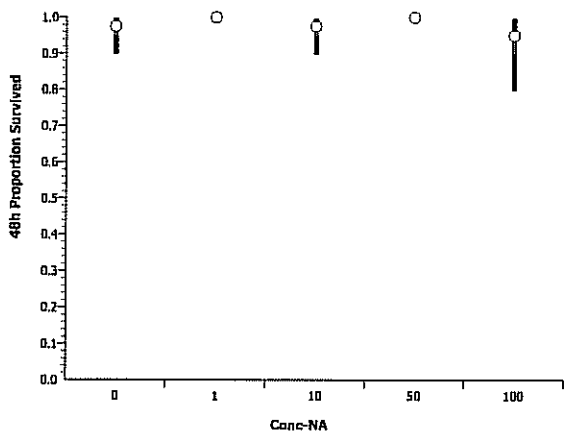
Data Summary

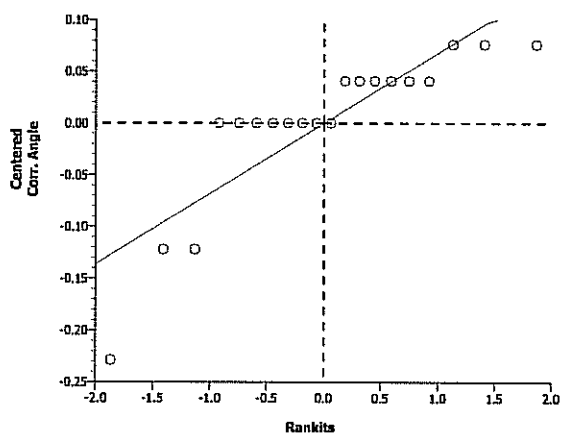
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Lab Water	4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
1		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
10		4	0.97500	0.90000	1.00000	0.05000	1.37127	1.24905	1.41202	0.08149
50		4	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00027
100		4	0.95000	0.80000	1.00000	0.10000	1.33580	1.10715	1.41202	0.15243

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1.00000	0.90000	1.00000	1.00000						
1		1.00000	1.00000	1.00000	1.00000						
10		0.90000	1.00000	1.00000	1.00000						
50		1.00000	1.00000	1.00000	1.00000						
100		0.80000	1.00000	1.00000	1.00000						

Graphics





CETIS Analysis Detail

Fathead Minnow 48-h Acute Survival Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Nonlinear Regression	08-4824-3246	08-4824-3246	28 Nov-06 9:12 PM	CETISv1.026

Non-Linear Regression Options

X Transform	Y Transform	Model Function	Weighting Function	PTBS Function
None	None	Asymptotic [Y=1/(A+BX)]	No Weight [W = 1]	No Transform [None]

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P Level	Decision(0.05)
A	1.01140	0.01640	0.97694	1.04585	61.672	0.00000	Significant Parameter
B	0.00028	0.00034	-0.00043	0.00099	0.840	0.41176	Not Significant

Regression Summary

Iters	Log Likelihood	Psuedo R2	Opt Threshold	F Statistic	Critical	P Level	Decision(0.01)
4	49.95275	0.04212	No	0.53443	5.41697	0.66570	Non-Significant Lack of Fit

Residual Analysis

Attribute	Method	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	0.82963	5.29221	0.49683	Equal Variances
Distribution	Shapiro-Wilk W	0.76062	0.86826	0.00009	Non-normal Distribution

Point Estimates

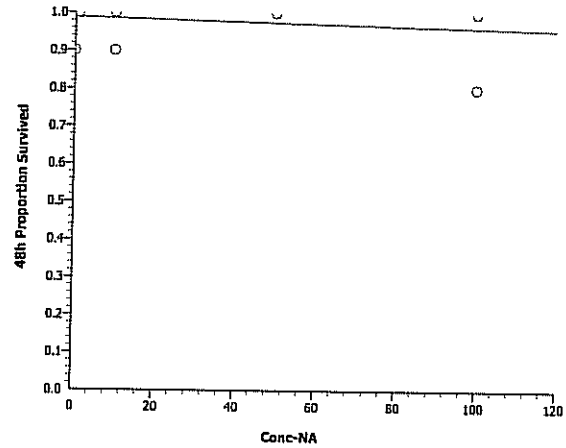
% Effect	Conc-NA	95% LCL	95% UCL
50	3669.32000	N/A	-29517.65000

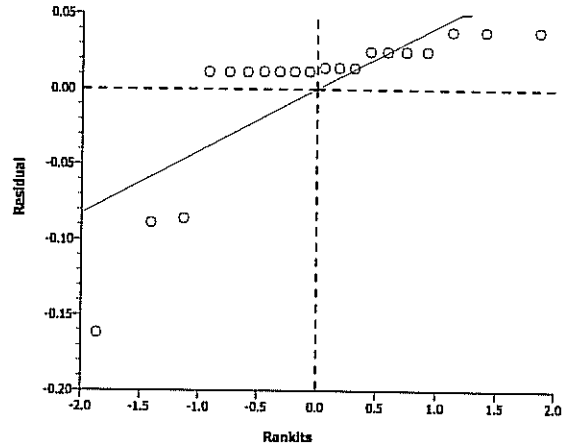
Data Summary

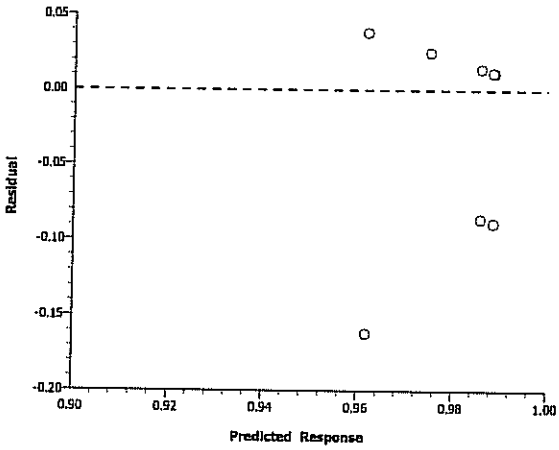
			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Lab Water	4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
1		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
10		4	0.97500	0.90000	1.00000	0.01021	0.05000	39	40
50		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
100		4	0.95000	0.80000	1.00000	0.02041	0.10000	38	40

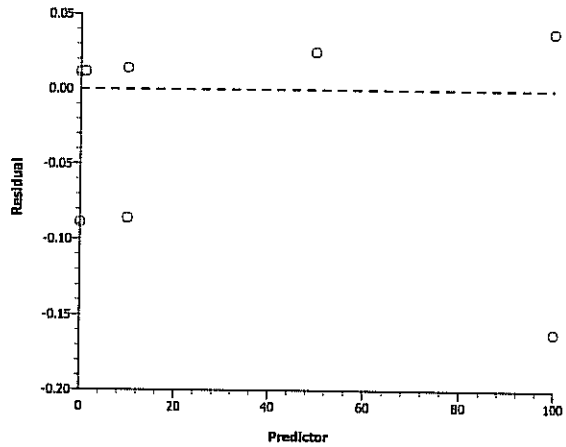
CETIS Analysis Detail

Graphics









Aquatic Research Organisms

DATA SHEET

I. Organism History

Species: Daphnia magna

Source: Lab reared X Hatchery reared____ Field collected____

Hatch date 10/3/06 Receipt date____

Lot number 100306 DM Strain ARO

Brood Origination US EPA OHIO

II. Water Quality

Temperature 24 °C Salinity — ppt DO Sat

pH 7.4 Hardness ≈110 ppm

III. Culture Conditions

System: FW static renewal

Diet: Flake Food____ Phytoplankton ✓ Trout Chow____

Brine Shrimp____ Rotifers____ Other YCT

Prophylactic Treatments:____

Comments: Neonates < 24 hrs old

IV. Shipping Information

Client: ESI # of Organisms: ≈ 220

Carrier: — Date Shipped: 10/3/06

Biologist: Neil Savage

1 - 800 - 927 - 1650

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Aqua. : Research Organisms

DATA SHEET

I. Organism History

Species: Pimephales promelas (FH)

Source: Lab reared X Hatchery reared ____ Field collected ____

Hatch date 9/20/06 Receipt date ____

Lot number 091606 FH Strain ARO

Brood Origination US EPA OHIO

II. Water Quality

Temperature 24 °C Salinity — ppt DO Sat

pH 7.4 Hardness ≈ 110 ppm

III. Culture Conditions

System: FW recirculated

Diet: Flake Food X Phytoplankton ____ Trout Chow ____

Brine Shrimp X Rotifers ____ Other ____

Prophylactic Treatments: ____

Comments: ____

IV. Shipping Information

Client: ESI # of Organisms: ≈220

Carrier: — Date Shipped: 10/3/06

Biologist: ____

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Aquatic Research Organisms

DATA SHEET

I. Organism History

Species: Pimephales promelas

Source: Lab reared ✓ Hatchery reared____ Field collected____

Hatch date 09/23/06 Receipt date____

Lot number 091906FH Strain____

Brood Origination USEPA OH

II. Water Quality

Temperature 23 °C Salinity — ppt DO SAT

pH 7.3 Hardness ≈120 ppm

III. Culture Conditions

System: FW SAT recirculated

Diet: Flake Food ✓ Phytoplankton____ Trout Chow____

Brine Shrimp ✓ Rotifers____ Other____

Prophylactic Treatments:____

Comments:____

IV. Shipping Information

Client: ESI # of Organisms: 220

Carrier: PICK UP Date Shipped: 10/5/06

Biologist: [illegible]

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rec'd 9/9/06

Aquatic Research Organisms

DATA SHEET

I. Organism History

Species: Pimephales promelas

Source: Lab reared ✓ Hatchery reared ____ Field collected ____

Hatch date 9-26-06 Receipt date ____

Lot number 092206FH Strain ____

Brood Origination EPA-OHIO

II. Water Quality

Temperature 23 °C Salinity <1 ppt DO —

pH 7.2 Hardness — ppm

III. Culture Conditions

System: Recirc

Diet: Flake Food ✓ Phytoplankton ____ Trout Chow ____

Brine Shrimp ✓ Rotifers ____ Other ____

Prophylactic Treatments: ____

Comments: ____

IV. Shipping Information

Client: ESI # of Organisms: 420+

Carrier: ____ Date Shipped: 10-9-06

Biologist: Mark Rosengrist

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RLP
10/11/06

Aquatic Research Organisms

DATA SHEET

I. Organism History

Species: Pimephales promelas

Source: Lab reared ✓ Hatchery reared ____ Field collected ____

Hatch date 9-29-06 Receipt date ____

Lot number 092506FH Strain ____

Brood Origination EPA-OHIO

II. Water Quality

Temperature 23 °C Salinity <1 ppt DO —

pH 7.2 Hardness — ppm

III. Culture Conditions

System: Recirc

Diet: Flake Food ✓ Phytoplankton ____ Trout Chow ____

Brine Shrimp ✓ Rotifers ____ Other ____

Prophylactic Treatments: ____

Comments: ____

IV. Shipping Information

Client: EST # of Organisms: 220+

Carrier: ____ Date Shipped: 10-11-06

Biologist: Mark Rosengrant

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Aquatic Research Organisms

DATA SHEET

I. Organism History

Species: Pimephales promelas

Source: Lab reared ✓ Hatchery reared ____ Field collected ____

Hatch date 10/5/06 Receipt date ____

Lot number 100106FH Strain ARO

Brood Origination USEPA OH

II. Water Quality

Temperature 24 °C Salinity — ppt DO SAT

pH 7.3 Hardness ~100 ppm

III. Culture Conditions

System: FW recirculated

Diet: Flake Food ✓ Phytoplankton ____ Trout Chow ____

Brine Shrimp ✓ Rotifers ____ Other ____

Prophylactic Treatments: ____

Comments: ____

IV. Shipping Information

Client: EST # of Organisms: 840+

Carrier: PICK UP Date Shipped: 10/14/06

Biologist: Lisa Litke

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Aquatic Research Organisms

RCC 10/21/06

DATA SHEET

I. Organism History

Species: Pimephales promelas

Source: Lab reared ✓ Hatchery reared ____ Field collected ____

Hatch date 10/10/06 Receipt date ____

Lot number 100606FH Strain ARO

Brood Origination USEPA Off

II. Water Quality

Temperature 23 °C Salinity — ppt DO SAT

pH 7.2 Hardness ≈100 ppm

III. Culture Conditions

System: FW & recirculated

Diet: Flake Food ✓ Phytoplankton ____ Trout Chow ____

Brine Shrimp ✓ Rotifers ____ Other ____

Prophylactic Treatments: ____

Comments: ____

IV. Shipping Information

Client: ESI # of Organisms: 900+

Carrier: pick up Date Shipped: 10/21/06

Biologist: Stan Lenitski

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Aquatic Research Organisms

DATA SHEET

I. Organism History

Species: Pimephales promelas

Source: Lab reared ✓ Hatchery reared ____ Field collected ____

Hatch date 10/11/06 Receipt date ____

Lot number 101506 FH Strain ARO

Brood Origination US EPA OHIO

II. Water Quality

Temperature 25 °C Salinity — ppt DO Sat

pH 7.4 Hardness ≈110 ppm

III. Culture Conditions

System: FW heated recirculated

Diet: Flake Food ✓ Phytoplankton ____ Trout Chow ____

Brine Shrimp ✓ Rotifers ✓ Other ____

Prophylactic Treatments: ____

Comments: ____

IV. Shipping Information

Client: ESI # of Organisms: 220+

Carrier: — Date Shipped: 10/30/06

Biologist: Neil Savage

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ORGANISM WET WEIGHTS

STUDY #: 15061 CLIENT: CH2M Hill

SPECIES: P. promelas ASSAY: PP48AD

Standard Weight of 20 (#) Control Organisms at the Start (Start / End) of Test

REP	WEIGHT (g)	REP	WEIGHT (g)
1	0.00392	11	0.00396
2	0.00440	12	0.00355
3	0.00517	13	0.00432
4	0.00297	14	0.00356
5	0.00475	15	0.00573
6	0.00408	16	0.00590
7	0.00549	17	0.00276
8	0.00193	18	0.00278
9	0.00277	19	0.00290
10	0.00478	20	0.00305

Mean Wet Weight _____ **g**

Test Solution Volume:_____ mL

LOADING RATE:_____g/L

Signature: Ryan Rodriguez Date: 10/3/06

Loading Rate = (Mean Wet Weight (g))*10 / Test Solution Volume (L)

@15°C loading rate must be ≤0.5 g/L (trout)
@20°C loading rate must be ≤0.65 g/L
@25°C loading rate must be ≤0.40 g/L

ORGANISM WET WEIGHTS

STUDY #: 15061-003 CLIENT: CH2M Hill

SPECIES: Ppromelas ASSAY: DMPP48AD

Standard Length and Weight of ____ (#) Control Organisms at the _____ (Start / End) of Test

REP	WEIGHT (g)	REP	WEIGHT (g)
1	0.00196	11	0.00309
2	0.00285	12	0.00305
3	0.00290	13	0.00094
4	0.00212	14	0.00281
5	0.00682	15	0.00364
6	0.00442	16	0.00052
7	0.00571	17	0.00140
8	0.00587	18	0.00231
9	0.00115	19	0.00260
10	0.00406	20	0.00060

Mean Wet Weight 0.002941 **g**
Mean Length _____ **mm**

Test Solution Volume: 200 mL

LOADING RATE: 0.1471 g/L

Signature: [illegible] Date: 10/5/06

Loading Rate = (Mean Wet Weight (g))*10 / Test Solution Volume (L)

@15°C loading rate must be ≤0.5 g/L (trout)
@20°C loading rate must be ≤0.65 g/L
@25°C loading rate must be ≤0.40 g/L

ORGANISM WET WEIGHTS

STUDY #: 15061 CLIENT: CH2M Hill

SPECIES: P. promelas ASSAY: PP48AD

Standard Length and Weight of 20 (#) Control Organisms at the END (Start / End) of Test

REP	WEIGHT (g)	REP	WEIGHT (g)
1	0.0024	11	0.0020
2	0.0012	12	0.0023
3	0.0024	13	0.0013
4	0.0009	14	0.0010
5	0.0012	15	0.0030
6	0.0012	16	0.0009
7	0.0021	17	0.0017
8	0.0017	18	0.0007
9	0.0023	19	0.0021
10	0.0007	20	0.0020

Mean Wet Weight 0.001655 **g**
Mean Length _____ **mm**

Test Solution Volume: 200 mL

LOADING RATE: 0.083 g/L

Signature: [illegible] Date: 10/16/06

Loading Rate = (Mean Wet Weight (g))*10 / Test Solution Volume (L)

@15°C loading rate must be ≤0.5 g/L (trout)
@20°C loading rate must be ≤0.65 g/L
@25°C loading rate must be ≤0.40 g/L

ORGANISM WET WEIGHTS

STUDY #: 15061 CLIENT: CH2M Hill

SPECIES: P. promelas ASSAY: PP48AD

Standard Length and Weight of 20 (#) Control Organisms at the Start (Start / End) of Test

REP	WEIGHT (g)	REP	WEIGHT (g)
1	0.0019	11	0.0033
2	0.0061	12	0.0059
3	0.0019	13	0.0037
4	0.0022	14	0.0043
5	0.0039	15	0.0049
6	0.0033	16	0.0018
7	0.0031	17	0.0028
8	0.0040	18	0.0038
9	0.0027	19	0.0021
10	0.0015	20	0.0014

Mean Wet Weight 0.0032 **g**
Mean Length ~~____~~ **mm**

Test Solution Volume: 200 mL

LOADING RATE: 0.16 g/L

Signature: m Date: 10/11/06

Loading Rate = (Mean Wet Weight (g))*10 / Test Solution Volume (L)

@15°C loading rate must be ≤0.5 g/L (trout)
@20°C loading rate must be ≤0.65 g/L
@25°C loading rate must be ≤0.40 g/L

ORGANISM WET WEIGHTS

STUDY #: CH2MHill (15061) CLIENT: CH2MHill

SPECIES: Pimephales promelas ASSAY: PP48AD

Standard Length and Weight of 20 (#) Control Organisms at the END (Start / End) of Test

REP	WEIGHT (g)	REP	WEIGHT (g)
1	.0073	11	.0009
2	.0071	12	.0037
3	.0026	13	.0086
4	.0020	14	.0056
5	.0073	15	.0031
6	.0044	16	.0055
7	.0041	17	.0021
8	.0021	18	.0041
9	.0057	19	.0038
10	.0030	20	.0050

Mean Wet Weight ~~.0087~~ .00439 g
Mean Length _____ mm

Test Solution Volume: 2000 mL

LOADING RATE: 0.215 g/L

Signature: [signature] Date: 10/11/06

Loading Rate = (Mean Wet Weight (g))*10 / Test Solution Volume (L)

@15°C loading rate must be ≤0.5 g/L (trout)
@20°C loading rate must be ≤0.65 g/L
@25°C loading rate must be ≤0.40 g/L

ORGANISM WET WEIGHTS

STUDY #: 15061 CLIENT: CH2M Hill - 020

SPECIES: P. promelas ASSAY: PP48AD

Standard Length and Weight of 20 (#) Control Organisms at the End (Start / End) of Test

REP	WEIGHT (g)	REP	WEIGHT (g)
1	.0054	11	.0038
2	.0022	12	.0050
3	.0052	13	.0074
4	.0016	14	.0027
5	.0046	15	.0087
6	.0027	16	.0085
7	.0050	17	.0043
8	.0079	18	.0066
9	.0046	19	.0030
10	.0084	20	.0026

Mean Wet Weight .0050 **g**
Mean Length _____ **mm**

Test Solution Volume: 200 mL

LOADING RATE: .00025 g/L

Signature: [signature] Date: 10/23/06

Loading Rate = (Mean Wet Weight (g))*10 / Test Solution Volume (L)

@15°C loading rate must be ≤0.5 g/L (trout)
@20°C loading rate must be ≤0.65 g/L
@25°C loading rate must be ≤0.40 g/L

ORGANISM WET WEIGHTS

STUDY #: 15061 CLIENT: CH2M Hill

SPECIES: P. promelas ASSAY: DMPP48AD

Standard Length and Weight of 20 (#) Control Organisms at the END (Start / End) of Test

REP	WEIGHT (g)	REP	WEIGHT (g)
1	.0041	11	.0047
2	.0020	12	.0018
3	.0031	13	.0012
4	.0032	14	.0021
5	.0015	15	.0019
6	.0023	16	.0039
7	.0017	17	.0023
8	.0055	18	.0020
9	.0037	19	.0033
10	.0032	20	.0020

Mean Wet Weight .0027 **g**
Mean Length _____ **mm**

Test Solution Volume: 200 mL

LOADING RATE: .000135 g/L

Signature: [signature] Date: 11/1/06

Loading Rate = (Mean Wet Weight (g))*10 / Test Solution Volume (L)

@15°C loading rate must be ≤0.5 g/L (trout)
@20°C loading rate must be ≤0.65 g/L
@25°C loading rate must be ≤0.40 g/L

PREPARATION OF DILUTIONS

STUDY: 15061	CLIENT: ~~Charlestown, MH WWTF~~ (63) Cham Hill
SPECIES: *D. magna & P. promelas*	

Diluent: (65) ~~Receiving Water~~ lab	Sample: -002	
Concentration %	Vol. Eff.(mls)	Final Vol.(mls)
Lab Control	0	1200
1%	12	↓
10%	120	↓
50%	600	↓
100%	1200	✓
INITIALS:	m	
TIME:	1510	
DATE:	10/3/06	

PREPARATION OF DILUTIONS

STUDY: 15061 - 003	CLIENT: CH2M Hill	
SPECIES: *D. magna & P. promelas*		
Diluent: ~~Receiving Water~~ RB Lab	Sample: -003	
Concentration %	Vol. Eff.(mls)	Final Vol.(mls)
Lab Control	0	1200
1%	12	↓
10%	120	↓
50%	600	↓
100%	1200	↓
INITIALS:	Yr	
TIME:	1240	
DATE:	10/5/06	

PREPARATION OF DILUTIONS

STUDY: 15061 -006	CLIENT: CH2M Hill
SPECIES: *D. magna & P. promelas*	

Diluent: Receiving Water Lab	Sample: -006	
Concentration %	Vol. Eff.(mls)	Final Vol.(mls)
Lab Control		1200
1%	12	↓
10%	120	
50%	600	
100%	1200	
INITIALS:	CS	
TIME:	1300	
DATE:	10/9/06	

PREPARATION OF DILUTIONS

STUDY: 15061	CLIENT: CH2M Hill	
SPECIES: *D. magna & P. promelas*		
Diluent: ~~Receiving Water~~ RB LAB	Sample: -009	
Concentration %	Vol. Eff.(mls)	Final Vol.(mls)
Lab Control		1200
1%	12	↓
10%	120	↓
50%	600	↓
100%	1200	↓
INITIALS:	CS	
TIME:	1235	
DATE:	10/9/06	

PREPARATION OF DILUTIONS

STUDY: 15061	CLIENT: CH2M Hill	
SPECIES: *D. magna & P. promelas*		
Diluent: Lab	Sample: -012	
Concentration %	Vol. Eff.(mls)	Final Vol.(mls)
Lab Control	0	1200
1%	12	↓
10%	120	↓
50%	600	↓
100%	1200	↓
INITIALS:	m	
TIME:	1205	
DATE:	10/11/06	

PREPARATION OF DILUTIONS

STUDY: 15061 -013	CLIENT: CH2M Hill	
SPECIES: *D. magna & P. promelas*		
Diluent: Lab	Sample: -013	
Concentration %	Vol. Eff.(mls)	Final Vol.(mls)
Lab Control	0	1200
1%	12	↓
10%	120	
50%	600	
100%	1200	✓
INITIALS:	BB	
TIME:	1405	
DATE:	10/14/06	

PREPARATION OF DILUTIONS

STUDY: 15061	CLIENT: CH2M Hill	
SPECIES: *D. magna & P. promelas*		
Diluent: Lab	Sample: -014	
Concentration %	Vol. Eff.(mls)	Final Vol.(mls)
Lab Control	0	1200
1%	12	↓
10%	120	↓
50%	600	↓
100%	1200	↓
INITIALS:	BB	
TIME:	1415	
DATE:	10/14/06	

PREPARATION OF DILUTIONS

STUDY: 15061	CLIENT: CH2M Hill	
SPECIES: *D. magna & P. promelas*		
Diluent: Lab	Sample: -015	
Concentration %	Vol. Eff.(mls)	Final Vol.(mls)
Lab Control	0	1200
1%	12	↓
10%	120	
50%	600	
100%	1200	✓
INITIALS:	BB	
TIME:	10/14/06	
DATE:	1355	

PREPARATION OF DILUTIONS

STUDY: 15061	CLIENT: CH2M Hill	
SPECIES: *D. magna* & *P. promelas*		
Diluent: Lab	Sample: -016	
Concentration %	Vol. Eff.(mls)	Final Vol.(mls)
Lab Control	0	1200
1%	12	
10%	120	
50%	600	
100%	1200	✓
INITIALS:	BB	
TIME:	1425	
DATE:	10/14/06	

PREPARATION OF DILUTIONS

STUDY: 15061 -017	CLIENT: CH2M Hill	
SPECIES: *D. magna & P. promelas*		
Diluent: Lab	Sample: -017	
Concentration %	Vol. Eff.(mls)	Final Vol.(mls)
Lab Control	0	1200
1%	12	↓
10%	120	
50%	600	
100%	1200	
INITIALS:	yr	
TIME:	1410	
DATE:	10/21/06	

PREPARATION OF DILUTIONS

STUDY: 15061 - 018	CLIENT: CH2M Hill	
SPECIES: *D. magna & P. promelas*		
Diluent: Lab	Sample: - 018	
Concentration %	Vol. Eff.(mls)	Final Vol.(mls)
Lab Control	Ø	1200
1%	12	↓
10%	120	↓
50%	600	↓
100%	1200	↓
INITIALS:	yr	
TIME:	1510	
DATE:	10/21/06	

PREPARATION OF DILUTIONS

STUDY: 15061 -019	CLIENT: CH2M Hill	
SPECIES: *D. magna & P. promelas*		
Diluent: Lab	Sample: -019	
Concentration %	Vol. Eff.(mls)	Final Vol.(mls)
Lab Control	Ø	1200
1%	12	↓
10%	120	
50%	600	
100%	1200	
INITIALS:	yr	
TIME:	1530	
DATE:	10/21/06	

PREPARATION OF DILUTIONS

STUDY: 15061	CLIENT: CH2M Hill	
SPECIES: *D. magna & P. promelas*		
Diluent: Lab	Sample: -020	
Concentration %	Vol. Eff.(mls)	Final Vol.(mls)
Lab Control	0	1200
1%	12	↓
10%	120	↓
50%	600	↓
100%	1200	↓
INITIALS:	EG	
TIME:	1440	
DATE:	10/21/06	

PREPARATION OF DILUTIONS

STUDY: 15061	CLIENT: CH2M Hill	
SPECIES: *D. magna & P. promelas*		
Diluent: Lab	Sample: -049	
Concentration %	Vol. Eff.(mls)	Final Vol.(mls)
Lab Control	0	1200
1%	12	↓
10%	120	
50%	600	
100%	1200	
INITIALS:	SJ	
TIME:	1410	
DATE:	10/30/06	

RECORD OF METERS USED

STUDY: 15061 - 002		CLIENT: CH2M Hill	
D. magna			
Exposure (Hours)			
	0	24	48
Water Quality Station #	2		2
Initials / Date	m 10/3		CS 10/5/06

P. promelas			
Exposure (Hours)			
	0	24	48
Water Quality Station #	2	1	2
Initials / Date	m 10/3	m 10/4	CS 10/5/06

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #	3	DO meter #	19	
DO probe #	13	DO probe #	12	
pH meter #	1097	pH meter #	470	
pH probe #	44	pH probe #	48	
S/C meter #	YSI 30C	S/C meter #	YSI 30C	
S/C probe #	↓	S/C probe #	↓	
Salinity meter #	↓	Salinity meter #	↓	

RECORD OF METERS USED

STUDY: 15061 - 003	CLIENT: CH2M Hill		
D. magna			
Exposure (Hours)			
	0	24	48
Water Quality Station #			2
Initials / Date			EG 10/7/06

P. promelas			
Exposure (Hours)			
	0	24	48
Water Quality Station #		1	2
Initials / Date		CS/10/6/06	EG 10/7/06

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #	3	DO meter #	19	
DO probe #	13	DO probe #	12	
pH meter #	1097	pH meter #	470	
pH probe #	44	pH probe #	48	
S/C meter #	YSI30C	S/C meter #	YSI30C	
S/C probe #	↓	S/C probe #	↓	
Salinity meter #	↓	Salinity meter #	↓	

RECORD OF METERS USED

STUDY: 15061 -006	CLIENT: CH2M Hill	
D. magna		
Exposure (Hours)		
0	24	48
Water Quality Station #	1		1
Initials / Date	CS 10/9/06		CS 10/11/06

P. promelas			
Exposure (Hours)			
	0	24	48
Water Quality Station #	1	2	1
Initials / Date	CS 10/9/06	m 10/10	CS 10/11/06

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #	3	DO meter #	19	
DO probe #	13	DO probe #	12	
pH meter #	1097	pH meter #	470	
pH probe #	44	pH probe #	48	
S/C meter #	YSI 30C	S/C meter #	YSI 30C	
S/C probe #	↓	S/C probe #	↓	
Salinity meter #	↓	Salinity meter #	↓	

RECORD OF METERS USED

STUDY: 15061 - 009	CLIENT: CH2M Hill	
D. magna		
Exposure (Hours)		
0	24	48
Water Quality Station #	1		1
Initials / Date	CS / 10/9/06		EG 10/11

P. promelas			
Exposure (Hours)			
	0	24	48
Water Quality Station #	1	2	1
Initials / Date	CS/10/9/06	m 10/10	EG 10/11

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #	3	DO meter #	19	
DO probe #	13	DO probe #	12	
pH meter #	1097	pH meter #	420	
pH probe #	44	pH probe #	48	
S/C meter #	45I30C	S/C meter #	YSI30C	
S/C probe #	↓	S/C probe #	↓	
Salinity meter #	↓	Salinity meter #	↓	

RECORD OF METERS USED

STUDY: 15061 -012	CLIENT: CH2M Hill		
D. magna			
Exposure (Hours)			
	0	24	48
Water Quality Station #	2		1
Initials / Date	lm 10/11		CS 10/13

P. promelas			
Exposure (Hours)			
	0	24	48
Water Quality Station #	2	2	1
Initials / Date	lm 10/11	EG 10/12	10/13 CS

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #	3	DO meter #	19	
DO probe #	13	DO probe #	12	
pH meter #	1097	pH meter #	1097	
pH probe #	44	pH probe #	48	
S/C meter #	YSI30C	S/C meter #	YSI30C	
S/C probe #	↓	S/C probe #	↓	
Salinity meter #	↓	Salinity meter #	↓	

RECORD OF METERS USED

STUDY: 15061 - 013	CLIENT: CH2M Hill		
D. magna			
Exposure (Hours)			
	0	24	48
Water Quality Station #	1		1
Initials / Date	BB 10/14/06		CS 10/16/06

P. promelas			
Exposure (Hours)			
	0	24	48
Water Quality Station #	1	2	1
Initials / Date	BB 10/14/06	SJ 10/15	CS 10/16/06

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #	3	DO meter #	19	
DO probe #	13	DO probe #	12	
pH meter #	1097	pH meter #	470	
pH probe #	44	pH probe #	48	
S/C meter #	YSI30C	S/C meter #	YSI30C	
S/C probe #	1	S/C probe #	1	
Salinity meter #	N/A	Salinity meter #	N/A	

RECORD OF METERS USED

STUDY: 15061 - 014	CLIENT: CH2M Hill	
D. magna		
Exposure (Hours)		
0	24	48
Water Quality Station #	1		1
Initials / Date	BB 10/14/06		CS 10/16/04

P. promelas			
Exposure (Hours)			
	0	24	48
Water Quality Station #	1	2	1
Initials / Date	BB 10/14/06	SJ 10/15	CS 10/16/06

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #	3	DO meter #	19	
DO probe #	13	DO probe #	12	
pH meter #	1097	pH meter #	470	
pH probe #	44	pH probe #	48	
S/C meter #	YSI 30C	S/C meter #	YSI 30C	
S/C probe #	↓	S/C probe #	↓	
Salinity meter #	N/A	Salinity meter #	N/A	

RECORD OF METERS USED

STUDY: 15061 - 015	CLIENT: CH2M Hill	
D. magna		
Exposure (Hours)		
0	24	48
Water Quality Station #	1		1
Initials / Date	10/14/06 BB		10/16/06

P. promelas			
Exposure (Hours)			
	0	24	48
Water Quality Station #	1	2	1
Initials / Date	BB 10/14/06	SJ 10/15	CS 10/16/06

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #	3	DO meter #	19	
DO probe #	13	DO probe #	12	
pH meter #	1097	pH meter #	478	
pH probe #	44	pH probe #	48	
S/C meter #	YSI 30C	S/C meter #	YSI 30C	
S/C probe #	↓	S/C probe #	↓	
Salinity meter #	N/A	Salinity meter #	N/A	

RECORD OF METERS USED

STUDY: 15061 -016	CLIENT: CH2M Hill	
D. magna		
Exposure (Hours)		
0	24	48
Water Quality Station #	1		1
Initials / Date	BB 10/14/06		CS 10/16/06

P. promelas			
Exposure (Hours)			
	0	24	48
Water Quality Station #	1	2	1
Initials / Date	BB 10/14/06	SJ 10/15	m 10/16

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #	3	DO meter #	19	
DO probe #	13	DO probe #	12	
pH meter #	1097	pH meter #	470	
pH probe #	44	pH probe #	48	
S/C meter #	YSI 30L	S/C meter #	YSI 30L	
S/C probe #	6	S/C probe #	6	
Salinity meter #	N/A	Salinity meter #	N/A	

RECORD OF METERS USED

STUDY: 15061 -017	CLIENT: CH2M Hill	
D. magna		
Exposure (Hours)		
0	24	48
Water Quality Station # 2		2
Initials / Date 10/21/06		CS 10/23/06

P. promelas		
Exposure (Hours)		
0	24	48
Water Quality Station # 2	2	1
Initials / Date 10/21/06	SS 10/22	m 10/23

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #	3	DO meter #	19	
DO probe #	13	DO probe #	12	
pH meter #	1097	pH meter #	470	
pH probe #	44	pH probe #	48	
S/C meter #	YSI30C	S/C meter #	YSI30C	
S/C probe #	↓	S/C probe #	↓	
Salinity meter #		Salinity meter #		

RECORD OF METERS USED

STUDY: 15061 – 018	CLIENT: CH2M Hill	
D. magna		
Exposure (Hours)		
0	24	48
Water Quality Station #	2		2
Initials / Date	YL 10/21/04		CP 10/23

P. promelas			
Exposure (Hours)			
0	24	48	
Water Quality Station #	2	1	2
Initials / Date	YL 10/21/04	SJ 10/22	10/23

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #		DO meter #	18	
DO probe #		DO probe #	12	
pH meter #		pH meter #	470	
pH probe #		pH probe #	48	
S/C meter #		S/C meter #	YSI 30C	
S/C probe #		S/C probe #		
Salinity meter #		Salinity meter #		

RECORD OF METERS USED

STUDY: 15061 -019	CLIENT: CH2M Hill	
D. magna		
Exposure (Hours)		
0	24	48
Water Quality Station # 1		1
Initials / Date Ym 10/21/06		CS 10/23

P. promelas		
Exposure (Hours)		
0	24	48
Water Quality Station # 1	2	1
Initials / Date Ym 10/21/06	Ym 10/22	CS 10/23

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #	3	DO meter #	19	
DO probe #	13	DO probe #	12	
pH meter #	1097	pH meter #	470	
pH probe #	44	pH probe #	48	
S/C meter #	YSI 30C	S/C meter #	YSI 30C	
S/C probe #	↓	S/C probe #	↓	
Salinity meter #	↓	Salinity meter #	↓	

RECORD OF METERS USED

STUDY: 15061 -020	CLIENT: CH2M Hill	
D. magna		
Exposure (Hours)		
0	24	48
Water Quality Station #	1		1
Initials / Date	EG 10/21		CS 10/23

P. promelas			
Exposure (Hours)			
	0	24	48
Water Quality Station #	1	2	1
Initials / Date	EG 10/21/06	CP 10/22	CS 10/23

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #	3	DO meter #	19	As Rec: 5.75
DO probe #	13	DO probe #	12	2 drops NaOH added
pH meter #	1097	pH meter #	470	
pH probe #	44	pH probe #	48	
S/C meter #	YSI30C	S/C meter #	YSI30C	
S/C probe #	↓	S/C probe #	↓	
Salinity meter #	↓	Salinity meter #	↓	

RECORD OF METERS USED

STUDY: 15061 - 049	CLIENT: CH2M Hill	
D. magna		
Exposure (Hours)		
0	24	48
Water Quality Station #	1		2
Initials / Date	m 10/30		CS 11/1

P. promelas			
Exposure (Hours)			
	0	24	48
Water Quality Station #	1	2	2
Initials / Date	m 10/30	SJ 10/31	CS 11/1

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #	3	DO meter #	19	
DO probe #	13	DO probe #	12	
pH meter #	1097	pH meter #	470	
pH probe #	44	pH probe #	48	
S/C meter #	YSI30C	S/C meter #	YSI30C	
S/C probe #	↓	S/C probe #	↓	
Salinity meter #	↓	Salinity meter #		

ESI

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Hampton, NH 03843-0778
Telephone: 603-926-3345

SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/3/06 TIME: 1200 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/3/06 TIME: 1200 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☑ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☑ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☑ YES	☐ NO
SAMPLE DATE:	☑ YES	☐ NO
SAMPLE TIME RECORDED:	☑ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☑ YES	☐ NO
CUSTODY SEAL IN PLACE:	☑ YES	☐ NO
SHIPPING CONTAINER INTACT:	☑ YES	☐ NO

SAMPLE TEMPERATURE (AT ARRIVAL): 15 °C

DOES CLIENT NEED NOTIFICATION OF TEMPERATURE? ☐ YES ☑ NO

SAMPLE ARRIVED ON ICE: ☐ YES ☑ NO Melted

COMMENTS: 1x 1g Solid
1x 2.5g Water

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/5/06 TIME: 1030 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/5/06 TIME: 1145 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☑ YES	☐ NO	1 missing cooler - No Chain BB
CHAIN OF CUSTODY SIGNED:	☑ YES	☐ NO	
CHAIN OF CUSTODY COMPLETE:	☑ YES	☐ NO	
SAMPLE DATE:	☑ YES	☐ NO	
SAMPLE TIME RECORDED:	☑ YES	☐ NO	
SAMPLE TYPE IDENTIFIED:	☑ YES	☐ NO	
CUSTODY SEAL IN PLACE:	☑ YES	☐ NO	
SHIPPING CONTAINER INTACT:	☑ YES	☐ NO	

SAMPLE TEMPERATURE (AT ARRIVAL): 4 °C

DOES CLIENT NEED NOTIFICATION OF TEMPERATURE? ☐ YES ☒ NO

SAMPLE ARRIVED ON ICE: ☒ YES ☐ NO

COMMENTS: DLHCV1-LS-1 water
DLHCV1-DS-1 solid

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/7/08 TIME: 1130 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/7/08 TIME: 1130 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☑ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☑ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☑ YES	☐ NO
SAMPLE DATE:	☑ YES	☐ NO
SAMPLE TIME RECORDED:	☑ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☑ YES	☐ NO
CUSTODY SEAL IN PLACE:	☑ YES	☐ NO
SHIPPING CONTAINER INTACT:	☑ YES	☐ NO
SAMPLE TEMPERATURE (AT ARRIVAL): 4 °C		
DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?	☐ YES	☑ NO
SAMPLE ARRIVED ON ICE:	☑ YES	☐ NO

COMMENTS:
DLHCV2-DS-1 solid -005
DLHCV2-LS-1 water -006
CLECV3-DS-1 solid -007

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/9/06 TIME: 0945 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/9/06 TIME: 0945 BY: BR

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☒ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☒ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☒ YES	☐ NO
SAMPLE DATE:	☒ YES	☐ NO
SAMPLE TIME RECORDED:	☒ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☒ YES	☐ NO
CUSTODY SEAL IN PLACE:	☒ YES	☐ NO
SHIPPING CONTAINER INTACT:	☒ YES	☐ NO

SAMPLE TEMPERATURE (AT ARRIVAL): 17 °C

DOES CLIENT NEED NOTIFICATION OF TEMPERATURE? ☐ YES ☒ NO

SAMPLE ARRIVED ON ICE: ☐ YES ☒ NO Melted

COMMENTS:
DLHTV2-DS-1 Solid -008
DLHTV2-LS-1 Water -009

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/11/06 TIME: 1000 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/11/06 TIME: 1030 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☒ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☒ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☒ YES	☐ NO
SAMPLE DATE:	☒ YES	☐ NO
SAMPLE TIME RECORDED:	☒ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☒ YES	☐ NO
CUSTODY SEAL IN PLACE:	☒ YES	☐ NO
SHIPPING CONTAINER INTACT:	☐ YES	☐ NO
SAMPLE TEMPERATURE (AT ARRIVAL): 5 °C		
DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?	☐ YES	☒ NO
SAMPLE ARRIVED ON ICE:	☒ YES	☐ NO

COMMENTS:
CLECU1-DS-1 solid -011
CLECU1-LS-1 water -012
CLECU4-DS-1 solid -010

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/~~13~~ 14/06 (B) TIME: 1330 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/14/06 TIME: 1330 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☑ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☑ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☑ YES	☐ NO
SAMPLE DATE:	☑ YES	☐ NO
SAMPLE TIME RECORDED:	☑ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☑ YES	☐ NO
CUSTODY SEAL IN PLACE:	☑ YES	☐ NO
SHIPPING CONTAINER INTACT:	☑ YES	☐ NO
SAMPLE TEMPERATURE (AT ARRIVAL): 4 °C		
DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?	☐ YES	☑ NO
SAMPLE ARRIVED ON ICE:	☑ YES	☐ NO

COMMENTS:

WCOAL LKE	-013	water
ECOAL LKE	-014	"
LIME LKE	-015	"
IRON LKE	-016	"

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** Cham Hill

SAMPLE RECEIPT:
DATE: 10/21/06 TIME: 1330 BY: [illegible]

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/21/06 TIME: 1330 BY: [illegible]

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☒ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☒ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☒ YES	☐ NO
SAMPLE DATE:	☒ YES	☐ NO
SAMPLE TIME RECORDED:	☒ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☒ YES	☐ NO
CUSTODY SEAL IN PLACE:	☒ YES	☐ NO
SHIPPING CONTAINER INTACT:	☒ YES	☐ NO
SAMPLE TEMPERATURE (AT ARRIVAL): 4°C °C		
DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?	☐ YES	☒ NO
SAMPLE ARRIVED ON ICE:	☒ YES	☐ NO

COMMENTS:

WCOAL LKS -017 water
ECOAL LKS -018 "
LIME LKS -019 "
IRON LKS -020 "

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/28/06 TIME: 1030 BY: EG

DELIVERED VIA: ☐ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/30/06 TIME: 0900 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☑ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☑ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☑ YES	☐ NO
SAMPLE DATE:	☑ YES	☐ NO
SAMPLE TIME RECORDED:	☑ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☑ YES	☐ NO
CUSTODY SEAL IN PLACE:	☑ YES	☐ NO
SHIPPING CONTAINER INTACT:	☑ YES	☐ NO
SAMPLE TEMPERATURE (AT ARRIVAL): 4 °C		
DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?	☐ YES	☑ NO
SAMPLE ARRIVED ON ICE:	☑ YES	☐ NO

COMMENTS: CLELV2-DS-1 solid
CLELV2-LS-1 water

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ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2MHill	Contact: R. McMorris	Project Name: Cargo Sweep	Page 1 of 1
Report to:	Address:	Project Number:	
Invoice to: PARSON Brinkerhoff	Address:	Project Manager: E. Mosley	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-001	DLHTV1-DS-1	10/1/06	1640	McMorris	C	4L	P	N/A	S	N	Per Quote ↓
-002	DLHTV1-LS-1	10/1/06	1440	McMorris	C	10L	P	N/A	W	N	

Relinquished By: J. Coffey	Date: 10/01/06	Time: 1840	Received By: [signature] Date: 10/3/06 Time: 1200
Relinquished By:	Date:	Time:	Received at Lab By: Date: Time:

Comments:

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ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact:	Project Name: GREAT LAKES	Page 1 of 1
Report to: JOHN COFFEY/CH2M HILL	Address:	Project Number:	
Invoice to: PARSONS BRINKERHOFF	Address:	Project Manager:	
Voice: R. McMORRIS 541-740-4250	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com-posit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preser-vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-007	CLECV3-DS-1	10/6/06	1300	RM	C	4L	P	N/A	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS

Relinquished By: Reagan McMorris	Date: 10/6/06 Time: 1410	Received By:	Date: 10/7/06 Time: 1130
Relinquished By:	Date: Time:	Received at Lab By:	Date: Time:

Comments:

Sample Delivery Group No:	Page of

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ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact: R. McMORRIS	Project Name: GREAT LAKES	Page 1 of 1
Report to:	Address:	Project Number:	
Invoice to: PARSON BRINKERHOFF	Address:	Project Manager:	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-005	DLHCV2-DS-1	10-4-06	2300	RM	C	4L	P	4°C	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-006	DLHCV2-LS-1	↓	↓	↓	C	10L	P	↓	W	N	48 HOUR PIMEPHALES/DAPHNIA

Relinquished By: REGAN McMORRIS	Date: 11-4-06 Time: 2350	Received By:	Date: 10/7/06 Time: 1130
Relinquished By:	Date: Time:	Received at Lab By:	Date: Time:

Comments:

Sample Delivery Group No:	Page of

No: № 2105

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Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact: R. McMORRIS	Project Name: GREAT LAKES	Page 1 of 1
Report to:	Address:	Project Number:	
Invoice to: PARSON BRINKERHOFF	Address:	Project Manager:	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-004	DLHCV1-DS-1	10-3-06	0900	McMorris	C	4L	P	4°C	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-003	DLHCV1-LS-1	↓	↓	McMorris	C	10L	P	↓	W	N	48 HOUR PIMEPHALES/DAPHNIA
-008	DLH TV2-DS-1	↓	1300	McMorris	C	4L	P	↓	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-009	DLH TV2-LS-1	↓	↓	McMorris	C	10L	P	↓	W	N	48 HOUR PIMEPHALES/DAPHNIA

Relinquished By: Regan McMorris Date: 10-3-06 Time: 1500 | Received By: Date: 10/9/06 Time: 0945

Relinquished By: Date: Time: | Received at Lab By: Date: Time:

Comments:

No: № 2106

Sample Delivery Group No: Page 1 of 1

ESI
EnviroSystems, Inc.
1 Lafayette Road
P.O. Box 778
Hampton, N.H. 03843
Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact: REGAN MCMORRIS	Project Name: GREAT LAKES	Page 1 of 1
Report to: JOHN COFFEY / CH2MHILL	Address: 541-740-4250	Project Number:	
Invoice to: PARSON BRINKERHOFF	Address:	Project Manager: ERIN MOSLEY	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com-posit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preser-vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-010	CLECV4-DS-1	10-9-06	16:00	RM	C	4L	P	N/A	S	N	28 DAY HYALLELLA 20 DAY CHIRONOMUS
RM ~~-011~~	~~CLECV4-LS-1~~	~~10-9-06~~		~~RM~~	~~C~~	~~10L~~	~~P~~	~~N/A~~	~~W~~	~~N~~	~~48 HOUR PIMEPHALES/DAPHNIA~~

Relinquished By: [signature]	Date: 10/10/06 Time: 13:35	Received By: [signature]	Date: 10/11/06 Time: 1000
Relinquished By:	Date: Time:	Received at Lab By:	Date: Time:

Comments:

Sample Delivery Group No:	Page of

No: № 2103

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Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-011	CLELV1-DS-1	10/10/06	0900	RM	C	4L	P	N/A	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-012	CLELV1-LS-1	10/10/06	0700	RM	C	10L	P	N/A	W	N	48 HOUR PIMEPHALES/DAPHNIA

Relinquished By: [signature]	Date: 10/10/06 Time: 13:25	Received By: [signature]	Date: 10/11/06 Time: 1000
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CH2MHILL Applied Sciences Lab
CHAIN OF CUSTODY RECORD
AND AGREEMENT TO PERFORM SERVICES

CVO 2300 NW Walnut Boulevard
Corvallis, OR 97330-3538
(541) 752-4271 FAX (541) 752-0276

ESI # 15061

COC #

Project #	Purchase Order #
Project Name: GREAT LAKES PROJECT	
Company Name: CH2M HILL INC	
Report to: RYAN LOVERIDGE / CH2M Hill BOSTON	Phone No: (617) 523-2002 x239
Requested Completion Date:	Sample Disposal: Dispose ☐ Return ☐

Requested Analytical Method #: Pimephales & daphnid acute

Preservative: 4°C

THIS AREA FOR LAB USE ONLY

Lab #	Page	of

TO ENVIROSYSTEMS

EPA Tier QC Level: 1 (Screening) 2 3 4

Sampling Date	Sampling Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	Matrix AIR	Matrix Other	CLIENT SAMPLE ID (8 CHARACTERS)	LAB QC	TOTAL # OF CONTAINERS	Pimephales & daphnid acute	Alternate Description	Lab ID
10/13/06	1315			X				WCOALLKE		1	X	15061 -013	
	1320			X				ECOALLKE		1	X	-014	
	1325			X				LIME LKE		1	X	-015	
	1330			X				IRON LKE		1	X	-016	

Relinquished By	Date/Time	Received By	Date/Time
Sampled By and Title (Please sign and print name): BRETT Muckey Assoc. Sci CH2M	10/13/06	Relinquished By (Please sign and print name): BRETT Muckey	10/13/06 541-768-3160
Received By (Please sign and print name): Brian Buzby ESI	10/14/06 1330	Relinquished By (Please sign and print name)	
Received By (Please sign and print name)		Shipped Via: UPS Fed-Ex Other 4°C	Shipping #

Special Instructions: LAKE ERIE, OHR 100% TEST CONDITIONS

Instructions and Agreement Provisions on Reverse Side

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CH2MHILL Applied Sciences Lab
CHAIN OF CUSTODY RECORD
AND AGREEMENT TO PERFORM SERVICES

CVO 2300 NW Walnut Boulevard
Corvallis, OR 97330-3538
(541) 752-4271 FAX (541) 752-0276

COC #

Project #	Purchase Order #
Project Name: GREAT LAKES	
Company Name: CH2M HILL	
Report to: RYAN LOVERIDGE / BOSTON	Phone No: (617) 523-2002 x239
Requested Completion Date:	Sample Disposal: Dispose ☐ Return ☐

Requested Analytical Method #: Pimephales & DAPHNID ACUTE

Preservative: 4°C

THIS AREA FOR LAB USE ONLY

Lab #	Page	of

-1 ENVIROSYSTEMS

EPA Tier QC Level: 1 (Screening) 2 3 4

	Sampling Date	Sampling Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	Matrix AIR	Matrix Other	CLIENT SAMPLE ID (8 CHARACTERS)	LAB QC	TOTAL # OF CONTAINERS	Pimephales & DAPHNID ACUTE	Alternate Description	Lab ID
-017	10/20/06	1130			X				WCOALLKS		1	X	4L cubetainer	
-018	↓	↓			X				ECOALLKS		1	X	↓	
-019	↓	↓			X				LIME LKS		1	X	↓	
-020	↓	↓			X				IRON LKS		1	X	↓	

Relinquished By	Date/Time	Received By	Date/Time
[signature]			
Sampled By and Title (Please sign and print name): [signature] Troy Pittenger	Date/Time: 1130 10/20/06	Relinquished By (Please sign and print name): [signature] BRETT Mackey Assoc. SCS	Date/Time: 10/20/06 1340
Received By (Please sign and print name): Fed EX	Date/Time: 10/21/06	Relinquished By (Please sign and print name): [signature]	Date/Time: 10/21/06 1330
Received By (Please sign and print name)	Date/Time	Shipped Via: UPS Fed-Ex Other ____	Shipping #

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Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-048	CLELV2-DS-1	10/27/06	10:00	RM	C	4L	P	N/A	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-049	CLELV2-LS-1	↓	07:00	RM	C	10L	P	N/A	S	N	48 HOUR PIMEPHALES/DAPHNIA

Relinquished By: Regan L. McMorris	Date: 10/27/06 Time: 1400	Received By: FedEx	Date: Time:
Relinquished By: FedEx	Date: Time:	Received at Lab By: [illegible]	Date: 10/28/06 Time: 1030

Comments:

No: № 2103

Sample Delivery Group No:	Page of

TOXICOLOGICAL EVALUATION OF SEDIMENT SAMPLES

Great Lakes Sweepings Characterization *Chironomus dilutus* Toxicity Tests

Prepared For

CH2M Hill, Incorporated
25 New Chardon Street, Suite 500
Boston, MA 02114-4774

By

EnviroSystems, Incorporated
1 Lafayette Road
Hampton, New Hampshire 03842

October 2006
Reference Number 15061-06-10

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TOXICOLOGICAL EVALUATION
OF SEDIMENT SAMPLES
October 2006

Great Lakes Sweepings Characterization
Chironomus dilutus Toxicity Tests

1.0 INTRODUCTION

This report presents the results of chronic exposure partial life cycle toxicity tests conducted on sediment samples provided by CH2M Hill as part of a program to evaluate deck sweepings discharged to the Great Lakes. Testing was based on programs and protocols developed by the ASTM (2001) and US EPA (2000). The toxicity of the samples was assessed by conducting long term toxicity tests using the freshwater midge, *Chironomus dilutus*. Assays were performed at EnviroSystems, Incorporated (ESI), Hampton, New Hampshire.

Toxicity tests expose groups of organisms to environmental samples, a laboratory control and/or a field reference site for a specified period to assess potential impacts on a variety of endpoints, such as survival, growth or reproduction. For this series of assays endpoints were survival and growth. Analysis of variance techniques are used to determine the relative toxicity of the samples as compared to the laboratory control and/or field reference site.

2.0 MATERIALS AND METHODS

2.1 General Methods, Biological Evaluations

Toxicological and analytical protocols used in this program follow procedures outlined in *Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates* (ASTM 2001), *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates* (US EPA 2000) and *Standard Methods for the Examination of Water and Wastewater*, 20th Edition (APHA 1998). These protocols provide standard approaches for physical and chemical analysis and for the evaluation of toxicological effects of sediments on aquatic invertebrates.

2.2 Test Species

C. dilutus were obtained from Aquatic BioSystems, Inc., Fort Collins, Colorado. Second instar egg cases were shipped to ESI 11 days after they were deposited. At ESI egg cases were transferred to fresh water and placed in an incubator at 23°C. Observations and water changes were made daily until hatch. Once larvae started to hatch, approximately 48 hours after receipt, the cases were transferred to a new culture vessel. After approximately 20 hours the hatched larvae were collected and added to the test vessels.

2.3 Test Samples and Laboratory Control Sediment

Once received, samples were inspected to determine integrity, given unique sample numbers and logged into the laboratory sample management database. Samples were then placed in a secure storage area and refrigerated at 2 - 4 °C until required. A listing of sample sites, sample collection, and receipt information is summarized in Table 1.

The control sediment was a natural, fine-grained substrate field collected from the upper portion of the Taylor River in Hampton and Hampton Falls, NH. This water body receives no discharges from any known point sources. Overlying water for the sediment toxicity tests was a mixture of natural surface water, collected from the same source as the control sediment, and moderately hard reconstituted water. Use of natural surface water mixed with artificial reconstituted water is recommended by the protocol (EPA 2000, ASTM 2001).

2.4 *Chironomus dilutus* Assay

Sediment tests were conducted according to ASTM (2001) and EPA (2000) methods. Endpoints of the 20 day exposure were survival and growth, measured as ash free dry weight. Site sediment and laboratory control sediment treatments consisted of 8 replicates with 10 organisms/replicate. Test vessels were 400 mL glass beakers containing approximately 100 mL of sediment and 250 mL of overlying water. Test vessels were drilled at a consistent height above their bases and the hole covered with Nytex® screen. The screened hole facilitated water exchange. The overlying water volume to sediment surface area ratio was approximately 7:1. Vessels were maintained in a water bath during the assay. Depth of the water in the bath was set to be approximately 1 cm below the drain hole in the test vessel to eliminate flow of water from the bath into the test vessel. The water bath was maintained in a limited access temperature controlled room. Temperatures in the room and water bath were independently maintained at 23 ±1°C. The photoperiod in the test chamber was set at 16:8 hour light:dark. Light was provided by cool white flourescent bulbs.

The day prior to test initiation (day -1) control and test sediments were sieved using a 2 mm sieve to remove rocks, twigs, and other debris, and then placed in the test vessels. Overlying water was immediately added, and the vessels were left undisturbed overnight to settle. Floating detritus was removed the next morning. On day 0 organisms were added to the test vessels below the water surface using a glass transfer pipet with the assistance of a dissecting microscope.

Overlying water in each replicate was renewed daily after collection of water quality data. The volume of water added to each test chamber was approximately 500 mL, two volumes. Water exchanges were facilitated by use of a distribution system designed to provide equal, regulated, flow to each chamber. The system was activated manually by the addition of water during this assay.

Prior to the daily overlying water renewal, temperature, specific conductance, pH, and dissolved oxygen were measured in one replicate of each treatment. Alkalinity, ammonia, and hardness of the overlying water were measured at the start, day 10 and end of the assay. Daily overlying water quality records and weekly alkalinity, ammonia and hardness values are available in Appendix A. Each replicate was fed 1.5 mL of 6 g/L Tetramin® flake fish food suspension after the daily renewal.

After 20 days exposure, replicates of each test treatment were terminated to collect data for the survival and growth endpoints. Each test chamber was gently swirled to loosen the sediments and the test material was dumped into an 8" stainless steel sieve with a 0.5 mm mesh screen. The sediments were washed through the sieve using synthetic, moderately hard reconstituted water and material left on the screen was sorted to recover the organisms. This process was continued until the entire sample was evaluated. Surviving larvae were placed on tared weighing pans; partially and fully emerged organisms were recorded in survival counts but not included in weight measurements. Pans were dried overnight at 103°C to obtain dry weight to the nearest 0.01 mg. The organisms were then fired in a muffle furnace for two hours at 550°C to obtain the ash free dry weight to the nearest 0.01 mg. The mean weight of surviving organisms was determined to assess growth.

2.5 Statistical Analysis

Survival and growth data were analyzed using CETIS® software to determine significant differences between the test sediments and both the associated laboratory control and reference sediments. Data sets were evaluated to determine normality of distribution and homogeneity of sample variance. Data sets were subsequently evaluated using the appropriate parametric or non-parametric Analysis of Variance (ANOVA) statistic. Pair-wise comparisons were made using the appropriate statistical evaluation. Statistical difference was evaluated at α=0.05.

2.6 Quality Control

As part of the laboratory quality control program, reference toxicant evaluations are conducted on a regular basis for each test species. These results provide relative health and response data while allowing for comparison with historic data sets. Results were within one standard deviation of the historic mean for the species. Results are summarized in Table 2.

2.7 Protocol Deviations

Review of data associated with this study documented no deviations from specified method protocol.

3.0 RESULTS AND DISCUSSION

Survival and growth data from the 20 day exposure are summarized in Tables 3 and 4, respectively. Water quality data collected during the assays are summarized in Table 5. Support data, including copies of laboratory bench sheets and individual endpoint summaries, are provided in Appendix A.

3.1 *Chironomus dilutus* 20 Day Survival and Growth Evaluation

At the end of the 20 day exposure period, mean survival in the laboratory control sediment was 87.5%; the coefficient of variance (CV) for the replicates in the control treatment was 13.31% for the first series of assays and 90.0% survival with a CV of 14.55% for the second series of assays. Larvae recovered from the laboratory control sediment had a mean ash free dry weight of 1.917 and 1.401 mg/larvae, with CVs of 32.43% and 22.17%, respectively. The minimum acceptable criteria for the laboratory control treatment is 70% survival and a mean ash free dry weight of 0.48 mg/larvae. As the laboratory control treatment exceeded the minimum acceptability criteria for the assay the test organisms were determined to be healthy and unstressed and the overlying water was determined to have had no significant adverse impact on the outcome of the assay. These data are considered as valid for evaluating impacts associated with the sediment samples.

Mean temperatures in the surrogate test chambers for the two series of assays were 23.22°C and 22.11°C. The means were computed from 480 hourly data points. Temperature in the surrogate test chamber for the first assay ranged from 20.0 to 26.0°C. Temperature in the surrogate test chamber for the second assay ranged from 20.9 to 23.0°C.

3.3 Summary

The following matrix provides a summary of the data documenting which sample sites exhibited significant negative effects on either midge survival or growth when compared to the laboratory control treatment.

Sample ID	Lab Code	Significant Effect
DLHTV1-DS-1	15061-001	Yes
DLHCV1-DS-1	15061-004	No
DLHCV2-DS-1	15061-005	No
CLECV3-DS-1	15061-007	Yes
DLHTV2-DS-1	15061-008	Yes
CLECV4-DS-1	15061-010	No
CLELV1-DS-1	15061-011	No
CLELV2-DS-1	15061-048	Yes

4.0 REFERENCES

APHA. 1998. *Standard Methods for the Examination of Water and Wastewater*, 20th Edition. Washington D.C.

ASTM. 2001. Annual Book of ASTM Standards. Volume 11.05. *Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates*. E 1706-00. ASTM, Philadelphia.

U.S. EPA. 2000. *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates.* Second Edition. EPA/600-R-99/064. Method 100.5.

TABLE 1. Summary of Sample Collection Information. Great Lakes Sweepings Characterization. CH2M Hill. October 2006.

			Sample Collection		Sample Receipt	
Sample ID	ESI Ref#	Matrix	Date	Time	Date	Time
DLHTV1-DS-1	15061-001	Solid	10/01/06	1640	10/03/06	1200
DLHCV1-DS-1	15061-004	Solid	10/03/06	0900	10/05/06*	1030*
DLHCV2-DS-1	15061-005	Solid	10/04/06	2300	10/07/06	1130
CLECV3-DS-1	15061-007	Solid	10/06/06	1300	10/07/06	1130
DLHTV2-DS-1	15061-008	Solid	10/03/06	1300	10/09/06	0945
CLECV4-DS-1	15061-010	Solid	10/09/06	1600	10/11/06	1000
CLELV1-DS-1	15061-011	Solid	10/10/06	0900	10/11/06	1000
CLELV2-DS-1	15061-048	Solid	10/27/06	1000	10/28/06	1030

NOTES:

* The chain of custody indicates that sample receipt occurred on 10/9/06 at 0945, but the sample receipt record indicates that sample receipt occurred on 10/5/06 at 1030.

TABLE 2. Reference Toxicant Evaluation: *C. dilutus.* Great Lakes Sweepings Characterization. CH2M Hill. October 2006.

Date	Endpoint		Value	Historic Mean/ Central Tendency	Acceptable Range	Reference Toxicant
Chironomus dilutus						
10/26/06	Survival	LC-50	1.49	1.40	0.0 - 5.2	Cadmium (mg/L)

TABLE 3. Summary of *C. dilutus* Day 20 Survival Data. Great Lakes Sweepings Characterization. CH2M Hill. October 2006.

Day 20 Survival Summary

Sample ID	Lab Code	Reps	Mean	Minimum	Maximum	CV
Lab Control	15061-000	8	87.50%	70.00%	100.00%	13.31%
DLHTV1-DS-1	15061-001	8	75.00%	60.00%	100.00%	18.86%
DLHCV1-DS-1	15061-004	8	95.00%	80.00%	100.00%	7.96%
DLHCV2-DS-1	15061-005	8	78.75%	40.00%	100.00%	26.67%
CLECV3-DS-1	15061-007	8	83.75%	60.00%	100.00%	16.81%
DLHTV2-DS-1	15061-008	8	72.50%	40.00%	90.00%	20.52%
CLECV4-DS-1	15061-010	8	80.00%	50.00%	100.00%	24.09%
CLELV1-DS-1	15061-011	8	83.75%	60.00%	100.00%	17.98%
Lab Control	15061-000a	8	90.00%	60.00%	100.00%	14.55%
CLELV2-DS-1	15061-048	8	16.25%	0.00%	50.00%	122.80%

Day 20 Survival Summary

Sample ID	Lab Code	Mean	Statistically Significant Difference as Compared to Lab Control	
			p Value	
Lab Control	15061-000	87.50%	-	-
DLHTV1-DS-1	15061-001	75.00%	0.0456	YES
DLHCV1-DS-1	15061-004	95.00%	0.9203	NO
DLHCV2-DS-1	15061-005	78.75%	0.1856	NO
CLECV3-DS-1	15061-007	83.75%	0.3007	NO
DLHTV2-DS-1	15061-008	72.50%	0.0171	YES
CLECV4-DS-1	15061-010	80.00%	0.2181	NO
CLELV1-DS-1	15061-011	83.75%	0.3195	NO
Lab Control	15061-000a	90.00%	-	-
CLELV2-DS-1	15061-048	16.25%	0.0000	YES

TABLE 4. Summary of *C. dilutus* Day 20 Growth Data. Great Lakes Sweepings Characterization. CH2M Hill. October 2006.

Mean AF Dry Weight-mg Summary

Sample ID	Lab Code	Reps	Mean	Minimum	Maximum	CV
Lab Control	15061-000	8	1.917	1.067	2.720	32.43%
DLHTV1-DS-1	15061-001	8	2.206	1.333	3.473	33.24%
DLHCV1-DS-1	15061-004	8	1.519	1.189	1.916	20.01%
DLHCV2-DS-1	15061-005	8	1.573	0.396	2.217	34.41%
CLECV3-DS-1	15061-007	8	1.408	1.054	1.670	15.02%
DLHTV2-DS-1	15061-008	8	1.936	1.584	3.420	31.39%
CLECV4-DS-1	15061-010	8	2.851	2.056	3.870	19.50%
CLELV1-DS-1	15061-011	8	2.387	1.412	2.844	19.50%
Lab Control	15061-000a	8	1.401	0.915	1.920	22.17%
CLELV2-DS-1	15061-048	8	0.295	0.070	0.480	63.02%

Day 20 Mean AF Dry Weight-mg Summary			Statistically Significant Difference as Compared to Lab Control	
Sample ID	Lab Code	Mean	p Value	
Lab Control	15061-000	1.917	-	-
DLHTV1-DS-1	15061-001	2.206	0.7953	NO
DLHCV1-DS-1	15061-004	1.519	0.0633	NO
DLHCV2-DS-1	15061-005	1.573	0.1288	NO
CLECV3-DS-1	15061-007	1.408	0.0229	YES
DLHTV2-DS-1	15061-008	1.936	0.5241	NO
CLECV4-DS-1	15061-010	2.851	0.9966	NO
CLELV1-DS-1	15061-011	2.387	0.9456	NO
Lab Control	15061-000a	1.401	-	-
CLELV2-DS-1	15061-048	0.295	0.0000	YES

Table 5. Summary of Water Qualities: *C. dilutus.* Great Lakes Sweepings Characterization. CH2M Hill. October 2006.

Sample ID	Lab Code		pH (SU)	Conductance (µmhos/cm)	Alkalinity (mg/L)	Ammonia (mg/L)	Hardness (mg/L)
Lab Control	15061-000	Day 0	7.33	270	41	0.19	86
		Day 20	6.76	215	26	0.48	42
DLHTV1-DS-1	15061-001	Day 0	8.99	252	45	<10	96
		Day 20	8.25	235	63	0.23	97
DLHCV1-DS-1	15061-004	Day 0	7.53	295	60	<10	66
		Day 20	7.13	160	31	0.2	35
DLHCV2-DS-1	15061-005	Day 0	7.46	214	63	<10	84
		Day 20	7.06	159	30	0.22	32
CLECV3-DS-1	15061-007	Day 0	6.71	642	<10	<10	350
		Day 20	6.58	133	<10	0.33	42
DLHTV2-DS-1	15061-008	Day 0	7.96	239	<10	<10	89
		Day 20	7.24	171	53	0.23	68
CLECV4-DS-1	15061-010	Day 0	7.56	415	72	<10	150
		Day 20	7.12	156	34	0.33	170
CLELV1-DS-1	15061-011	Day 0	7.81	390	88	<10	230
		Day 20	7.79	227	84	<10	180
Pond Water		Day 0	-	-	30	<0.1	54
		Day 20	-	-	18	<0.1	33
Lab Control	15061-000a	Day 0	7.44	284	21	0.19	33
		Day 20	6.98	173	33	0.12	42
CLELV2-DS-1	15061-048	Day 0	8.63	170	15	0.58	32
		Day 20	7.74	221	72	0.64	81
Pond Water		Day 0	-	-	18	0.73	32
		Day 20	-	-	28	-	41

Additional water quality data provided in Appendix A

APPENDIX A
RAW DATA
STATISTICAL SUPPORT

Contents	Number of Pages
C. dilutus 20-Day Sediment Toxicity Tests	
Daily Water Quality Measurements and Feeding Record	5
Day 20 Organism Recovery Bench Sheets	5
Day 20 Survival Statistical Analysis	11
Day 20 Growth Data Bench Sheets	3
Day 20 Growth Statistical Analysis	10
Water Quality Summary	3
Temperature Profile	2
Organism History Record	1
Laboratory Sample Receiving Log	6
Chain of Custody Record	7
Total Appendix Pages	53

C. dilutus SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY #: 15061	Client: CH2M Hill	Overlying Water: Pond	START DATE: 10/26/06

DAY	LAB				-001				Water Quality Station #	S/C Meter #	ΔH_2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	9.1	270	7.33	21	9.3	252	8.99	21	3	SG3	✓	10/26/06	BB
1	9.0	316	7.33	22	9.2	402	8.84	22	3	YSI30C	✓	10/27	[illegible]
2	6.8	345	7.54	22	6.5	408	8.60	22	3	YSI30C	✓	10/28	EG
3	5.6	338	7.09	21	5.4	336	8.05	21	2	YSI30C	✓	10/29	CP
4	6.7	270	7.38	19	6.8	289	8.10	21	2	YSI30C	✓	10/30	CP
5	7.3	256	7.80	22	6.9	284	8.54	23	3	~~YSI30C~~ SG3	✓	10/31	EG
6	5.8	246	7.28	25	6.0	274	8.01	25	3	SG3	✓	11/1	CP
7	7.4	226	7.30	23	7.4	260	7.99	24	1	YSI30C	✓	11/2	CS
8	6.1	239	7.08	22	6.2	268	8.15	22	2	SG3	✓	11/3	[illegible]
9	7.6	230	7.49	22	7.8	254	8.06	22	2	YSI30C	✓	11/4	[illegible]
10	4.7	234	6.95	22	7.5	247	7.88	22	2	YSI30C	✓	11/5	CP
11	3.1	227	7.24	22	6.0	217	8.06	22	3	SG3	✓	11/6	CP
12	4.6	241	7.16	21	5.6	232	8.40	22	3	SG3	✓	11/7	[illegible]
13	4.7	210	7.08	23	5.0	238	7.86	23	2	SG3	✓	11/8	SJ
14	5.0	233	7.22	23	5.4	264	8.29	23	3	SG3	✓	11/9	[illegible]
15	5.2	227	7.13	24	5.2	260	8.52	24	3	SG3	✓	11/10	EG
16	6.0	187	6.84	24	6.0	248	8.13	24	3	SG3	✓	11/11	EG
17	4.8	184	6.72	24	5.4	232	8.36	24	1	SG3	✓	11/12	SJ
18	4.0	185	7.26	24	7.1	196	8.31	25	1	SG3	✓	11/13	[illegible]
19	5.4	180	7.34	24	5.9	222	8.62	25	1	YSI30C	✓	11/14	[illegible]
20	6.1	215	6.76	24	6.4	235	8.25	24	1	YSI30C	✓	11/15	[illegible]

Pull Alkalinity, Hardness, Ammonia Day 0,10,20
23° C
FEED 1 mL of 6g/L Tetramin Flake Daily Two Volume Additions Daily

C. dilutus SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY #: 15061	Client: CH2M Hill	Overlying Water: Pond	START DATE: 10/26/06

DAY	-004				-005				Water Quality Station #	S/C Meter #	ΔH2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	8.6	295	7.53	21	8.6	214	7.46	21	3	SG3	✓	10/26/06	BB
1	8.7	435	7.62	22	8.7	321	7.66	22	3	YSI30C	✓	10/27	[illegible]
2	6.4	450	7.64	23	6.5	316	7.66	23	3	YSI30C	✓	10/28	EG
3	6.5	315	7.28	22	6.4	278	7.22	22	2	YSI30C	✓	10/29	CP
4	7.2	259	7.65 ~~6.43~~	21	7.6	249	7.58	21	2	YSI30C	✓	10/30	CP
5	8.6	254	7.49	24	6.9	243	7.43	24	3	YSI30C	✓	10/31	EG
6	5.0	264	7.20	25	5.9	245	7.36	25	3	SG3	✓	11/1	CP
7	7.2	236	7.62	24	8.0	221	7.61	24	2	YSI30C	✓	11/2	CS
8	6.2	240	7.13	22	6.3	213	7.23	22	2	SG3	✓	11/3	[illegible]
9	7.8	219	7.70	22	7.7	216	7.53	22	2	YSI30C	✓	11/4	[illegible]
10	6.3	268	7.23	22	6.6	215	7.35	22	2	YSI30C	✓	11/5	CP
11	5.7	193	7.52	22	5.7	198	7.45	22	3	SG3	✓	11/6	CP
12	5.7	198	7.60	22	6.0	201	7.29	23	3	SG3	✓	11/7	[illegible]
13	5.8	203	7.48	23	5.7	200	7.17	23	2	SG3	✓	11/8	SJ
14	6.1	202	7.58	23	6.3	200	7.37	23	3	SG3	✓	11/9	[illegible]
15	6.1	201	7.41	25	6.1	195	7.35	25	3	SG3	✓	11/10	EG
16	5.9	174	7.02	25	6.2	173	7.11	25	3	SG3	✓	11/11	EG
17	4.9	178	7.25	24	6.1	168	7.25	24	1	SG3	✓	11/12	SJ
18	7.0	171	7.32	25	7.1	150	7.45	25	1	SG3	✓	11/13	[illegible]
19	5.5	164	7.61	25	5.6	159	7.55	25	1	YSI30C	✓	11/14	[illegible]
20	6.1	160	7.13	24	6.4	159	7.06	24	1	YSI30C	✓	11/15	[illegible]

Pull Alkalinity, Hardness, Ammonia Day 0,10, 20
23° C
FEED 1 mL of 6g/L Tetramin Flake Daily Two Volume Additions Daily

C. dilutus SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY #: 15061	Client: CH2M Hill	Overlying Water: Pond	START DATE: 10/26/06

DAY	-007				-008				Water Quality Station #	S/C Meter #	ΔH2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	8.9	642	6.71	21	9.0	239	7.96	21	3	SG3	✓	10/26/06	BB
1	8.9	996	6.70	22	9.0	381	8.05	22	3	YSI30C	✓	10/27	[illegible]
2	7.2	1030	5.79	23	7.3	398	7.97	23	3	YSI30C	✓	10/28	EG
3	6.9	537	6.32	22	7.4	330	7.68	22	2	YSI30C	✓	10/29	CP
4	7.7	496	7.08	22	7.5	308	7.87	22	2	YSI30C	✓	10/30	CP
5	7.5	417	6.91	24	7.6	308	7.88	24	3	SG3	✓	10/31	EG
6	6.7	753	6.83	25	6.0	243	7.53	25	3	SG3	✓	11/1	CP
7	7.6	366	7.00	24	7.5	396	7.73	24	2	YSI30C	✓	11/2	CS
8	6.9	265	6.78	22	7.0	371	7.52	22	2	SG3	✓	11/3	[illegible]
9	8.2	222	7.31	22	7.9	247	7.69	22	2	YSI30C	✓	11/4	[illegible]
10	6.4	226	7.45	22	6.4	230	7.60	22	2	YSI30C	✓	11/5	CP
11	7.2	190	6.96	22	6.5	217	7.32	22	3	SG3	✓	11/6	CP
12	7.1	202	7.02	23	6.5	202	7.40	23	3	SG3	✓	11/7	[illegible]
13	6.0 (7.0)	195	6.94	23	6.6	206	7.45	23	2	SG3	✓	11/8	SJ
14	6.5	186	6.99	23	6.4	218	7.35	23	3	SG3	✓	11/9	[illegible]
15	6.4	172	6.74	25	6.6	227	7.51	25	3	SG3	✓	11/10	EG
16	6.4	145	6.52	25	6.1	225	7.44	25	3	SG3	✓	11/11	[illegible]
17	6.2	132	6.56	24	6.3	194	7.16	24	1	SG3	✓	11/12	SJ
18	7.4	130	6.78	25	7.5	167	7.63	25	1	SG3	✓	11/13	[illegible]
19	5.6	128	6.73	25	5.9	174	7.45	25	1	YSI30C	✓	11/14	[illegible]
20	6.5	133	6.58	24	6.5	171	7.24	24	1	YSI30C	✓	11/15	[illegible]

Pull Alkalinity, Hardness, Ammonia Day 0,10, 20
23° C
FEED 1 mL of 6g/L Tetramin Flake Daily Two Volume Additions Daily

C. dilutus SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY #: 15061	Client: CH2M Hill	Overlying Water: Pond	START DATE: 10/26/06

DAY	-010				-011				Water Quality Station #	S/C Meter #	ΔH2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	8.5	415	7.56	21	8.8	390	7.81	22	3	SG3	✓	10/26/06	BB
1	8.5	426	7.80	22	8.8	1029	7.95	22	3	YSI30C	✓	10/27	YA
2	6.0	788	7.54	23	7.2	634	7.85	23	3	YSI30C	✓	10/28	EG
3	6.2	365	7.38	22	5.3	533	7.55	22	2	YSI30C	✓	10/29	CP
4	7.1	374	7.68	22	6.7	430	7.76	22	2	YSI30C	✓	10/30	CP
5	7.1	338	7.74	24	7.2	578	7.85	24	3	SG3	✓	10/31	EG
6	6.0	256	7.50	25	5.4	540	7.64	25	3	SG3	✓	11/1	CP
7	7.6	270	7.73	24	7.5	417	7.75	25	1	YSI30C	✓	11/2	CS
8	6.1	239	7.29	22	6.2	385	7.57	22	2	SG3	✓	11/3	YA
9	7.6	209	7.58	23	7.5	326	7.90	23	2	YSI30C	✓	11/4	YA
10	6.8	213	7.34	22	7.5	304	7.53	23	2	YSI30C	✓	11/5	CP
11	5.7	190	7.32	22	6.3	276	7.69	23	3	SG3	✓	11/6	CP
12	5.9	220	7.33	23	5.9	316	7.66	23	3	SG3	✓	11/7	YA
13	~~4.5~~ 4.58	217	7.30	23	~~4.5~~ 4.68	271	7.62	23	2	SG3	✓	11/8	SJ
14	5.4	215	7.33	23	5.4	285	7.65	23	3	SG3	✓	11/9	YA
15	6.1	208	7.25	25	6.7	297	7.86	25	3	SG3	✓	11/10	EG
16	5.8	169	7.11	25	5.7	265	7.79	25	3	SG3	✓	11/11	EG
17	5.3	174	7.16	24	5.2	271	7.81	24	1	SG3	✓	11/12	SJ
18	7.2	155	7.48	25	7.2	222	7.98	25	1	SG3	✓	11/13	YA
19	5.6	155	7.39	25	6.0	226	7.93	25	1	YSI30C	✓	11/14	YA
20	6.3	156	7.12	24	6.4	227	7.79	24	1	YSI30C	✓	11/15	YA

Pull Alkalinity, Hardness, Ammonia Day 0,10, 20
23° C
FEED 1 mL of 6g/L Tetramin Flake Daily Two Volume Additions Daily

C. dilutus SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY #: 15061	Client: CH2M Hill	Overlying Water: Pond	START DATE: 11/15/06

DAY	Lab (-0002)				-048				Water Quality Station #	S/C Meter #	ΔH_2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	7.7	284	7.44	23	7.8	170	8.63	23	3	YSI30	✓	11/15/06	BB
1	7.2	290	7.46	22	8.1	213	8.11	22	1	YSI30	✓	11/16/06	RP
2	6.4	238	7.40	22	7.4	235	7.95	22	2	YSI30C	✓	11/17	[illegible]
3	7.0	290	7.07	22	7.1	309	7.80	22	1	YSI30C	✓	11/18	[illegible]
4	7.3	293	7.11	22	7.2	244	7.76	22	1	YSI30C	✓	11/19	CP
5	8.8	220	7.53	21	8.7	283	7.80	21	1	YSI30C	✓	11/20	CP
6	7.5	192	7.13	21	7.5	210	7.88	21	1	YSI30C	✓	11/21	[illegible]
7	6.4	219	10.95	21	6.8	190	7.60	21	1	YSI30C	✓	11/22	SJ
8	6.6	218	7.14	22	6.8	215	7.58	22	2	YSI30C	✓	11/23	NT
9	6.8	188	7.10	22	6.9	237	7.60	22	3	^	✓	11/24	CAS
10	6.1	204	7.09	22	6.0	269	7.59	22	2	YSI30C	✓	11/25	EG
11	6.1	174	6.83	22	6.0	264	7.52	22	2	YSI30C	✓	11/26	SJ
12	6.5	~~324~~ 198 (512)	7.23	22	7.1	~~358~~ 343 (30)	7.67	22	1	YSI30C	✓	11/27	CS
13	7.0	169	7.25	22	6.7	178	7.59	22	2	YSI30C	✓	11/28	CP
14	6.9	177	6.99	23	6.5	226	7.44	23	2	YSI30C	✓	11/29	EG
15	6.2	175	6.97	23	4.9	226	7.28	23	1	YSI30C	✓	11/30	[illegible]
16	6.0	183	6.97	23	6.0	284	7.49	23	2	YSI30C	✓	12/1	CS
17	6.0	172	7.08	23	6.0	235	7.45	23	1	YSI30C	✓	12/2	[illegible]
18	6.0	174	7.10	22	6.0	211	7.38	22	1	YSI30C	✓	12/3	CP
19	6.9	170	7.05	22	7.7	203	7.76	22	1	YSI30C	✓	12/4	SJ
20	5.2	173	6.98	22	5.2	221	7.74	22	2	YSI30C	✓	12/5	[illegible]

Pull Alkalinity, Hardness, Ammonia Day ~~0~~, 10, 20
23 ° C
FEED 1 mL of 6g/L Tetramin Flake Daily Two Volume Additions Daily

ESI STUDY# 15061 CH2M Hill
***C. dilutus* SEDIMENT ASSAY**

DAY 20:

SAMPLE ID	TIME	#LIVE	COMMENTS
000 A	1000	8	2 partial emerged
B		8	
C		9	
D		10	1 partial
E		7	
F		10	1 emerged
G		10	1 emerged
H		8	1 emerged
001 A	1020	8	1 partial
B		6	
C		7	1 partial
D		7	
E		7	2 partial
F		6	
G		9	
H		10	

ANALYST: CPS 11/15/06 CP
DATE:

ESI STUDY# 15061 CH2M Hill
***C. dilutus* SEDIMENT ASSAY**

DAY 20:

SAMPLE ID	TIME	#LIVE	COMMENTS
004 A	0835	10	
B		9	
C		9	
D		10	
E		10	
F		10	
G		10	
H		8	
005 A		7	1 partial
B		9	
C		8	
D		4	1 partial
E		10	
F		10	1 partial
G		6	
H		9	

ANALYST: CP
DATE: 11/15/06

ESI STUDY# 15061 CH2M Hill
***C. dilutus* SEDIMENT ASSAY**

DAY 20:

SAMPLE ID	TIME	#LIVE	COMMENTS
-008A	1258	9	
-008B		8	
-008C		8	
-008D		8	
-008E		7	
-008F		7	1 partial
-008G		7	1 partial
-008H		4	1 partial 2 emerged
-007 A		9	
-007 B		7	
-007 C		8	
-007 D		6	
-007 E		10	
-007 F		9	1 emerged
-007 G		8 ~~10~~ 23	~~2 partial~~
-007 H		10	2 partial

ANALYST: m CP
DATE: 11/15/06 11/15/06

ESI STUDY# 15061 CH2M Hill
***C. dilutus* SEDIMENT ASSAY**

DAY 20:

SAMPLE ID	TIME	#LIVE	COMMENTS
-011 E	1242	7	2 partial
-011 A		8	2 partial 1 emerged
-011 B		6	1 partial 1 emerged
-011 C		8	2 partial
-011 D		8	
-011 F		10	
-011 G		10	1 partial
-011 H	1256	10	
-010 A		8	2 emerged
-010 B		10	
-010 C		7	
-010 D		(E3) ~~5~~ 6	3 partial, 2 emerged
-010 E		(E3) ~~8~~ 5	1 ~~partial~~ emerged (E3)
-010 F		10	1 ~~2~~ (E3) emerged, 1 partial
-010 G		8	1 partial
-010 H		10	

ANALYST: m CP
DATE: 11/13/06 11/15/06

ESI STUDY# 15061 CH2M Hill
***C. dilutus* SEDIMENT ASSAY**

DAY 20:

SAMPLE ID	TIME	#LIVE	COMMENTS
(-000a) Lab A	1055	10	
Lab B		10	
Lab C		9	1 emerging not on foil
Lab D		6	
Lab E		9	1 emerging not on foil
Lab F		10	2 emerging not on foil
Lab G		9	
Lab H		9	
-048 A		0	
-048 B		0	
-048 C		2	
-048 D		0	
-048 E		4	
-048 F		0	
-048 G		5	
-048 H	1140	2	

ANALYST: BB
DATE: 12/5/06

CETIS Test Summary

Report Date: 19 Dec-06 3:32 PM
Link: 15-6919-1750

Chironomus 20-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Sample No:	03-3366-6980	**Material:**	Freshwater Sediment	**Client:**	CH2M Hill
Sample Date:	25 Oct-06 12:00 PM	**Code:**	15061-000	**Project:**	Ecological Risk Assessment
Receive Date:	25 Oct-06 12:00 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	24h	**Station:**	Lab Control; 15061-000		
Sample No:	04-1225-4609	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	01 Oct-06 04:40 PM	**Code:**	15061-001	**Project:**	Ecological Risk Assessment
Receive Date:	03 Oct-06 12:00 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	24d 19h	**Station:**	DLHTV1-DS-1; 15061-001		
Sample No:	10-2183-2337	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	03 Oct-06 12:00 PM	**Code:**	15061-004	**Project:**	Ecological Risk Assessment
Receive Date:	05 Oct-06 10:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	23d 0h	**Station:**	DHLCV1-DS-1; 15061-004		
Sample No:	09-3432-1084	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	04 Oct-06 11:00 PM	**Code:**	15061-005	**Project:**	Ecological Risk Assessment
Receive Date:	07 Oct-06 11:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	21d 13h	**Station:**	DLHCV2-DS-1; 15061-005		
Sample No:	16-1815-3147	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	06 Oct-06 01:00 PM	**Code:**	15061-007	**Project:**	Ecological Risk Assessment
Receive Date:	07 Oct-06 11:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	19d 23h	**Station:**	CLECV3-DS-1; 15061-007		
Sample No:	15-8347-4253	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	03 Oct-06 01:00 PM	**Code:**	15061-008	**Project:**	Ecological Risk Assessment
Receive Date:	09 Oct-06 09:45 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	22d 23h	**Station:**	DLHTV2-DS-1; 15061-008		
Sample No:	06-7315-6010	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	09 Oct-06 04:00 PM	**Code:**	15061-010	**Project:**	Ecological Risk Assessment
Receive Date:	11 Oct-06 10:00 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	16d 20h	**Station:**	CLECV4-DS-1; 15061-010		
Sample No:	16-2334-8319	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	10 Oct-06 09:00 AM	**Code:**	15061-011	**Project:**	Ecological Risk Assessment
Receive Date:	11 Oct-06 10:00 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	16d 3h	**Station:**	CLELV1-DS-1; 15061-011		

Proportion Survived Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
15061-000	8	0.87500	0.70000	1.00000	0.04119	0.11650	13.31%
15061-001	8	0.75000	0.60000	1.00000	0.05000	0.14142	18.86%
15061-004	8	0.95000	0.80000	1.00000	0.02673	0.07559	7.96%
15061-005	8	0.78750	0.40000	1.00000	0.07425	0.21002	26.67%
15061-007	8	0.83750	0.60000	1.00000	0.04978	0.14079	16.81%
15061-008	8	0.72500	0.40000	0.90000	0.05261	0.14880	20.52%
15061-010	8	0.80000	0.50000	1.00000	0.06814	0.19272	24.09%
15061-011	8	0.83750	0.60000	1.00000	0.05324	0.15059	17.98%

CETIS Test Summary

Report Date: 19 Dec-06 3:32 PM
Link: 15-6919-1750

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
15061-000	0.80000	0.80000	0.90000	1.00000	0.70000	1.00000	1.00000	0.80000
15061-001	0.80000	0.60000	0.70000	0.70000	0.70000	0.60000	0.90000	1.00000
15061-004	1.00000	0.90000	0.90000	1.00000	1.00000	1.00000	1.00000	0.80000
15061-005	0.70000	0.90000	0.80000	0.40000	1.00000	1.00000	0.60000	0.90000
15061-007	0.90000	0.70000	0.80000	0.60000	1.00000	0.90000	0.80000	1.00000
15061-008	0.90000	0.80000	0.80000	0.80000	0.70000	0.70000	0.70000	0.40000
15061-010	0.80000	1.00000	0.70000	0.60000	0.50000	1.00000	0.80000	1.00000
15061-011	0.80000	0.60000	0.80000	0.80000	0.70000	1.00000	1.00000	1.00000

CETIS Test Summary

Report Date: 19 Dec-06 3:37 PM
Link: 08-7186-2609

Chironomus 20-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Test No:	13-2271-8672	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	15 Nov-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	05 Dec-06 12:00 PM	**Dil Water:**	Natural Surface Water	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	15 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Sample No:	16-1038-3061	**Material:**	Freshwater Sediment	**Client:**	CH2M Hill
Sample Date:	14 Nov-06 12:00 PM	**Code:**	15061-000a	**Project:**	Ecological Risk Assessment
Receive Date:	14 Nov-06 12:00 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	N/A	**Station:**	Lab Control; 15061-000		

Sample No:	00-8986-6754	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	27 Oct-06 10:00 AM	**Code:**	15061-048	**Project:**	Ecological Risk Assessment
Receive Date:	28 Oct-06 10:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	N/A	**Station:**	CLECV2-DS-1; 15161-048		

Mean AF Weight-mg Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
15061-000a	8	1.40986	0.91500	1.92000	0.11048	0.31250	22.17%
15061-048	8	0.29500	0.07000	0.48000	0.09296	0.18592	63.02%

Proportion Survived Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
15061-000a	8	0.90000	0.60000	1.00000	0.04629	0.13093	14.55%
15061-048	8	0.16250	0.00000	0.50000	0.07055	0.19955	122.80

Mean AF Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
15061-000a	0.91500	1.63400	1.44250	1.15167	1.92000	1.23125	1.57889	1.40556
15061-048	N/A	N/A	0.48000	N/A	0.22000	N/A	0.41000	0.07000

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
15061-000a	1.00000	1.00000	0.90000	0.60000	0.90000	1.00000	0.90000	0.90000
15061-048	0.00000	0.00000	0.20000	0.00000	0.40000	0.00000	0.50000	0.20000

CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Test No:	13-2271-8672	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	15 Nov-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	05 Dec-06 12:00 PM	**Dil Water:**	Natural Surface Water	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	15 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	08-7186-2609	08-7186-2609	13 Dec-06 10:10 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.22946	8.88539	0.31211	Equal Variances
Distribution	Shapiro-Wilk W	0.95350	0.84420	0.52381	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	3.138013	3.138013	1	64.95	0.00000	Significant Effect
Error	0.6763827	0.0483131	14			
Total	3.81439579	3.1863262	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000a		15061-048	8.05926	1.76131	0.0000	0.19357	Significant Effect

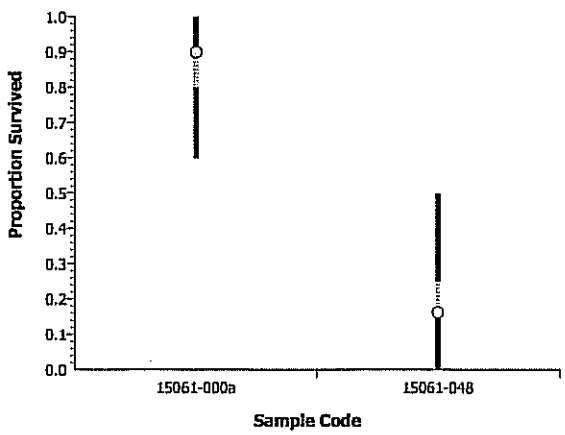
Data Summary

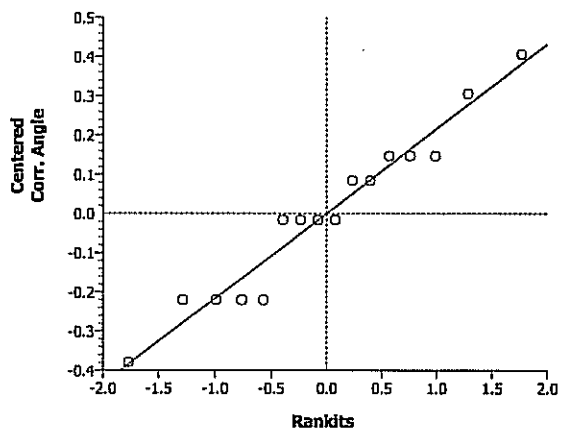
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000a	8	0.90000	0.60000	1.00000	0.13093	1.26479	0.88608	1.41202	0.17297
15061-048	8	0.16250	0.00000	0.50000	0.19955	0.37907	0.15878	0.78540	0.25827

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000a	1.00000	1.00000	0.90000	0.60000	0.90000	1.00000	0.90000	0.90000		
15061-048	0.00000	0.00000	0.20000	0.00000	0.40000	0.00000	0.50000	0.20000		

Graphics





CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	15-6919-1750	15-6919-1750	15 Nov-06 3:39 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.17140	8.88539	0.84002	Equal Variances
Distribution	Shapiro-Wilk W	0.90861	0.84420	0.11073	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.1030189	0.1030189	1	3.29	0.09116	Non-Significant Effect
Error	0.4383022	0.0313073	14			
Total	0.54132114	0.1343262	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-001	1.81399	1.76131	0.0456	0.15582	Significant Effect

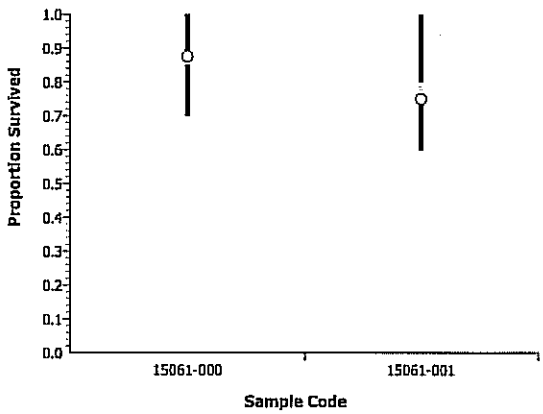
Data Summary

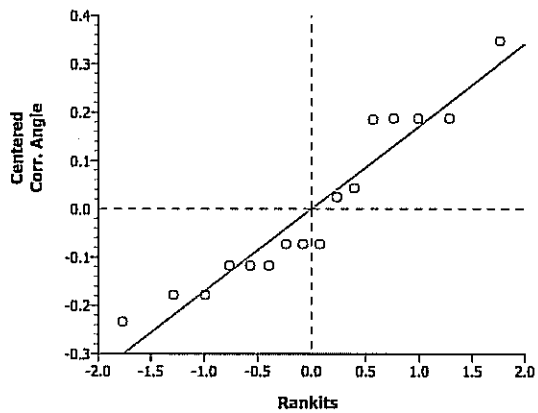
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.87500	0.70000	1.00000	0.11650	1.22471	0.99116	1.41202	0.16981
15061-001	8	0.75000	0.60000	1.00000	0.14142	1.06423	0.88608	1.41202	0.18379

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.80000	0.80000	0.90000	1.00000	0.70000	1.00000	1.00000	0.80000		
15061-001	0.80000	0.60000	0.70000	0.70000	0.70000	0.60000	0.90000	1.00000		

Graphics





CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	15-6919-1750	15-6919-1750	15 Nov-06 3:39 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.09558	8.88539	0.35009	Equal Variances
Distribution	Shapiro-Wilk W	0.90421	0.84420	0.09416	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0470482	0.0470482	1	2.21	0.15938	Non-Significant Effect
Error	0.2981751	0.0212982	14			
Total	0.34522328	0.0683464	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-004	-1.4863	1.76131	0.9203	0.12852	Non-Significant Effect

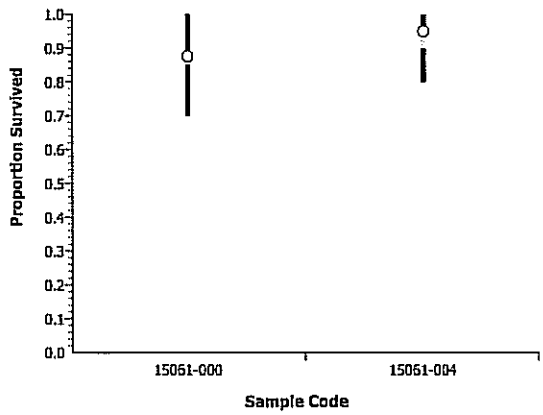
Data Summary

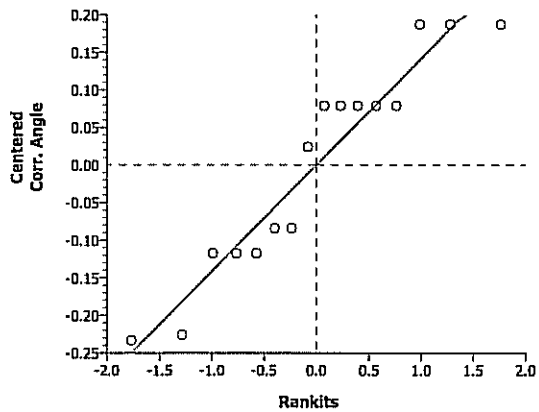
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.87500	0.70000	1.00000	0.11650	1.22471	0.99116	1.41202	0.16981
15061-004	8	0.95000	0.80000	1.00000	0.07559	1.33317	1.10715	1.41202	0.11730

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.80000	0.80000	0.90000	1.00000	0.70000	1.00000	1.00000	0.80000		
15061-004	1.00000	0.90000	0.90000	1.00000	1.00000	1.00000	1.00000	0.80000		

Graphics





CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	15-6919-1750	15-6919-1750	15 Nov-06 3:39 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.30211	8.88539	0.29363	Equal Variances
Distribution	Shapiro-Wilk W	0.94254	0.84420	0.36961	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0406498	0.0406498	1	0.85	0.37113	Non-Significant Effect
Error	0.6665378	0.0476098	14			
Total	0.70718752	0.0882596	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-005	0.92402	1.76131	0.1856	0.19216	Non-Significant Effect

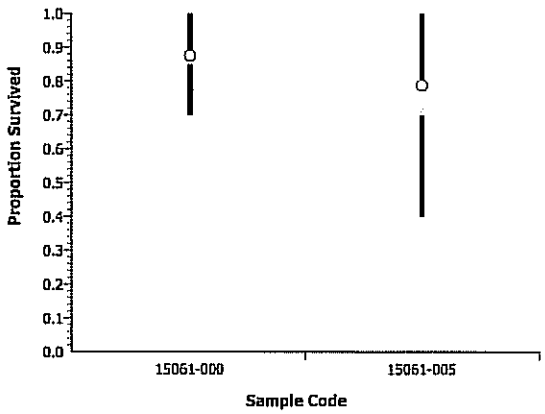
Data Summary

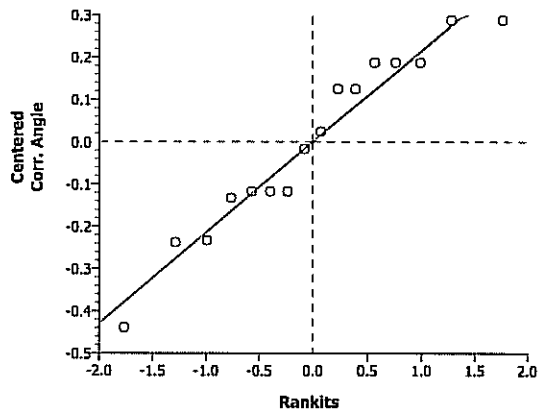
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.87500	0.70000	1.00000	0.11650	1.22471	0.99116	1.41202	0.16981
15061-005	8	0.78750	0.40000	1.00000	0.21002	1.12390	0.68472	1.41202	0.25765

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.80000	0.80000	0.90000	1.00000	0.70000	1.00000	1.00000	0.80000		
15061-005	0.70000	0.90000	0.80000	0.40000	1.00000	1.00000	0.60000	0.90000		

Graphics





CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	15-6919-1750	15-6919-1750	15 Nov-06 3:39 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.23743	8.88539	0.78584	Equal Variances
Distribution	Shapiro-Wilk W	0.92613	0.84420	0.20930	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0092180	0.0092180	1	0.29	0.60135	Non-Significant Effect
Error	0.4516301	0.0322593	14			
Total	0.4608481	0.0414773	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-007	0.53455	1.76131	0.3007	0.15817	Non-Significant Effect

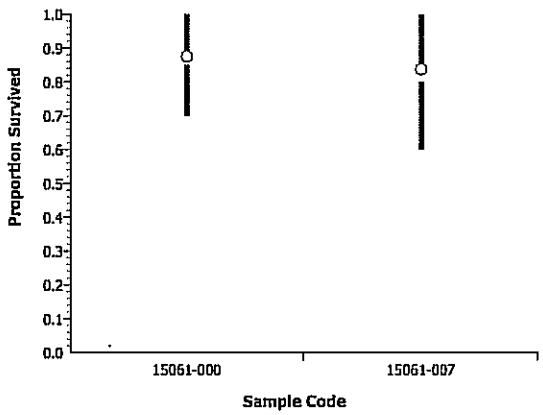
Data Summary

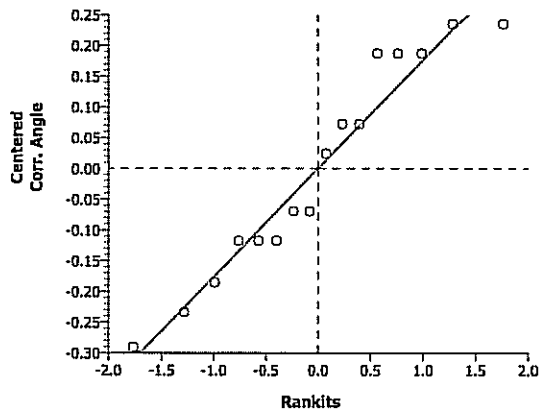
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.87500	0.70000	1.00000	0.11650	1.22471	0.99116	1.41202	0.16981
15061-007	8	0.83750	0.60000	1.00000	0.14079	1.17671	0.88608	1.41202	0.18890

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.80000	0.80000	0.90000	1.00000	0.70000	1.00000	1.00000	0.80000		
15061-007	0.90000	0.70000	0.80000	0.60000	1.00000	0.90000	0.80000	1.00000		

Graphics





CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	15-6919-1750	15-6919-1750	15 Nov-06 3:39 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.06481	8.88539	0.93611	Equal Variances
Distribution	Shapiro-Wilk W	0.94406	0.84420	0.38863	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.1538632	0.1538632	1	5.50	0.03423	Significant Effect
Error	0.3914182	0.0279584	14			
Total	0.54528138	0.1818216	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-008	2.34591	1.76131	0.0171	0.14725	Significant Effect

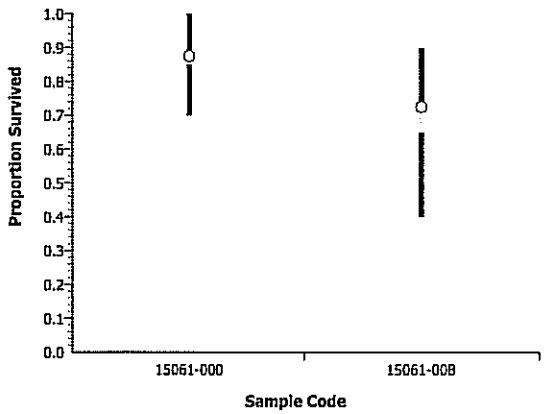
Data Summary

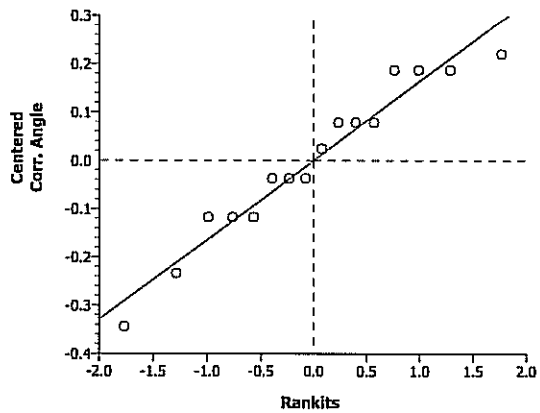
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.87500	0.70000	1.00000	0.11650	1.22471	0.99116	1.41202	0.16981
15061-008	8	0.72500	0.40000	0.90000	0.14880	1.02859	0.68472	1.24905	0.16456

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.80000	0.80000	0.90000	1.00000	0.70000	1.00000	1.00000	0.80000		
15061-008	0.90000	0.80000	0.80000	0.80000	0.70000	0.70000	0.70000	0.40000		

Graphics





CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	15-6919-1750	15-6919-1750	15 Nov-06 3:39 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.16249	8.88539	0.33043	Equal Variances
Distribution	Shapiro-Wilk W	0.91846	0.84420	0.15877	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0293025	0.0293025	1	0.64	0.43615	Non-Significant Effect
Error	0.6383563	0.0455969	14			
Total	0.66765885	0.0748994	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-010	0.80165	1.76131	0.2181	0.18805	Non-Significant Effect

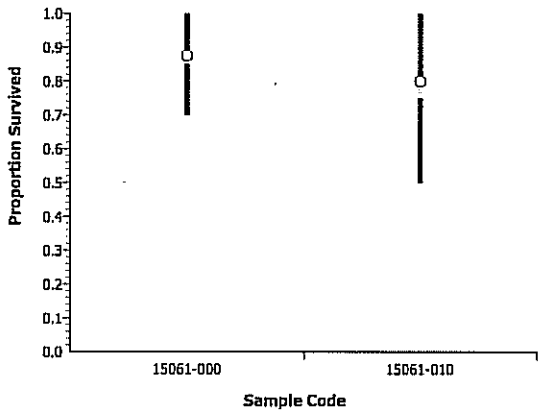
Data Summary

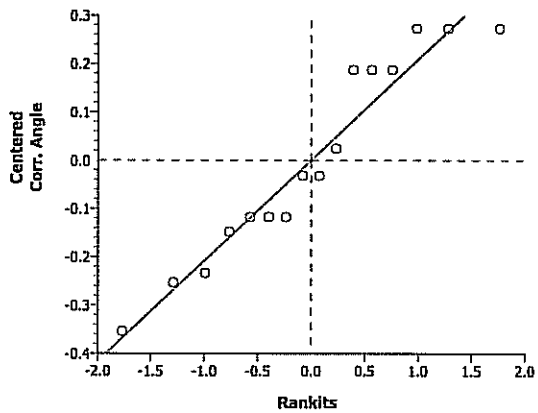
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.87500	0.70000	1.00000	0.11650	1.22471	0.99116	1.41202	0.16981
15061-010	8	0.80000	0.50000	1.00000	0.19272	1.13912	0.78540	1.41202	0.24972

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.80000	0.80000	0.90000	1.00000	0.70000	1.00000	1.00000	0.80000		
15061-010	0.80000	1.00000	0.70000	0.60000	0.50000	1.00000	0.80000	1.00000		

Graphics





CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	15-6919-1750	15-6919-1750	19 Dec-06 3:32 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.48359	8.88539	0.61565	Equal Variances
Distribution	Shapiro-Wilk W	0.88211	0.84420	0.04138	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0082341	0.0082341	1	0.23	0.63897	Non-Significant Effect
Error	0.5013175	0.0358084	14			
Total	0.50955164	0.0440425	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-011	0.47953	1.76131	0.3195	0.16665	Non-Significant Effect

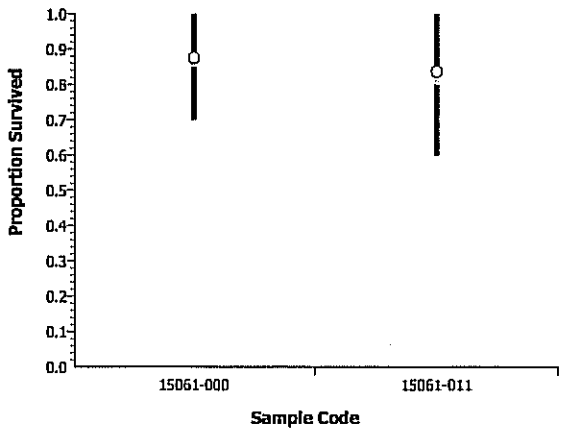
Data Summary

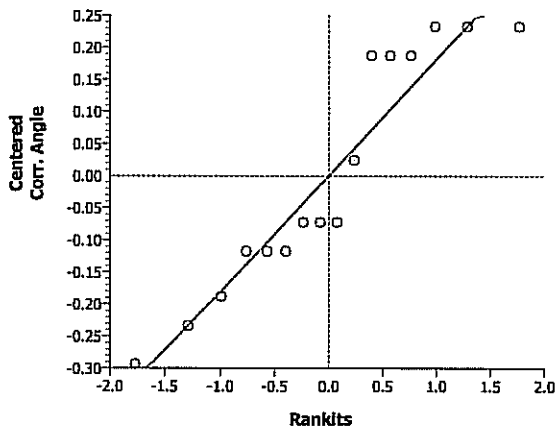
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.87500	0.70000	1.00000	0.11650	1.22471	0.99116	1.41202	0.16981
15061-011	8	0.83750	0.60000	1.00000	0.15059	1.17934	0.88608	1.41202	0.20684

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.80000	0.80000	0.90000	1.00000	0.70000	1.00000	1.00000	0.80000		
15061-011	0.80000	0.60000	0.80000	0.80000	0.70000	1.00000	1.00000	1.00000		

Graphics





C. dilutus Assay
GROWTH DATA

STUDY NUMBER: 15061 **CLIENT:** CH2M

ESI SAMPLE ID	REP	FOIL TARE WEIGHT (g)	*C.tentans* Dry + FOIL (g)	*C.tentans* Ashed + FOIL (g)
Lab ~~001~~ (E3)	A	(E2) ~~11.56~~ 11.71	31.21	14.89
	B	(E2) ~~20.13~~ 13.48	36.50	~~22.41~~ 15.20
	C	17.86	34.63	25.03
	D	21.12	43.72	~~14.86~~ 24.80
	E	10.47	31.48	19.2
	F	13.54	31.48	19.3
	G	20.92	40.37	27.8
	H	22.36	40.66	24.7
001	A	11.56	35.52	22.3
	B	20.13	36.56	26.8
	C	22.99	41.96	30.7
	D	21.46	44.38	31.5
	E	12.50	25.85	11.89
	F	14.86	~~50.49~~ 30.41	22.41
	G	22.09	50.49	25.13
	H	21.28	49.53	14.80
010 ~~002~~ (E3)	A	12.55	31.28	15.19
	B	16.31	40.15	19.59
	C	13.31	41.65	18.99
	D	14.07	36.07*	22.20
	E	14.27	~~27.39~~ 27.46	15.10
	F	13.49	35.27	15.70
	G	13.87	36.06	15.90
	H	13.50	41.46	16.00
011 ~~003~~ (E3)	A	11.26	27.63	15.20
	B	14.77	27.85	18.80
	C	14.30	31.25	~~18.5~~ 15.60
	D	(E3) ~~14.28~~ 15.10	35.08	~~22.30~~ 14.5
	E	14.95	29.40	15.18
	F	15.00	39.92	19.00
	G	15.08	43.11	~~22.30~~ 18.40
	H	15.91	38.42	24.50
RECORDED BY:		GL	NT	CS
DATE:		11/15/06	11/16/06	11/20/06

NOTES: * 26.07 wd.

C. dilutus Assay
GROWTH DATA

STUDY NUMBER: 15061 **CLIENT:** CH2M

ESI SAMPLE ID	REP	FOIL TARE WEIGHT ~~(g)~~ mg	*C.tentans* Dry + FOIL (g)	*C.tentans* Ashed + FOIL (g)
004	A	10.52	29.28	11.92
	B	13.67	30.47	14.90
	C	13.72	30.26	14.00
	D	14.91	28.63	16.00
	E	12.76	25.85	13.70
	F	12.85	25.89	14.00
	G	13.03	27.30	14.30
	H	16.88	33.33	18.00
005	A	11.88	22.08	13.10
	B	13.39	30.81	15.30
	C	13.47	29.43	15.30
	D	22.96	30.55	23.90
	E	15.37	25.46	21.50
	F	12.83	28.35	16.20
	G	13.44	25.54	14.10
	H	19.81	37.06	21.50
007	A	13.43	24.99	15.50
	B	14.45	27.52	16.10
	C	15.75	27.34	17.00
	D	17.19	27.69	15.70
	E	15.80	32.96	17.60
	F	16.63	31.86	~~14.18~~ 18.50
	G	15.45	27.09	16.40
	H	15.71	27.06	17.10
008	A	14.70	42.10	27.30
	B	14.79	41.04	25.70
	C	15.57	38.57	25.90
	D	16.91	45.66	31.50
	E	16.64	40.06	27.80
	F	12.87	34.00	23.90
	G	16.52	28.20	17.90
	H	16.09	29.72	26.30
RECORDED BY:		GL	NT	OS
DATE:		11/15/06	11/16/06	11/20/06

NOTES:

C. dilutus Assay
GROWTH DATA

STUDY NUMBER: 15061 **CLIENT:** CH2M

ESI SAMPLE ID	REP	FOIL TARE WEIGHT (g) mg	*C.tentans* Dry + FOIL (g) mg	*C.tentans* Ashed + FOIL (g)
Lab (-000a)	A	16.54	26.48	17.33
	B	15.57	33.58	17.24
	C	15.58	28.19	16.65
	D	16.79	25.95	19.04
	E	13.34	30.12	14.76
	F	14.98	26.97	17.12
	G	16.99	32.83	18.62
	H	14.30	28.28	15.63
-048	A	16.34	—	—
	B	16.27	—	—
	C	16.02	17.43	(E2) ~~16.3~~ 16.47
	D	14.13	—	—
	E	15.71	16.74	15.86
	F	13.70	—	—
	G	13.79	16.87	14.82
	H	15.85	16.26	16.12
	A			
	B			
	C			
	D			
	E			
	F			
	G			
	H			
	A			
	B			
	C			
	D			
	E			
	F			
	G			
	H			
RECORDED BY:		GL / BB	EG	BB
DATE:		12/5/06	12/6/06	12/13/06

NOTES:

CETIS Test Summary

Report Date: 19 Dec-06 3:56 PM
Link: 15-6919-1750

Chironomus 20-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Sample No:	03-3366-6980	**Material:**	Freshwater Sediment	**Client:**	CH2M Hill
Sample Date:	25 Oct-06 12:00 PM	**Code:**	15061-000	**Project:**	Ecological Risk Assessment
Receive Date:	25 Oct-06 12:00 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	24h	**Station:**	Lab Control; 15061-000		
Sample No:	04-1225-4609	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	01 Oct-06 04:40 PM	**Code:**	15061-001	**Project:**	Ecological Risk Assessment
Receive Date:	03 Oct-06 12:00 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	24d 19h	**Station:**	DLHTV1-DS-1; 15061-001		
Sample No:	10-2183-2337	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	03 Oct-06 12:00 PM	**Code:**	15061-004	**Project:**	Ecological Risk Assessment
Receive Date:	05 Oct-06 10:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	23d 0h	**Station:**	DHLCV1-DS-1; 15061-004		
Sample No:	09-3432-1084	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	04 Oct-06 11:00 PM	**Code:**	15061-005	**Project:**	Ecological Risk Assessment
Receive Date:	07 Oct-06 11:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	21d 13h	**Station:**	DLHCV2-DS-1; 15061-005		
Sample No:	16-1815-3147	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	06 Oct-06 01:00 PM	**Code:**	15061-007	**Project:**	Ecological Risk Assessment
Receive Date:	07 Oct-06 11:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	19d 23h	**Station:**	CLECV3-DS-1; 15061-007		
Sample No:	15-8347-4253	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	03 Oct-06 01:00 PM	**Code:**	15061-008	**Project:**	Ecological Risk Assessment
Receive Date:	09 Oct-06 09:45 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	22d 23h	**Station:**	DLHTV2-DS-1; 15061-008		
Sample No:	06-7315-6010	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	09 Oct-06 04:00 PM	**Code:**	15061-010	**Project:**	Ecological Risk Assessment
Receive Date:	11 Oct-06 10:00 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	16d 20h	**Station:**	CLECV4-DS-1; 15061-010		
Sample No:	16-2334-8319	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	10 Oct-06 09:00 AM	**Code:**	15061-011	**Project:**	Ecological Risk Assessment
Receive Date:	11 Oct-06 10:00 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	16d 3h	**Station:**	CLELV1-DS-1; 15061-011		

Mean AF Weight-mg Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
15061-000	8	1.91696	1.06667	2.72000	0.21977	0.62160	32.43%
15061-001	8	2.20600	1.33333	3.47300	0.25923	0.73322	33.24%
15061-004	8	1.51949	1.18900	1.91625	0.10749	0.30402	20.01%
15061-005	8	1.57306	0.39600	2.21667	0.19137	0.54126	34.41%
15061-007	8	1.40799	1.05444	1.67000	0.07478	0.21151	15.02%
15061-008	8	1.93589	1.58375	3.42000	0.21486	0.60772	31.39%
15061-010	8	2.85088	2.05600	3.87000	0.19653	0.55587	19.50%
15061-011	8	2.38724	1.41200	2.84400	0.16460	0.46556	19.50%

CETIS Test Summary

Report Date: 19 Dec-06 3:56 PM
Link: 15-6919-1750

Mean AF Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
15061-000	2.72000	2.66250	1.06667	2.10222	1.75429	1.35333	1.39667	2.28000
15061-001	1.88857	1.62667	1.87667	1.84000	2.79200	1.33333	2.81778	3.47300
15061-004	1.73600	1.73000	1.80667	1.26300	1.21500	1.18900	1.30000	1.91625
15061-005	1.49667	1.72333	1.76625	2.21667	0.39600	1.35000	1.90667	1.72889
15061-007	1.05444	1.63143	1.29250	1.49833	1.53600	1.67000	1.33625	1.24500
15061-008	1.64444	1.91750	1.58375	1.77000	1.75143	1.68333	1.71667	3.42000
15061-010	2.68167	2.05600	3.23714	3.87000	3.09000	2.44625	2.88000	2.54600
15061-011	2.48600	2.26250	2.60833	2.64750	2.84400	2.09200	2.74556	1.41200

CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Test No:	13-2271-8672	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	15 Nov-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	05 Dec-06 12:00 PM	**Dil Water:**	Natural Surface Water	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	15 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean AF Weight-mg	Comparison	08-7186-2609	08-7186-2609	19 Dec-06 3:36 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.82512	44.43410	0.42389	Equal Variances
Distribution	Shapiro-Wilk W	0.98500	0.80465	0.98642	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	3.31442	3.31442	1	42.10	0.00007	Significant Effect
Error	0.7872887	0.0787289	10			
Total	4.10170841	3.3931486	11			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000a		15061-048	6.48839	1.81246	0.0000	0.31142	Significant Effect

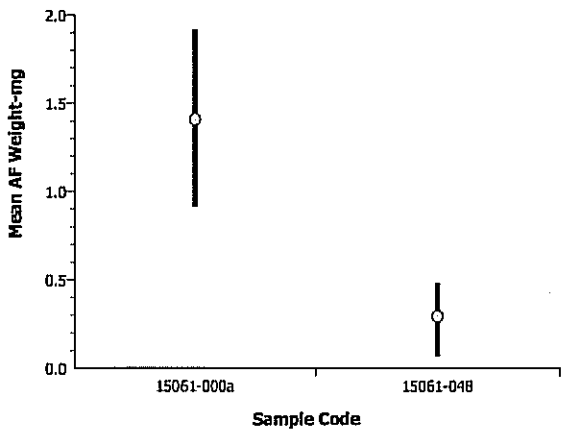
Data Summary

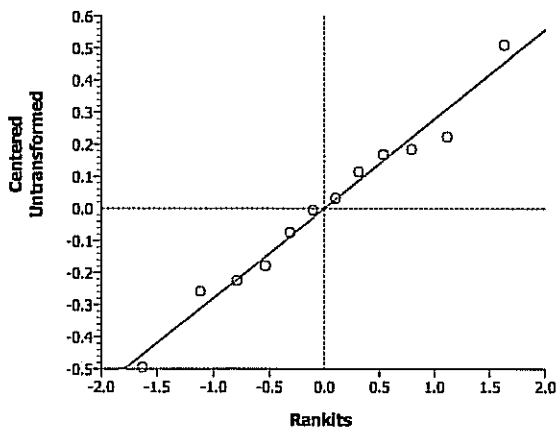
		Original Data				Transformed Data			
Sample Code	**Count**	**Mean**	**Minimum**	**Maximum**	**SD**	**Mean**	**Minimum**	**Maximum**	**SD**
15061-000a	8	1.40986	0.91500	1.92000	0.31250				
15061-048	4	0.29500	0.07000	0.48000	0.18592				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000a	0.91500	1.63400	1.44250	1.15167	1.92000	1.23125	1.57889	1.40556		
15061-048	0.48000	0.22000	0.41000	0.07000						

Graphics





CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean AF Weight-mg	Comparison	15-6919-1750	15-6919-1750	20 Nov-06 8:18 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.39141	8.88539	0.67392	Equal Variances
Distribution	Shapiro-Wilk W	0.93150	0.84420	0.25317	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.3341829	0.3341829	1	0.72	0.40936	Non-Significant Effect
Error	6.467974	0.4619981	14			
Total	6.8021566	0.7961810	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-001	-0.8505	1.76131	0.7953	0.59859	Non-Significant Effect

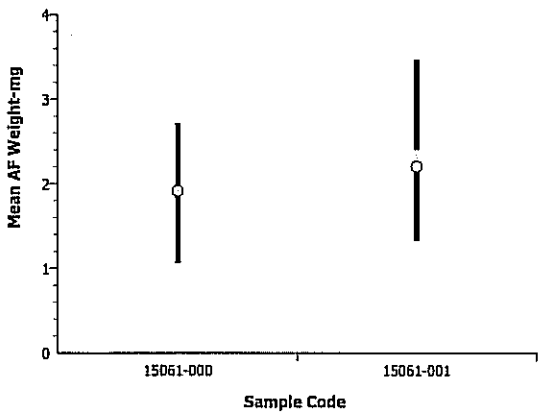
Data Summary

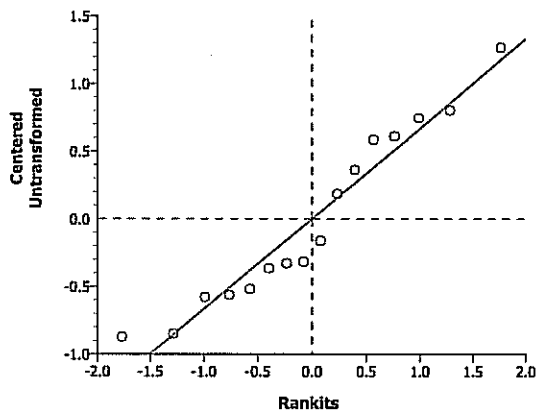
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	1.91696	1.06667	2.72000	0.62160				
15061-001	8	2.20600	1.33333	3.47300	0.73322				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	2.72000	2.66250	1.06667	2.10222	1.75429	1.35333	1.39667	2.28000		
15061-001	1.88857	1.62667	1.87667	1.84000	2.79200	1.33333	2.81778	3.47300		

Graphics





CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean AF Weight-mg	Comparison	15-6919-1750	15-6919-1750	20 Nov-06 8:19 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	4.18044	8.88539	0.07862	Equal Variances
Distribution	Shapiro-Wilk W	0.96430	0.84420	0.70634	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.6319287	0.6319287	1	2.64	0.12652	Non-Significant Effect
Error	3.351646	0.2394033	14			
Total	3.98357493	0.8713320	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-004	1.62468	1.76131	0.0633	0.43089	Non-Significant Effect

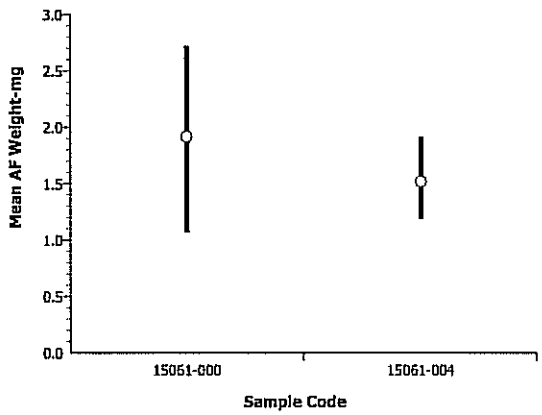
Data Summary

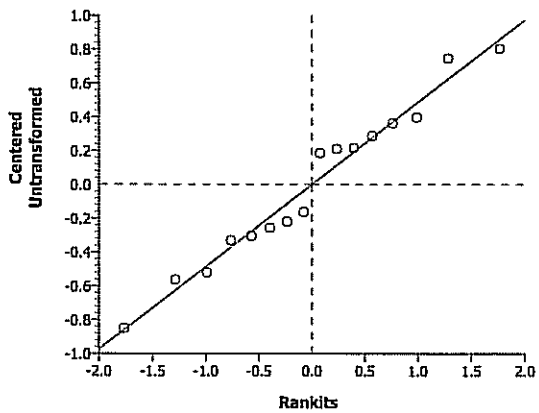
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	1.91696	1.06667	2.72000	0.62160				
15061-004	8	1.51949	1.18900	1.91625	0.30402				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	2.72000	2.66250	1.06667	2.10222	1.75429	1.35333	1.39667	2.28000		
15061-004	1.73600	1.73000	1.80667	1.26300	1.21500	1.18900	1.30000	1.91625		

Graphics





CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean AF Weight-mg	Comparison	15-6919-1750	15-6919-1750	20 Nov-06 8:19 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.31885	8.88539	0.72425	Equal Variances
Distribution	Shapiro-Wilk W	0.95739	0.84420	0.58716	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.4730698	0.4730698	1	1.39	0.25761	Non-Significant Effect
Error	4.755437	0.3396741	14			
Total	5.22850671	0.8127439	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-005	1.18013	1.76131	0.1288	0.51326	Non-Significant Effect

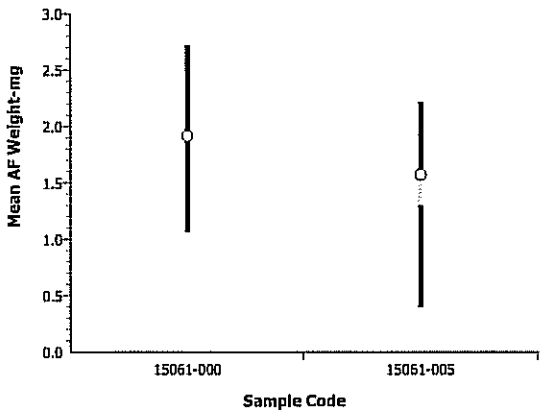
Data Summary

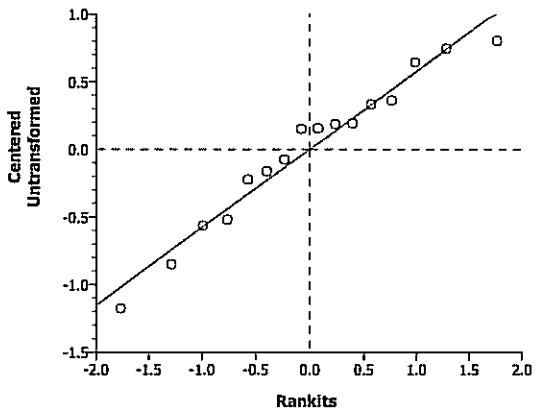
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	1.91696	1.06667	2.72000	0.62160				
15061-005	8	1.57306	0.39600	2.21667	0.54126				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	2.72000	2.66250	1.06667	2.10222	1.75429	1.35333	1.39667	2.28000		
15061-005	1.49667	1.72333	1.76625	2.21667	0.39600	1.35000	1.90667	1.72889		

Graphics





CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean AF Weight-mg	Comparison	15-6919-1750	15-6919-1750	20 Nov-06 8:19 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	8.63649	8.88539	0.01087	Equal Variances
Distribution	Shapiro-Wilk W	0.97710	0.84420	0.90986	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	1.036181	1.036181	1	4.81	0.04574	Significant Effect
Error	3.017832	0.2155595	14			
Total	4.05401289	1.2517401	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-007	2.19247	1.76131	0.0229	0.40887	Significant Effect

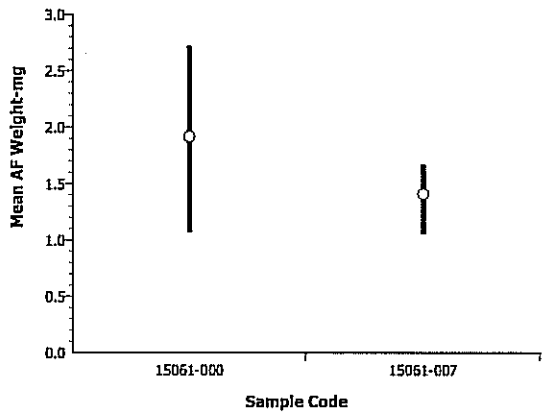
Data Summary

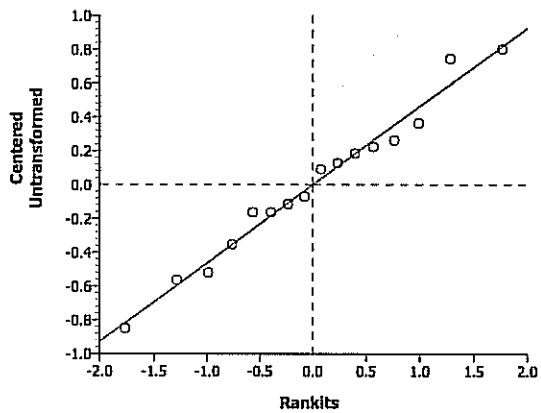
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	1.91696	1.06667	2.72000	0.62160				
15061-007	8	1.40799	1.05444	1.67000	0.21151				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	2.72000	2.66250	1.06667	2.10222	1.75429	1.35333	1.39667	2.28000		
15061-007	1.05444	1.63143	1.29250	1.49833	1.53600	1.67000	1.33625	1.24500		

Graphics





CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean AF Weight-mg	Comparison	15-6919-1750	15-6919-1750	20 Nov-06 8:19 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.04619	8.88539	0.95403	Equal Variances
Distribution	Shapiro-Wilk W	0.90163	0.84420	0.08558	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0014335	0.0014335	1	0.00	0.95176	Non-Significant Effect
Error	5.289918	0.3778513	14			
Total	5.29135149	0.3792849	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-008	-0.0616	1.76131	0.5241	0.54134	Non-Significant Effect

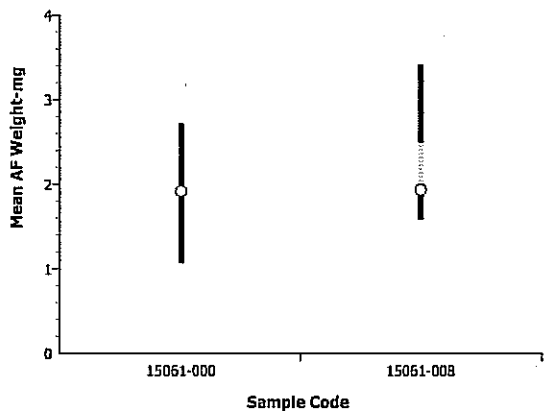
Data Summary

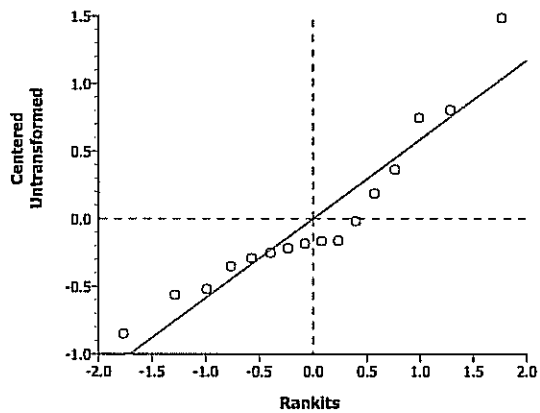
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	1.91696	1.06667	2.72000	0.62160				
15061-008	8	1.93589	1.58375	3.42000	0.60772				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	2.72000	2.66250	1.06667	2.10222	1.75429	1.35333	1.39667	2.28000		
15061-008	1.64444	1.91750	1.58375	1.77000	1.75143	1.68333	1.71667	3.42000		

Graphics





CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean AF Weight-mg	Comparison	15-6919-1750	15-6919-1750	19 Dec-06 3:56 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.25044	8.88539	0.77562	Equal Variances
Distribution	Shapiro-Wilk W	0.96493	0.84420	0.71742	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	3.488849	3.488849	1	10.03	0.00685	Significant Effect
Error	4.867638	0.3476884	14			
Total	8.35648704	3.8365374	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-010	-3.1677	1.76131	0.9966	0.51928	Non-Significant Effect

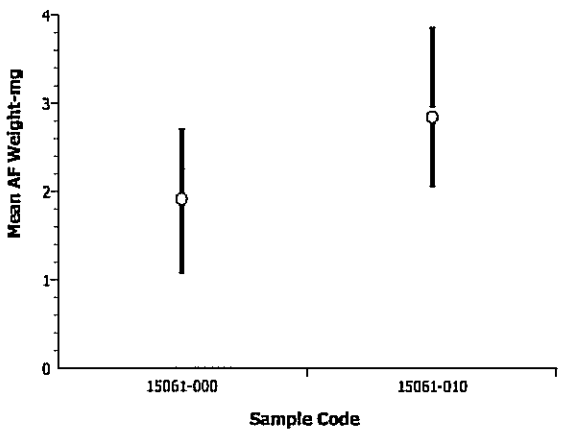
Data Summary

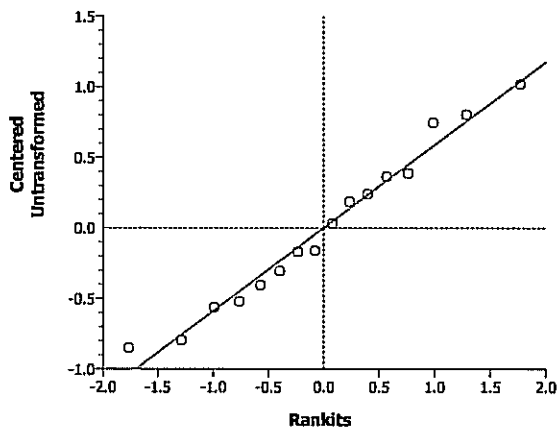
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	1.91696	1.06667	2.72000	0.62160				
15061-010	8	2.85088	2.05600	3.87000	0.55587				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	2.72000	2.66250	1.06667	2.10222	1.75429	1.35333	1.39667	2.28000		
15061-010	2.68167	2.05600	3.23714	3.87000	3.09000	2.44625	2.88000	2.54600		

Graphics





CETIS Analysis Detail

Chironomus 20-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Test No:	18-3545-8125	**Test Type:**	Survival-AF Growth	**Duration:**	20d 0h
Start Date:	26 Oct-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Chironomus dilutus
Ending Date:	15 Nov-06 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	ABS - Aquatic Biosystems, CO
Setup Date:	26 Oct-06 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean AF Weight-mg	Comparison	15-6919-1750	15-6919-1750	19 Dec-06 3:28 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.78266	8.88539	0.46346	Equal Variances
Distribution	Shapiro-Wilk W	0.95878	0.84420	0.61058	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.8846409	0.8846409	1	2.93	0.10881	Non-Significant Effect
Error	4.221876	0.3015625	14			
Total	5.1065166	1.1862035	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-011	-1.7128	1.76131	0.9456	0.48361	Non-Significant Effect

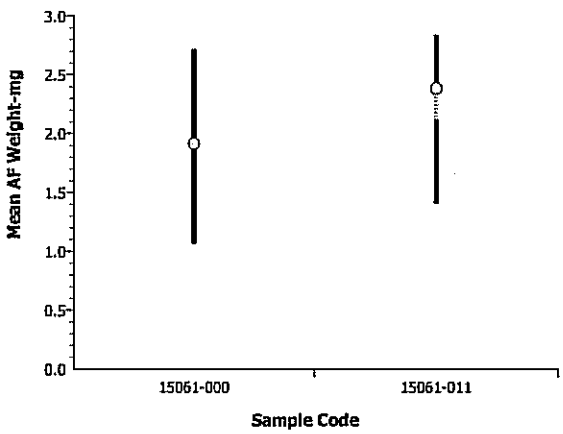
Data Summary

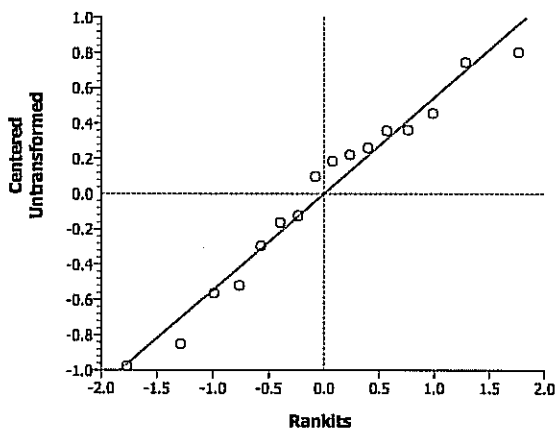
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	1.91696	1.06667	2.72000	0.62160				
15061-011	8	2.38724	1.41200	2.84400	0.46556				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	2.72000	2.66250	1.06667	2.10222	1.75429	1.35333	1.39667	2.28000		
15061-011	2.48600	2.26250	2.60833	2.64750	2.84400	2.09200	2.74556	1.41200		

Graphics





STUDY: 15061
CLIENT: CH2M Hill
PROJECT: Great lakes Sweepings
ASSAY: 20-Day Chironomus dilutus Assay
TASK: Water Quality
PARAMETER: Alkalinity
METHOD: EPA 310.2

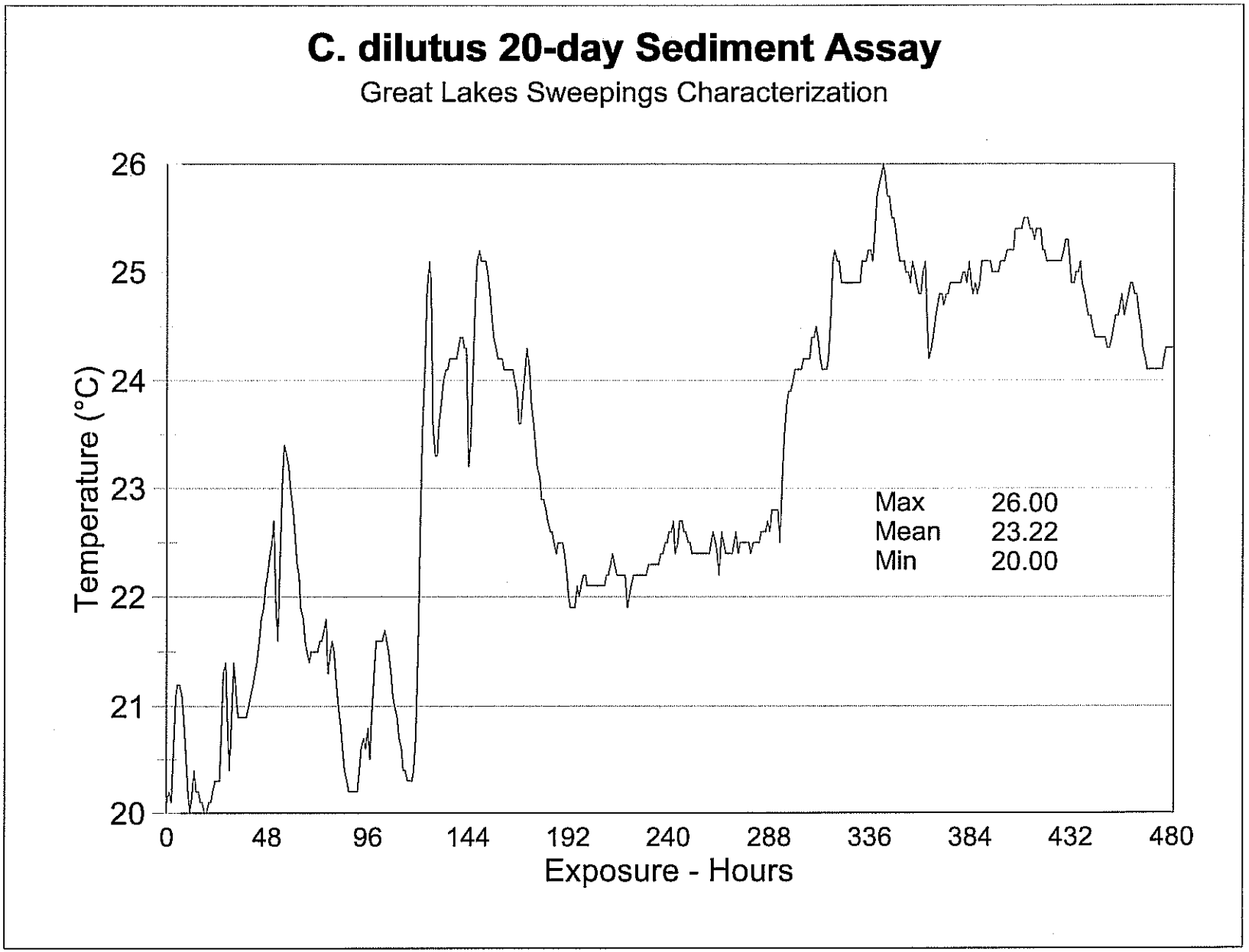
ID	PARAMET	LAB ID	RESULT	QUAL	QLIMIT	UNITS	SAMPLED	ANALYZED
-000 Cd Day 00	Alkalinity a	15061-021	41		10	mg/L	10/26/06 0930	10/26/06
-001 Cd Day 00	Alkalinity a	15061-022	45		10	mg/L	10/26/06 0930	10/26/06
-004 Cd Day 00	Alkalinity a	15061-023	60		10	mg/L	10/26/06 0930	10/26/06
-005 Cd Day 00	Alkalinity a	15061-024	63		10	mg/L	10/26/06 0930	10/26/06
-007 Cd Day 00	Alkalinity a	15061-025	ND		10	mg/L	10/26/06 0930	10/26/06
-008 Cd Day 00	Alkalinity a	15061-026	ND		10	mg/L	10/26/06 0930	10/26/06
-010 Cd Day 00	Alkalinity a	15061-027	72		10	mg/L	10/26/06 0930	10/26/06
-011 Cd Day 00	Alkalinity a	15061-028	88		10	mg/L	10/26/06 0930	10/26/06
Pond Cd Day 00	Alkalinity a	15061-029	30		10	mg/L	10/26/06 0930	10/26/06
-000 Cd Day 10	Alkalinity a	15061-050	38		10	mg/L	11/05/06	11/09/06
-001 Cd Day 10	Alkalinity a	15061-051	54		10	mg/L	11/05/06	11/09/06
-004 Cd Day 10	Alkalinity a	15061-052	41		10	mg/L	11/05/06	11/09/06
-005 Cd Day 10	Alkalinity a	15061-053	44		10	mg/L	11/05/06	11/09/06
-007 Cd Day 10	Alkalinity a	15061-054	21		10	mg/L	11/05/06	11/09/06
-008 Cd Day 10	Alkalinity a	15061-055	55		10	mg/L	11/05/06	11/09/06
-010 Cd Day 10	Alkalinity a	15061-056	49		10	mg/L	11/05/06	11/09/06
-011 Cd Day 10	Alkalinity a	15061-057	95		10	mg/L	11/05/06	11/09/06
Pond Cd Day 10	Alkalinity a	15061-058	22		10	mg/L	11/05/06	11/09/06
-000 Cd Day 20	Alkalinity a	15061-155	26		10	mg/L	11/15/06	11/28/06
-001 Cd Day 20	Alkalinity a	15061-156	63		10	mg/L	11/15/06	11/29/06
-004 Cd Day 20	Alkalinity a	15061-157	31		10	mg/L	11/15/06	11/28/06
-005 Cd Day 20	Alkalinity a	15061-158	30		10	mg/L	11/15/06	11/28/06
-007 Cd Day 20	Alkalinity a	15061-159	ND		10	mg/L	11/15/06	11/28/06
-008 Cd Day 20	Alkalinity a	15061-160	53		10	mg/L	11/15/06	11/28/06
-010 Cd Day 20	Alkalinity a	15061-161	34		10	mg/L	11/15/06	11/28/06
-011 Cd Day 20	Alkalinity a	15061-162	84		10	mg/L	11/15/06	11/29/06
Pond Cd Day 20	Alkalinity a	15061-163	18		10	mg/L	11/15/06	11/28/06
Pond Cd Day 00	Alkalinity a	15061-260	18		10	mg/L	11/15/06 1430	11/29/06
-000 Cd Day 00	Alkalinity a	15061-261	21		10	mg/L	11/15/06 1430	11/28/06
-048 Cd Day 00	Alkalinity a	15061-262	15		10	mg/L	11/15/06 1430	11/29/06
Pond Cd Day 20	Alkalinity a	15061-425	28		10	mg/L	12/05/06	12/13/06
-000 Cd Day 20	Alkalinity a	15061-426	33		10	mg/L	12/05/06	12/13/06
-048 Cd Day 20	Alkalinity a	15061-427	72		10	mg/L	12/05/06	12/13/06

STUDY: 15061
CLIENT: CH2M Hill
PROJECT: Great lakes Sweepings
ASSAY: 20-Day Chironomus dilutus Assay
TASK: Water Quality
PARAMETER: Ammonia
METHOD: SM 4500-NH3 G

ID	PARAMET	LAB ID	RESULT	QUAL	QLIMIT	UNITS	SAMPLED
-000 Cd Day 00	Ammonia-	15061-039	0.19		0.1	mg/L as N	10/26/06 0930
-001 Cd Day 00	Ammonia-	15061-040	ND		0.1	mg/L as N	10/26/06 0930
-004 Cd Day 00	Ammonia-	15061-041	ND		0.1	mg/L as N	10/26/06 0930
-005 Cd Day 00	Ammonia-	15061-042	ND		0.1	mg/L as N	10/26/06 0930
-007 Cd Day 00	Ammonia-	15061-043	ND		0.1	mg/L as N	10/26/06 0930
-008 Cd Day 00	Ammonia-	15061-044	ND		0.1	mg/L as N	10/26/06 0930
-010 Cd Day 00	Ammonia-	15061-045	ND		0.1	mg/L as N	10/26/06 0930
-011 Cd Day 00	Ammonia-	15061-046	ND		0.1	mg/L as N	10/26/06 0930
Pond Cd Day 00	Ammonia-	15061-047	ND		0.1	mg/L as N	10/26/06 0930
-000 Cd Day 10	Ammonia-	15061-068	1.7		0.1	mg/L as N	11/05/06
-001 Cd Day 10	Ammonia-	15061-069	1.5		0.1	mg/L as N	11/05/06
-004 Cd Day 10	Ammonia-	15061-070	1.1		0.1	mg/L as N	11/05/06
-005 Cd Day 10	Ammonia-	15061-071	1.1		0.1	mg/L as N	11/05/06
-007 Cd Day 10	Ammonia-	15061-072	0.85		0.1	mg/L as N	11/05/06
-008 Cd Day 10	Ammonia-	15061-073	0.55		0.1	mg/L as N	11/05/06
-010 Cd Day 10	Ammonia-	15061-074	2.7		0.1	mg/L as N	11/05/06
-011 Cd Day 10	Ammonia-	15061-075	1.3		0.1	mg/L as N	11/05/06
Pond Cd Day 10	Ammonia-	15061-076	ND		0.1	mg/L as N	11/05/06
-000 Cd Day 20	Ammonia-	15061-173	0.48		0.1	mg/L as N	11/15/06
-001 Cd Day 20	Ammonia-	15061-174	0.23		0.1	mg/L as N	11/15/06
-004 Cd Day 20	Ammonia-	15061-175	0.2		0.1	mg/L as N	11/15/06
-005 Cd Day 20	Ammonia-	15061-176	0.22		0.1	mg/L as N	11/15/06
-007 Cd Day 20	Ammonia-	15061-177	0.33		0.1	mg/L as N	11/15/06
-008 Cd Day 20	Ammonia-	15061-178	0.23		0.1	mg/L as N	11/15/06
-010 Cd Day 20	Ammonia-	15061-179	0.33		0.1	mg/L as N	11/15/06
-011 Cd Day 20	Ammonia-	15061-180	ND		0.1	mg/L as N	11/15/06
Pond Cd Day 20	Ammonia-	15061-181	0.19		0.1	mg/L as N	11/15/06
Pond Cd Day 00	Ammonia-	15061-266	0.73		0.1	mg/L as N	11/15/06 1430
-000 Cd Day 00	Ammonia-	15061-267	0.19		0.1	mg/L as N	11/15/06 1430
-048 Cd Day 00	Ammonia-	15061-268	0.58		0.1	mg/L as N	11/15/06 1430

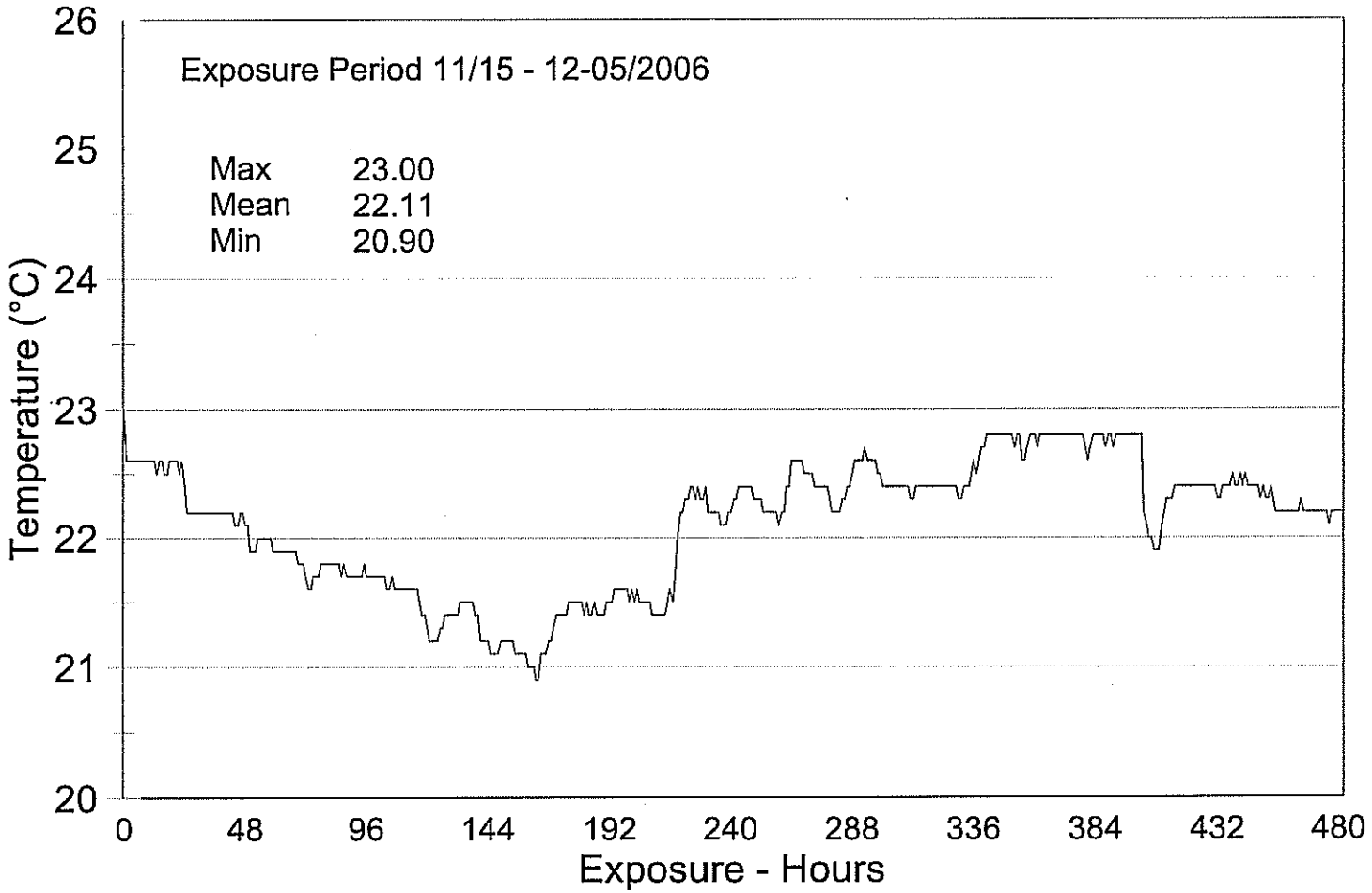
STUDY: 15061
CLIENT: CH2M Hill
PROJECT: Great Lakes Sweepings
ASSAY: 20-day Chironomus dilutus
TASK: Water Quality
PARAMETER: Hardness as CaCO3
METHOD: 200.7 EPA 600/R-94/111

ID	LAB ID	RESULT	QUAL	QLIMIT	UNITS	SAMPLED	ANALYZED
-000 Cd Day 00	15061-030	86		0.3	mg/L	10/26/06	10/31/06
-001 Cd Day 00	15061-031	96		0.3	mg/L	10/26/06	11/06/06
-004 Cd Day 00	15061-032	66		0.3	mg/L	10/26/06	11/06/06
-005 Cd Day 00	15061-033	84		0.3	mg/L	10/26/06	11/06/06
-007 Cd Day 00	15061-034	350		0.3	mg/L	10/26/06	10/31/06
-008 Cd Day 00	15061-035	89		0.3	mg/L	10/26/06	11/06/06
-010 Cd Day 00	15061-036	150		0.3	mg/L	10/26/06	11/06/06
-011 Cd Day 00	15061-037	230		0.3	mg/L	10/26/06	11/01/06
Pond Cd Day 00	15061-038	54		0.3	mg/L	10/26/06	11/06/06
Pond Cd Day 10	15061-067	41		1	mg/L	11/05/06	11/29/06
-000 Cd Day 10	15061-059	52		1	mg/L	11/05/06	01/02/07
-001 Cd Day 10	15061-060	74		1	mg/L	11/05/06	01/02/07
-004 Cd Day 10	15061-061	49		1	mg/L	11/05/06	01/02/07
-005 Cd Day 10	15061-062	39		1	mg/L	11/05/06	01/02/07
-007 Cd Day 10	15061-063	66		1	mg/L	11/05/06	01/02/07
-008 Cd Day 10	15061-064	73		1	mg/L	11/05/06	01/02/07
-010 Cd Day 10	15061-065	53		1	mg/L	11/05/06	01/02/07
-011 Cd Day 10	15061-066	110		1	mg/L	11/05/06	01/02/07
-000 Cd Day 20	15061-164	42		1	mg/L	11/15/06	01/02/07
-001 Cd Day 20	15061-165	97		1	mg/L	11/15/06	01/02/07
-004 Cd Day 20	15061-166	35		1	mg/L	11/15/06	01/02/07
-005 Cd Day 20	15061-167	32		1	mg/L	11/15/06	01/02/07
-007 Cd Day 20	15061-168	42		1	mg/L	11/15/06	01/02/07
-008 Cd Day 20	15061-169	68		0.3	mg/L	11/15/06	12/01/06
-010 Cd Day 20	15061-170	46		1	mg/L	11/15/06	01/02/07
-011 Cd Day 20	15061-171	180		1	mg/L	11/15/06	01/02/07
Pond Cd Day 20	15061-172	33		1	mg/L	11/15/06	01/02/07
Pond Cd Day 0	15061-263	32		1	mg/L	11/15/06	01/02/07
-000 Cd Day 0	15061-264	33		1	mg/L	11/15/06	01/02/07
-048 Cd Day 0	15061-265	32		1	mg/L	11/15/06	01/02/07
Pond Cd Day 20	15061-350	41		0.3	mg/L	11/25/06	12/20/06
-000 Cd Day 20	15061-429	42		0.3	mg/L	12/05/06	01/02/07
-048 Cd Day 20	15061-430	81		0.3	mg/L	12/05/06	01/02/07


C. dilutus 20-day Sediment Assay
Great Lakes Sweepings Characterization
Temperature (°C)
26
25
24
23
22
21
20
0
48
96
144
192
240
288
336
384
432
480
Exposure - Hours
Max 26.00
Mean 23.22
Min 20.00

C. dilutus 20-day Sediment Assay

Great lakes Sweepings Characterization



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

AQUATIC BIO SYSTEMS ABS INC.

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

ORGANISM HISTORY

DATE: 10/23/06

SPECIES: *Chironomus tentans*

AGE: Deposited on 10/12/06

LIFE STAGE: Second Instar 10/23/06

HATCH DATE: Emergent date 11/5/06

BEGAN FEEDING: Immediately

FOOD: *Selenastrum* sp., Flake slurry

Water Chemistry Record:	**Current**	**Range**
TEMPERATURE:	23°C	23-26°C
SALINITY/CONDUCTIVITY:	--	--
TOTAL HARDNESS (as $CaCO_3$):	94 mg/l	76-170 mg/l
TOTAL ALKALINITY (as $CaCO_3$):	65 mg/l	50-140 mg/l
pH:	7.86	7.04-8.29

Comments:

Facility Supervisor

ESI

EnviroSystems, Inc.
One Lafayette Road
P.O. Box 778
Hampton, NH 03843-0778
Telephone: 603-926-3345

SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/3/06 TIME: 1200 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/3/06 TIME: 1200 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☑ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☑ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☑ YES	☐ NO
SAMPLE DATE:	☑ YES	☐ NO
SAMPLE TIME RECORDED:	☑ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☑ YES	☐ NO
CUSTODY SEAL IN PLACE:	☑ YES	☐ NO
SHIPPING CONTAINER INTACT:	☑ YES	☐ NO

SAMPLE TEMPERATURE (AT ARRIVAL): 15 °C

DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?	☐ YES	☑ NO
SAMPLE ARRIVED ON ICE:	☐ YES	☑ NO Melted

COMMENTS: 1x 1g Solid DLHTV1-DS-1
1x 2.5g Water

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/5/06 TIME: 1030 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/5/06 TIME: 1145 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☑ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☑ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☑ YES	☐ NO
SAMPLE DATE:	☑ YES	☐ NO
SAMPLE TIME RECORDED:	☑ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☑ YES	☐ NO
CUSTODY SEAL IN PLACE:	☑ YES	☐ NO
SHIPPING CONTAINER INTACT:	☑ YES	☐ NO
SAMPLE TEMPERATURE (AT ARRIVAL): 4 °C		
DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?	☐ YES	☒ NO
SAMPLE ARRIVED ON ICE:	☒ YES	☐ NO

1 missing cooler - No Chain BB

COMMENTS: DLHCV1-LS-1 water
DLHCV1-DS-1 solid

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/7/08 TIME: 1130 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/7/08 TIME: 1130 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☑ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☑ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☑ YES	☐ NO
SAMPLE DATE:	☑ YES	☐ NO
SAMPLE TIME RECORDED:	☑ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☑ YES	☐ NO
CUSTODY SEAL IN PLACE:	☑ YES	☐ NO
SHIPPING CONTAINER INTACT:	☑ YES	☐ NO
SAMPLE TEMPERATURE (AT ARRIVAL): 4 °C		
DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?	☐ YES	☑ NO
SAMPLE ARRIVED ON ICE:	☑ YES	☐ NO

COMMENTS:
DLHCV2-DS-1 solid -005
DLHCV2-LS-1 water -006
CLECV3-DS-1 solid -007

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Hampton, NH 03843-0778
Telephone: 603-926-3345

SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/8/06 TIME: 0945 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/8/06 TIME: 0945 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☑ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☑ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☑ YES	☐ NO
SAMPLE DATE:	☑ YES	☐ NO
SAMPLE TIME RECORDED:	☑ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☑ YES	☐ NO
CUSTODY SEAL IN PLACE:	☑ YES	☐ NO
SHIPPING CONTAINER INTACT:	☑ YES	☐ NO

SAMPLE TEMPERATURE (AT ARRIVAL): 17 °C

DOES CLIENT NEED NOTIFICATION OF TEMPERATURE? ☐ YES ☑ NO

SAMPLE ARRIVED ON ICE: ☐ YES ☑ NO Melted

COMMENTS:
DLHTV2-DS-1 Solid -008
DLHTV2-LS-1 Water -009

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Telephone: 603-926-3345

SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/11/06 TIME: 1000 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/11/06 TIME: 1030 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☒ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☒ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☒ YES	☐ NO
SAMPLE DATE:	☒ YES	☐ NO
SAMPLE TIME RECORDED:	☒ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☒ YES	☐ NO
CUSTODY SEAL IN PLACE:	☒ YES	☐ NO
SHIPPING CONTAINER INTACT:	☒ YES	☐ NO

SAMPLE TEMPERATURE (AT ARRIVAL): 5 °C

DOES CLIENT NEED NOTIFICATION OF TEMPERATURE? ☐ YES ☒ NO

SAMPLE ARRIVED ON ICE: ☒ YES ☐ NO

COMMENTS:
CLECU1-DS-1 solid -011
CLECU1-LS-1 water -012
CLECU4-DS-1 solid -010

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/28/06 TIME: 1030 BY: EG

DELIVERED VIA: ☐ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/30/06 TIME: 0900 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☑ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☑ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☑ YES	☐ NO
SAMPLE DATE:	☑ YES	☐ NO
SAMPLE TIME RECORDED:	☑ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☑ YES	☐ NO
CUSTODY SEAL IN PLACE:	☑ YES	☐ NO
SHIPPING CONTAINER INTACT:	☑ YES	☐ NO
SAMPLE TEMPERATURE (AT ARRIVAL): 4 °C		
DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?	☐ YES	☑ NO
SAMPLE ARRIVED ON ICE:	☑ YES	☐ NO

COMMENTS: CLELV2-DS-1 soil
CLELV2-LS-1 water

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ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2MHill	Contact: R. McMorris	Project Name: Cargo Sweep	Page 1 of 1
Report to:	Address:	Project Number:	
Invoice to: PARSON Brinkerhoff	Address:	Project Manager: E. Mosley	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com-posit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preser-vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-001	DLHTV1-DS-1	10/1/06	1640	McMorris	C	4L	P	N/A	S	N	Per Quote ↓
-002	DLHTV1-LS-1	10/1/06	1440	McMorris	C	10L	P	N/A	W	N	

Relinquished By: J. Coffey	Date: 10/1/06	Time: 1840	Received By: [signature] Date: 10/3/06 Time: 1200
Relinquished By:	Date:	Time:	Received at Lab By: Date: Time:

Comments:

Sample Delivery Group No: Page of

No: № 2104

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Hampton, N.H. 03843
Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact: R. McMORRIS	Project Name: GREAT LAKES	Page 1 of 1
Report to:	Address:	Project Number:	
Invoice to: PARSON BRINKERHOFF	Address:	Project Manager:	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-004	DLHCV1-DS-1	10-3-06	0900	McMorris	C	4L	P	4°C	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-003	DLHCV1-LS-1	↓	↓	McMorris	C	10L	P	↓	W	N	48 HOUR PIMEPHALES/DAPHNIA
-008	DLH TV2-DS-1	↓	1300	McMorris	C	4L	P	↓	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-009	DLH TV2-LS-1	↓	↓	McMorris	C	10L	P	↓	W	N	48 HOUR PIMEPHALES/DAPHNIA

Relinquished By: Regan McMorris [signature]	Date: 10-3-06	Time: 1500	Received By: [signature] Date: 10/9/06 Time: 0945
Relinquished By:	Date:	Time:	Received at Lab By: Date: Time:

Comments:

No: № 2106

Sample Delivery Group No: Page 1 of 1

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Hampton, N.H. 03843

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FAX: 603-926-3521

ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact: R. McMORRIS	Project Name: GREAT LAKES	Page 1 of 1
Report to:	Address:	Project Number:	
Invoice to: PARSON BRINKERHOFF	Address:	Project Manager:	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-005	DLHCV2-DS-1	10-4-06	2300	RM	C	4L	P	4°C	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-006	DLHCV2-LS-1	↓	↓	↓	C	10L	P	↓	W	N	48 HOUR PIMEPHALES/DAPHNI

Relinquished By: RICHARD McMORRIS	Date: 11-4-06 Time: 2350	Received By:	Date: 10/7/06 Time: 1130
Relinquished By:	Date: Time:	Received at Lab By:	Date: Time:

Comments:

Sample Delivery Group No:	Page of

No: № 2105

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Hampton, N.H. 03843

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FAX: 603-926-3521

ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact:	Project Name: GREAT LAKES	Page 1 of 1
Report to: JOHN COFFEY/CH2M HILL	Address:	Project Number:	
Invoice to: PARSONS BRINKERHOFF	Address:	Project Manager:	
Voice: R. McMORRIS 541-740-4250	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
.007	CLECV3-DS-1	10/6/06	1300	RM	C	4L	P	N/A	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS

Relinquished By: Regan McMorris	Date: 10/6/06 Time: 1410	Received By: [signature]	Date: 10/7/06 Time: 1130
Relinquished By:	Date: Time:	Received at Lab By:	Date: Time:

Comments:

Sample Delivery Group No: Page of

No: № 2102

ESI
EnviroSystems, Inc.
1 Lafayette Road
P.O. Box 778
Hampton, N.H. 03843

Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact: RAGAN McMORRIS	Project Name: GREAT LAKES	Page 1 of 1
Report to: JOHN COFFEY/CH2MHILL	Address: 541-740-4250	Project Number:	
Invoice to: PARSON BRINKERHOFF	Address:	Project Manager: ERIN MOSLEY	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composit (G/C)	Container Size (mt.)	Container Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-010	CLECY4-DS-1	10-9-06	16:00	RM	C	4L	P	N/A	S	N	28 DAY HYALLELLA 20 DAY CHIRONOMUS
RM	~~CLECY4-LS-1~~	~~10-9-06~~		~~RM~~	~~C~~	~~10L~~	~~P~~	~~N/A~~	~~W~~	~~N~~	~~48 HOUR PIMEPHALES/DAPHNIA~~

Relinquished By: [signature]	Date: 10/10/06	Time: 13:35	Received By: [signature] Date: 10/11/06 Time: 1000
Relinquished By:	Date:	Time:	Received at Lab By: Date: Time:

Comments:

Sample Delivery Group No: Page of

No: № 2103

ESI
EnviroSystems, Inc.
1 Lafayette Road
P.O. Box 778
Hampton, N.H. 03843
Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact: REGAN McMORRIS	Project Name: GREAT LAKES	Page 1 of 1
Report to: JOHN COFFEY/CH2M HILL	Address: 541-740-4250	Project Number:	
Invoice to: PARSON BRINKERHOFF	Address:	Project Manager: ERIN MOSLEY	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composit (G/C)	Container Size (mL)	Container Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-011	CLELVI-DS-1	10/10/06	0900	RM	C	4L	P	N/A	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-012	CLELVI-LS-1	10/10/06	0700	RM	C	10L	P	N/A	W	N	48 HOUR RIMEPHALES/DAPHN

Relinquished By: [signature]	Date: 10/10/06 TS-2 pm	Time: 13:25	Received By: [signature] Date: 10/11/06 Time: 1000
Relinquished By:	Date:	Time:	Received at Lab By: Date: Time:

Comments:

Sample Delivery Group No: Page of

No: № 2103

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1 Lafayette Road
P.O. Box 778
Hampton, N.H. 03843
Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact: REGAN MCMORRIS 541-740-4250	Project Name: GREAT LAKES	Page 1 of 1
Report to: JOHN COFFEY/CH2M HILL	Address:	Project Number:	
Invoice to: PARSON BRINKERHOFF	Address:	Project Manager: ERIN MOSLEY	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com-posit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preser-vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-048	CLELV2-DS-1	10/27/06	10:00	RM	C	4L	P	N/A	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-049	CLELV2-LS-1	↓	07:00	RM	C	10L	P	N/A	S	N	48 HOUR PIMEPHALES/DAPHNIA

Relinquished By: Regan L. McMorris	Date: 10/27/06 Time: 1400	Received By: Fed Ex	Date: Time:
Relinquished By: Fed Ex	Date: Time:	Received at Lab By: [illegible]	Date: 10/28/06 Time: 1030

Comments:

Sample Delivery Group No:	Page of

No: № 2103

TOXICOLOGICAL EVALUATION OF SEDIMENT SAMPLES

Great Lakes Sweepings Characterization
***Hyalella azteca* 28 day Sediment Toxicity Tests**

Prepared For

CH2M Hill, Incorporated
25 New Chardon Street, Suite 500
Boston, MA 02114-4774

By

EnviroSystems, Incorporated
1 Lafayette Road
Hampton, New Hampshire 03842

November 2006
Reference Number 15061-06-11

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1.0 INTRODUCTION 3

2.0 MATERIALS AND METHODS 3
- 2.1 General Methods, Biological Evaluations 3
- 2.2 Test Species 3
- 2.3 Test Samples and Laboratory Control Sediment 3
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- 2.5 Statistical Analysis 4
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TOXICOLOGICAL EVALUATION OF SEDIMENT SAMPLES

Great Lakes Sweepings Characterization *Hyalella azteca* 28 day Sediment Toxicity Tests

1.0 INTRODUCTION

This report presents the results of chronic exposure partial life cycle toxicity tests conducted on samples provided by CH2M Hill as part of a program to evaluated deck sweepings discharged to the Great Lakes. Testing was based on programs and protocols developed by the ASTM (2001) and US EPA (2000). The toxicity of the samples was assessed by conducting long term toxicity tests using the freshwater amphipod, *H. azteca*. Assays were performed at EnviroSystems, Incorporated (ESI), Hampton, New Hampshire.

Toxicity tests expose groups of organisms to environmental samples, a laboratory control and/or a field reference site for a specified period to assess potential impacts on a variety of endpoints, such as survival, growth or reproduction. For this series of assays endpoints were survival and growth. Analysis of variance techniques are used to determine the relative toxicity of the samples as compared to the laboratory control and/or field reference site.

2.0 MATERIALS AND METHODS

2.1 General Methods, Biological Evaluations

Toxicological and analytical protocols used in this program follow procedures outlined in *Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates* (ASTM Method E 1706-00, 2001), *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates* (US EPA 2000) and *Standard Methods for the Examination of Water and Wastewater*, 20th Edition (APHA 1998). These protocols provide standard approaches for physical and chemical analysis and for the evaluation of toxicological effects of sediments on aquatic invertebrates.

2.2 Test Species

H. azteca were obtained from Aquatic Research Organisms, Hampton, New Hampshire. Organisms were approximately 7 days old at the start of the assay.

2.3 Test Samples and Laboratory Control Sediment

Sediment samples from the project site were received at ESI under chain of custody. Once received, samples were inspected to determine integrity, given unique sample numbers and logged into the laboratory sample management database. Once logged in the samples were placed in a secure refrigerated, 2 - 4 °C, storage area. A listing of sample sites, sample collection, and receipt information is summarized in Table 1.

The control substrate was an artificial sediment consisting of varying sized silica sand and approximately 1-2% organic material by weight. Organic matter consisted of material recovered from amphipod and chrionomid cultures. The organic matter was seived and then autoclaved prior to use. Overlying water for the sediment toxicity tests was a mixture of natural surface water, collected from the same source as the control sediment, and moderately hard reconstituted water. Use of natural surface water mixed with artificial reconstituted water is recommended by the protocol (EPA 2000, ASTM 2001).

2.4 *Hyalella azteca* Survival and Growth Toxicity Tests

The 28 day amphipod survival and growth tests were conducted according to ASTM Method E 1706-00 (ASTM 2001) and EPA method 100.4 (EPA 2000). Endpoints of the assay were survival and growth, measured as dry weight.

The site sediment and laboratory control sediment treatments consisted of 8 replicates with 10 organisms/replicate. Test vessels were 400 mL glass beakers containing approximately 100 mL of sediment and 250 mL of overlying water. The overlying water volume to sediment surface area ratio was approximately 7:1. Test vessels were drilled at a consistent height above their bases and the hole covered with Nytex® screen. The screened hole facilitated water exchange without compromising organisms. Vessels were maintained in a water bath during the assay. Depth of the water in the bath was set to be approximately 1 cm below the drain hole in the test vessel to eliminate flow of water from the bath into the test vessel. The water bath was maintained in a limited-access temperature controlled room. Temperatures in the room and water bath were independently maintained at 23 ±1°C. The photoperiod in the test chamber was set at 16:8 hour light:dark. Light was provided by cool white flourescent bulbs.

One day prior to test initiation (Day -1), control and test sediments were sieved using a 2 mm sieve to remove rocks, twigs, and other debris. Two aliquots of the samples were arbitrarily selected and mixed with the laboratory control sediment on a 1 to 9 and 1 to 1 basis so as the generate 10% and 50% sediment concentrations, respectively. The amended sediments plus “undiluted” sediment were placed in the test vessels. Overlying water was immediately added, and the vessels were left undisturbed overnight to settle. Floating detritus was removed the next morning. On Day 0, organisms were added below the water surface of each test vessel.

Overlying water in each replicate was renewed daily after collection of water quality data. The volume of water added to each test chamber was approximately 500 mL or two volumes. Water exchanges were facilitated by use of a distribution system designed to provide equal, regulated, flow to each chamber. The system was activated manually by the addition of water during the assay.

Prior to the daily overlying water renewal, temperature, specific conductance, pH, and dissolved oxygen were measured in one replicate of each treatment. Temperature data were collected in a surrogate test chamber on an hourly basis during the 28 day exposure period. Alkalinity, ammonia, and hardness of the overlying water were measured at the beginning and end of the assay. Daily overlying water quality records are available in Appendix A. Each replicate was fed 1.0 mL of a yeast/trout chow/alfalfa suspension after the daily renewal.

After 28 days exposure all replicates of each test treatment were terminated to collect data for the survival and growth endpoints. Each test chamber was gently swirled to loosen the sediments and the test material was dumped into an 8" stainless steel sieve with a 0.35 mm mesh screen. The sediments were washed through the sieve using synthetic, moderately hard reconstituted water and material left on the screen was sorted to recover the organisms. This process was continued until the entire sample was evaluated. Recovered organisms were set aside to determine growth. Surviving amphipods were counted and placed on tared weighing pans. Pans were dried overnight at 103°C to obtain dry weight to the nearest 0.01 mg. The mean dry weight of surviving organisms was determined to assess growth.

2.5 Statistical Analysis

Survival and growth data were analyzed using CETIS® software to determine significant differences between the test sediments and both the associated laboratory control and reference sediments. Data sets were evaluated to determine normality of distribution and homogeneity of sample variance. Data sets were subsequently evaluated using the appropriate parametric or non-parametric Analysis of Variance (ANOVA) statistic. Statistical comparisons were made against the following endpoints; day 28 survival and day 28 dry weight. Pair-wise comparisons were made using the appropriate statistical evaluation. Statistical difference was evaluated at α=0.05. Additionally, where applicable, 28-day No Effect Concentrations (NOEC) and LC/EC-50 values were computed for the diluted sediment sample sets.

2.6 Quality Control

As part of the laboratory quality control program, reference toxicant evaluations are conducted by ESI on a regular basis for each test species. These results provide relative health and response data while allowing for comparison with historic data sets. Results are summarized in Table 2.

2.7 Protocol Deviations

Review of data generated during the 28-day exposure period documented a minor deviation from prescribed protocol. The 8 replicates in the 10% treatment of the CLECV4-DS-1 sample contained 20 amphipods instead of the specified 10. The additional organisms were the result of a double addition of organisms to the test chambers during assay setup. Statistical analysis of these data were based on 20 organisms per replicate. Replicates “A” -“C” associated with the 10% CLECV3-DS-1 treatment received no test organisms at the start of the assay. The 3 replicates were excluded from the final statistical evaluation. Additionally,11 amphipods were recovered from laboratory control treatment replicate “A”. The number of amphipods in this replicate at the start of the assay was adjusted to 11 to reflect the addition of the extra amphipod. These deviations from the method protocol were the result of staff errors made in initial counts of organisms added to a replicate in on case and errors in actually adding organisms to test chambers. The number of errors was small, representing 12 replicates from the 400 used in the assay. It is the opinion of the study director that these deviations had no overall impact on the outcome of the assay.

3.0 RESULTS AND DISCUSSION

Tables 3 and 4 provide a summary of survival and growth data, respectively. Overlying water quality data collected during the assays are summarized in Table 5. Support data, including copies of laboratory bench sheets, statistical analyses and individual endpoint summaries, are provided in Appendix A.

3.1 *Hyalella azteca* Survival and Growth Evaluation

At the end of the 28 day exposure period, mean survival in laboratory control sediment was 83.75% with a coefficient of variation (CV) of 12.66%. Amphipods recovered from laboratory control sediment had a mean dry weight of 0.456 mg/amphipod, with a CV of 17.79%. The dry weight of a representative group of amphipods at the start of the assay was 0.019 mg/individual. The minimum test acceptability criteria for survival in the laboratory control is 80%. The minimum acceptable criteria for growth is a demonstration of increased dry weight after 28 days exposure. These criteria were met indicating that the organisms were healthy and not stressed by handling.

Daily temperature data collected as part of routine daily water quality measurements during the 28 day exposure period documented values ranging from 20 to 23°C. Temperature data collected by the data logger documented values ranging from 20.9 to 23.5°C with a mean value of 22.3°C. Test acceptability criteria requires a mean temperature of 23±1°C, with maximum temporary fluctuations of 23±3°C. Review of water quality parameters, Table 6 and Appendix A, document that variation in conductivity, alkalinity, hardness and ammonia between the start and end of the assay were within protocol limits.

3.2 Summary

The following matrix provides a summary of project samples having a significant impact on either amphipod survival or growth. A determination of a negative effect was based on finding of a significant reduction in amphipod survival or growth in the “As Received” (undiluted sample) as compared to the laboratory control treatment. Using data from the “diluted” samples the level of impact is also summarized in the matrix. The No Effect Concentration represents the no effect level. It should be noted that in the case of sediments from CLECV3-DS-1 there was a non-dose response curve associated with the growth data. In this case there was no significant impact observed for amphipod growth in the “As Received” sample but significant reductions in growth were observed in the “diluted” sediment treatments.

Sample ID	Lab Code	Significant Impact Based on "As Received" Samples		Level of Impact Based on "Diluted" Samples	
		Survival	Growth	Survival (NOEC)	Growth (NOEC)
DLHTV1-DS-1	15061-001	Yes	Yes	10.0%	10.0%
DLHCV1-DS-1	15061-004	Yes	Yes	<10.0%	<10.0%
DLHCV2-DS-1	15061-005	Yes	Yes	10.0%	<10.0%
CLECV3-DS-1	15061-007	Yes	No	10.0%	<10.0%*
DLHTV2-DS-1	15061-008	Yes	Yes	50.0%	<10.0%
CLECV4-DS-1	15061-010	No	Yes	100.0%	<10.0%
CLELV1-DS-1	15061-011	Yes	No	10.0%	100.0%
CLELV2-DS-1	15061-048	Yes	No	<10.0%	100.0%

* Non-dose response curve observed.

4.0 REFERENCES

APHA. 1998. *Standard Methods for the Examination of Water and Wastewater*, 20th Edition. Washington D.C.

ASTM. 2001. Annual Book of ASTM Standards. Volume 11.05. *Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates*. E 1706-00. ASTM, Philadelphia.

U.S. EPA. 2000. *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates.* Second Edition. EPA/600-R-99/064. Method 100.5.

TABLE 1. Summary of Sample Collection Information. Great Lakes Sweepings Characterization. CH2M Hill. November 2006.

			Sample Collection		Sample Receipt	
Sample ID	ESI Ref#	Matrix	Date	Time	Date	Time
DLHTV1-DS-1	15061-001	Solid	10/01/06	1640	10/03/06	1200
DLHCV1-DS-1	15061-004	Solid	10/03/06	0900	10/09/06	0945
DLHCV2-DS-1	15061-005	Solid	10/04/06	2300	10/07/06	1130
CLECV3-DS-1	15061-007	Solid	10/06/06	1300	10/07/06	1130
DLHTV2-DS-1	15061-008	Solid	10/03/06	1300	10/09/06	0945
CLECV4-DS-1	15061-010	Solid	10/09/06	1600	10/11/06	1000
CLELV1-DS-1	15061-011	Solid	10/10/06	0900	10/11/06	1000
CLELV2-DS-1	15061-048	Solid	10/27/06	1000	10/28/06	1030

TABLE 2. Reference Toxicant Evaluation: *H. azteca.* Great Lakes Sweepings Characterization. CH2M Hill. November 2006.

Date	Endpoint		Value	Historic Mean/ Central Tendency	Acceptable Range	Reference Toxicant
Hyalella azteca						
11/08/06	Survival	LC-50	0.002	0.0019	0.000 - 0.004	Cadmium (mg/L)

Means and Acceptable Ranges based on the most recent 20 reference toxicant assays

TABLE 3. Summary of *H. azteca* Day 28 Survival Data. Great Lakes Sweepings Characterization. CH2M Hill. November 2006.

Day 28 Survival Summary - "Undiluted" Samples

Sample ID	Lab Code	Reps	Mean	Minimum	Maximum	CV
Lab Control	15061-000	8	83.75%	70.00%	100.00%	12.66%
DLHTV1-DS-1	15061-001	8	61.25%	40.00%	80.00%	22.14%
DLHCV1-DS-1	15061-004	8	12.50%	0.00%	30.00%	102.54%
DLHCV2-DS-1	15061-005	8	31.25%	10.00%	60.00%	64.99%
CLECV3-DS-1	15061-007	8	35.00%	0.00%	80.00%	85.03%
DLHTV2-DS-1	15061-008	8	66.25%	40.00%	90.00%	26.68%
CLECV4-DS-1	15061-010	8	82.50%	70.00%	100.00%	12.55%
CLELV1-DS-1	15061-011	8	27.50%	0.00%	70.00%	84.17%
CLELV2-DS-1	15061-048	8	60.00%	30.00%	90.00%	36.73%

Day 28 Survival Summary - "Undiluted" Samples

Sample ID	Lab Code	Mean	Statistically Significant Difference as Compared to Lab Control	
			p Value	
Lab Control	15061-000	83.75%	-	-
DLHTV1-DS-1	15061-001	61.25%	0.0012	YES
DLHCV1-DS-1	15061-004	12.50%	0.0000	YES
DLHCV2-DS-1	15061-005	31.25%	0.0000	YES
CLECV3-DS-1	15061-007	35.00%	0.0004	YES
DLHTV2-DS-1	15061-008	66.25%	0.0153	YES
CLECV4-DS-1	15061-010	82.50%	0.4007	NO
CLELV1-DS-1	15061-011	27.50%	0.0000	YES
CLELV2-DS-1	15061-048	60.00%	0.0077	YES

Day 28 Survival Point Estimate Endpoint Summary - "Diluted" Samples

Sample ID	Lab Code	Survival	
		LC-50	NOEC
DLHTV1-DS-1	15061-001	>100.0%	10.0%
DLHCV1-DS-1	15061-004	16.1%	<10.0%
DLHCV2-DS-1	15061-005	56.0%	10.0%
CLECV3-DS-1	15061-007	74.3%	10.0%
DLHTV2-DS-1	15061-008	>100.0%	50.0%
CLECV4-DS-1	15061-010	>100.0%	100.0%
CLELV1-DS-1	15061-011	72.1%	10.0%
CLELV2-DS-1	15061-048	>100.0%	<10.0%

TABLE 4. Summary of *H. azteca* Day 28 Growth Data. Great Lakes Sweepings Characterization. CH2M Hill. November 2006.

Mean Dry Weight-mg Summary - "Undiluted" Samples

Sample ID	Lab Code	Reps	Mean	Minimum	Maximum	CV
Lab Control	15061-000	8	0.4560	0.3411	0.5645	17.79%
DLHTV1-DS-1	15061-001	8	0.2934	0.2225	0.3600	17.44%
DLHCV1-DS-1	15061-004	8	0.1713	0.0800	0.2500	36.41%
DLHCV2-DS-1	15061-005	8	0.3082	0.2075	0.5800	37.56%
CLECV3-DS-1	15061-007	8	0.4143	0.3140	0.6000	25.00%
DLHTV2-DS-1	15061-008	8	0.3224	0.2500	0.4000	18.11%
CLECV4-DS-1	15061-010	8	0.2737	0.1150	0.4157	34.17%
CLELV1-DS-1	15061-011	8	0.6079	0.2700	1.1000	56.95%
CLELV2-DS-1	15061-048	8	0.5628	0.2357	0.9067	46.61%

Day 28 Mean Dry Weight-mg Summary - "Undiluted" Samples — Statistically Significant Difference as Compared to Lab Control

Sample ID	Lab Code	Mean	p Value	
Lab Control	15061-000	0.4560	-	-
DLHTV1-DS-1	15061-001	0.2934	0.0001	YES
DLHCV1-DS-1	15061-004	0.1713	0.0000	YES
DLHCV2-DS-1	15061-005	0.3082	0.0052	YES
CLECV3-DS-1	15061-007	0.4143	0.2072	NO
DLHTV2-DS-1	15061-008	0.3224	0.0010	YES
CLECV4-DS-1	15061-010	0.2737	0.0005	YES
CLELV1-DS-1	15061-011	0.6079	0.8500	NO
CLELV2-DS-1	15061-048	0.5628	0.8484	NO

Day 28 Dry Weight Point Estimate Endpoint Summary - "Diluted" Samples

Sample ID	Lab Code	Survival IC-50	Survival NOEC	
DLHTV1-DS-1	15061-001	78.7%	10.0%	
DLHCV1-DS-1	15061-004	84.2%	<10.0%	
DLHCV2-DS-1	15061-005	>100.0%	<10.0%	
CLECV3-DS-1	15061-007	>100.0%	<10.0%	(Non-dose response curve for growth)
DLHTV2-DS-1	15061-008	>100.0%	<10.0%	
CLECV4-DS-1	15061-010	>100.0%	<10.0%	
CLELV1-DS-1	15061-011	>100.0%	100.0%	
CLELV2-DS-1	15061-048	>100.0%	100.0%	

TABLE 5. Summary of Water Qualities: *H. azteca.* Great Lakes Sweepings Characterization. CH2M Hill. November 2006.

Sample ID	Lab Code		pH (SU)	Conductance (µmhos/cm)	Alkalinity (mg/L)	Ammonia (mg/L)	Hardness (mg/L)
Lab Control	15061-000	Day 0	5.68	358	<10	0.27	77
		Day 28	7.47	272	28	<0.1	67
DLHTV1-DS-1	15061-001	Day 0	9.15	564	48	0.13	160
		Day 28	8.52	326	67	<0.1	120
DLHCV1-DS-1	15061-004	Day 0	7.24	529	12	0.26	87
		Day 28	7.56	282	35	<0.1	66
DLHCV2-DS-1	15061-005	Day 0	7.24	438	12	<0.1	100
		Day 28	7.54	281	33	<0.1	64
CLECV3-DS-1	15061-007	Day 0	4.61	1271	<10	0.14	520
		Day 28	7.18	276	12	<0.1	64
DLHTV2-DS-1	15061-008	Day 0	8.04	441	<10	0.23	120
		Day 28	7.79	317	46	<0.1	100
CLECV4-DS-1	15061-010	Day 0	7.51	768	39	0.33	630
		Day 28	7.76	281	40	<0.1	86
CLELV1-DS-1	15061-011	Day 0	8.16	622	31	<0.1	400
		Day 28	8.33	308	51	<0.1	90
CLELV2-DS-1	15061-048	Day 0	8.16	519	42	0.27	470
		Day 28	8.47	309	49	<0.1	96
MHR/Pond Water		Day 0	-	351	<10	0.16	94
		Day 28	-	275	<10	<0.1	75

Additional water quality data are provided in Appendix A

APPENDIX A

RAW DATA & STATISTICAL SUPPORT

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H. azteca SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY # 15061	Client: CH2M Hill	Overlying Water: MHR/Pond	START DATE: 11/08/06

DAY	Lab				-001 10%				Water Quality Station #	S/C Meter #	ΔH_2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	7.0	358	5.68	23	7.8	502	7.68	22	2	SG3		11/8/06	CP
1	7.3	371	6.68	22	7.7	472	7.42	22	2	SG3	✓	11/9/06	[illegible]
2	7.6	379	6.67	22	7.6	441	7.29	22	2	SG3	✓	11/10	CS
3	7.5	349	6.54	22	7.5	408	7.23	22	1	SG3	✓	11/11	EG
4	7.4	302	6.67	22	7.4	372	7.27	22	1	SG3	✓	11/12	SJ
5	8.1	288	6.51	23	8.0	376	7.51	23	1	SG3	✓	11/13	[illegible]
6	7.6	322	6.96	22	7.3	365	7.76	21	1	YSI30C	✓	11/14	[illegible]
7	7.3	335	7.05	21	7.1	383	7.85	21	1	YSI30C	✓	11/15	[illegible]
8	8.2	333	6.91	22	8.0	374	7.68	21	1	YSI30C	✓	11/16	RP
9	7.0	360	6.77	21	8.0	416	7.35	21	1	YSI30C	✓	11/17	CS
10	7.3	361	6.80	21	7.9	388	7.20	21	1	YSI30C	✓	11/18	[illegible]
11	7.4	336	6.93	22	7.9	373	7.52	22	1	YSI30C	✓	11/19	CP
12	8.3	358	6.72	21	8.3	380	7.23	21	1	YSI30C	✓	11/20	CP
13	7.1	330	6.90	21	7.2	356	7.33	21	1	YSI30C	✓	11/21	[illegible]
14	8.1	334	6.81	21		372	7.48	21	1	YSI30C	✓	11/22	[illegible]
15	7.4	313	7.59	21	7.1	352	7.74	21	2	YSI30C	✓	11/23	NT
16		351		22		371		22	3	"	✓	11/24	CHS
17	7.4	347	6.71	22	7.0	372	7.28	22	2	YSI30C	✓	11/25	EG
18	7.3	350	6.60	22	7.3	372	7.05	22	2	YSI30C	✓	11/26	SJ
19	6.6	348	6.63	22	6.3	351	7.12	22	1	YSI30C	✓	11/27	CP
20	6.8	293	6.63	22	6.6	317	7.08	22	2	YSI30C	✓	11/28	CP
21	6.5	300	6.36	23	6.4	335	7.10	22	1	YSI30C	✓	11/29	EG
22	6.9	394	6.94	23	7.0	348	7.25	23	1	YSI30C	✓	11/30	[illegible]
23	7.5	275	6.65	23	7.3	321	7.30	23	2	YSI30C	✓	12/1	CS
24	7.6	273	7.09	23	7.0	299	7.52	23	1	YSI30C	✓	12/2	[illegible]
25	7.0	285	6.92	22	7.0	306	7.11	22	1	YSI30C	✓	12/3	CP
26	7.2	283	7.21	22	7.4	326	7.77	22	1	YSI30C	✓	12/4	[illegible]
27	7.3	261	7.61	22	7.5	291	7.79	22	1	YSI30C	✓	12/5	[illegible]
28	7.4	272	7.47	20	7.4	316	7.73	21	1	YSI30C	✓	12/6	[illegible]

Pull Alkalinity, Hardness, Ammonia Day 0, 7, 14, 21, 28
23° C
Feed 1 mL of YCT/Replicate Daily
Two Volume Additions Daily

H. azteca SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY # 15061	Client: CH2M Hill	Overlying Water: MHR/Pond	START DATE: 11/08/06

DAY	-001 50%				-001				Water Quality Station #	S/C Meter #	ΔH_2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	7.3	543	8.05	22	8.1	564	9.15	22	2	SG3		11/8/06	CP
1	7.8	481	7.75	22	7.9	508	8.69	22	3	SG3	✓	11/9/06	✓
2	7.6	441	7.59	22	7.6	498	8.51	22	2	SG3	✓	11/10	CS
3	7.5	414	7.41	22	7.5	434	8.40	22	1	SG3	✓	11/11	EG
4	7.4	353	7.55	22	7.4	384	8.45	22	1	SG3	✓	11/12	SJ
5	8.0	370	7.78	22	8.0	394	8.52	22	1	SG3	✓	11/13	m
6	7.0	369	7.99	22	7.2	389	9.05	22	1	YSI30C	✓	11/14	m
7	6.6	374	7.66	21	6.9	392	8.62	21	1	YSI30C	✓	11/15	m
8	8.0	397	7.75	21	8.0	400	8.55	21	1	YSI30C	✓	11/16	RP
9	7.1	409	7.68	21	6.9	408	8.01	21	1	YSI30C	✓	11/17	CS
10	7.5	373	7.30	22	7.0	384	7.98	22	1	YSI30C	✓	11/18	✓
11	7.6	356	7.76	22	7.0	390	8.60	22	1	YSI30C	✓	11/19	CP
12	8.3	394	7.45	21	8.4	386	7.96	21	1	YSI30C	✓	11/20	CP
13	7.1	372	7.58	21	7.4	365	8.19	21	1	YSI30C	✓	11/21	m
14	7.6	482	7.72	21	7.9	411	8.15	21	1	YSI30C	✓	11/22	m
15	7.1	353	8.00	21	7.2	344	8.70	21	2	YSI30C	✓	11/23	NT
16		364		22		363		22	3	"	✓	11/24	KMB
17	6.9	382	7.44	22	6.9	389	8.47	22	2	YSI30C	✓	11/25	EG
18	7.0	380	7.39	22	7.0	392	7.92	22	2	YSI30C	✓	11/26	SJ
19	6.3	360	7.43	22	6.5	384	7.97	22	1	YSI30C	✓	11/27	CP
20	6.4	315	7.44	22	6.2	338	7.99	22	2	YSI30C	✓	11/28	CP
21	6.3	339	7.38	23	6.0	356	8.29	23	1	YSI30C	✓	11/29	EG
22	6.6	346	7.46	23	6.5	350	7.96	23	1	YSI30C	✓	11/30	m
23	7.1	358	7.49	23	7.0	348	7.97	23	2	YSI30C	✓	12/1	CS
24	7.0	303	7.59	23	7.0	312	8.12	23	1	YSI30C	✓	12/2	✓
25	7.0	352	7.73	22	7.0	324	8.16	22	1	YSI30C	✓	12/3	CP
26	7.4	348	8.08	22	7.4	329	8.66	22	1	YSI30C	✓	12/4	m
27	7.5	300	8.01	22	7.4	305	8.27	22	1	YSI30C	✓	12/5	m
28	7.2	336	8.04	21	7.2	326	8.52	22	1	YSI30C	✓	12/6	m

Pull Alkalinity, Hardness, Ammonia Day 0, 7, 14, 21, 28
23° C
Feed 1 mL of YCT/Replicate Daily
Two Volume Additions Daily

H. azteca SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY # 15061	Client: CH2M Hill	Overlying Water: MHR/Pond	START DATE: 11/08/06

DAY	-004 10%				-004 50%				Water Quality Station #	S/C Meter #	ΔH_2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	7.6	452	6.95	22	7.8	519	7.08	22	2	SG3		11/8/06	CP
1	8.0	434	7.28	22	8.0	468	7.28	22	3	SG3	✓	11/9/06	CP
2	7.2	413	7.94	22	7.3	448	7.49	22	2	SG3	✓	11/10	CS
3	7.1	374	7.10	22	7.3	412	7.01	22	1	SG3	✓	11/11	EG
4	7.5	323	7.15	22	7.6	353	7.35	23	1	SG3	✓	11/12	SJ
5	8.0	346	6.95	22	8.0	366	7.10	22	1	SG3	✓	11/13	m
6	7.1	340	7.05	22	7.0	358	7.03	22	1	YSI30C	✓	11/14	m
7	6.7	341	7.31	21	7.0	353	7.30	21	1	YSI30C	✓	11/15	m
8	8.0	340	6.98	21	8.0	362	7.13	22	1	YSI30C	✓	11/16	RP
9	7.0	361	7.09	21	6.8	369	7.40	21	1	YSI30C	✓	11/17	CS
10	7.0	277	7.30	22	7.0	239	7.18	22	1	YSI30C	✓	11/18	y
11	7.1	333	7.32	22	7.1	360	7.14	22	1	YSI30C	✓	11/19	CP
12	8.5	319	7.65	21	8.4	351	7.50	21	1	YSI30C	✓	11/20	CP
13	7.5	332	8.21	21	7.6	339	7.29	21	1	YSI30C	✓	11/21	m
14	7.8	325	7.31	21	7.7	346	7.20	21	1	YSI30C	✓	11/22	m
15	7.0	291	7.60	21	7.5	317	7.54	21	2	YSI30C	✓	11/23	NT
16		312		22		325		22	3	"	✓	11/24	CJS
17	7.0	336	6.70	22	6.9	349	6.89	22	2	YSI30C	✓	11/25	EG
18	7.0	335	7.01	22	6.8	351	6.94	22	2	YSI30C	✓	11/26	SJ
19	5.5	310	7.08	22	5.9	324	6.95	22	1	YSI30C	✓	11/27	CP
20	6.2	292	6.74	22	6.1	300	6.85	22	2	YSI30C	✓	11/28	CP
21	6.0	305	6.92	23	6.2	311	6.91	23	1	YSI30C	✓	11/29	EG
22	6.0	306	7.16	23	6.4	310	7.05	23	1	YSI30C	✓	11/30	m
23	6.2	286	7.08	23	6.4	306	7.02	23	2	YSI30C	✓	12/1	CS
24	6.0	274	7.35	23	6.3	280	7.36	23	1	YSI30C	✓	12/2	y
25	6.8	274	7.61	22	6.7	288	7.15	22	1	YSI30C	✓	12/3	CP
26	7.4	270	7.38	22	7.1	297	7.37	22	1	YSI30C	✓	12/4	m
27	7.5	311	7.45	22	7.4	260	7.70	22	1	YSI30C	✓	12/5	m
28	7.1	265	7.69	22	7.2	303	7.52	22	1	YSI30C	✓	12/6	m

Pull Alkalinity, Hardness, Ammonia Day 0, 7, 14, 21, 28
23° C
Feed 1 mL of YCT/Replicate Daily
Two Volume Additions Daily

H. azteca SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY # 15061	Client: CH2M Hill	Overlying Water: MHR/Pond	START DATE: 11/08/06

DAY	-004				-005 10%				Water Quality Station #	S/C Meter #	ΔH2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	8.1	529	7.24	22	8.0	453	7.10	22	2	SG3		11/8/06	CP
1	8.0	464	7.34	22	8.0	421	7.11	22	3	SG3	✓	11/9/06	[illegible]
2	7.7	447	7.41	22	7.5	370	7.20	22	2	SG3	✓	11/10	CS
3	7.0	405	7.12	22	7.4	356	6.72	22	1	SG3	✓	11/11	EG
4	7.4	354	7.32	22	7.2	340	6.85	22	1	SG3	✓	11/12	SJ
5	8.1	382	7.34	22	8.1	374	6.85	22	1	SG3	✓	11/13	[illegible]
6	6.8	364	7.03	22	6.0	350	6.88	22	1	YSI30C	✓	11/14	[illegible]
7	6.5	357	7.30	21	7.0	337	7.18	21	1	YSI30C	✓	11/15	[illegible]
8	8.0	355	7.22	22	8.0	343	6.98	21	1	YSI30C	✓	11/16	RP
9	7.1	413	7.32	21	7.1	365	7.38	21	1	YSI30C	✓	11/17	CS
10	7.0	378	7.08	22	7.0	285	7.05	22	1	YSI30C	✓	11/18	[illegible]
11	7.0	366	7.23	22	7.0	351	6.99	22	1	YSI30C	✓	11/19	CP
12	8.3	383	7.45	21	8.3	294	7.15	21	1	YSI30C	✓	11/20	CP
13	7.5	339	7.43	21	7.4	343	6.97	21	1	YSI30C	✓	11/21	[illegible]
14	7.6	350	7.22	21	7.9	312	7.06	21	1	YSI30C	✓	11/22	[illegible]
15	7.0	343	7.42	21	7.0	320	7.20	21	2	YSI30C	✓	11/23	NT
16		327		22		315		22	3	"	✓	11/24	[illegible]
17	7.0	350	6.96	22	6.6	336	6.70	22	2	"	✓	11/25	EG
18	7.0	352	6.97	22	6.7	335	6.73	22	2	YSI30C	✓	11/26	SJ
19	6.2	336	6.94	22	6.3	327	6.68	22	1	YSI30C	✓	11/27	CP
20	6.0	304	6.92	22	6.3	317	6.63	22	2	YSI30C	✓	11/28	CP
21	6.0	317	6.90	23	6.4	319	6.69	23	1	YSI30C	✓	11/29	EG
22	6.5	317	7.09	23	6.5	299	6.91	23	1	YSI30C	✓	11/30	[illegible]
23	6.4	312	6.89	23	6.6	284	6.90	23	2	YSI30C	✓	12/1	CS
24	6.2	280	7.36	23	6.5	257	7.33	23	1	YSI30C	✓	12/2	[illegible]
25	7.0	291	7.22	22	6.9	257	7.06	22	1	YSI30C	✓	12/3	CP
26	7.2	289	7.44	22	7.4	262	7.37	22	1	YSI30C	✓	12/4	[illegible]
27	7.4	270	7.65	22	7.5	249	7.55	22	1	YSI30C	✓	12/5	[illegible]
28	7.3	282	7.56	22	7.8	262	7.58	22	1	YSI30C	✓	12/6	[illegible]

Pull Alkalinity, Hardness, Ammonia Day 0, 7, 14, 21, 28
23° C
Feed 1 mL of YCT/Replicate Daily
Two Volume Additions Daily

H. azteca SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY # 15061	Client: CH2M Hill	Overlying Water: MHR/Pond	START DATE: 11/08/06

DAY	-005 50%				-005				Water Quality Station #	S/C Meter #	ΔH_2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	7.8	442	7.09	22	7.8	438	7.24	22	2	SG3	1	11/8/06	CP
1	8.0	428	7.20	22	7.7	418	7.29	22	3	SG3	✓	11/9	[illegible]
2	7.5	382	7.16	22	7.6	374	7.23	22	2	SG3	✓	11/10	CS
3	7.4	362	6.86	22	7.4	355	6.98	22	1	SG3	✓	11/11	EG
4	7.3	331	7.03	22	7.6	324	7.07	22	1	SG3	✓	11/12	SJ
5	8.0	353	7.02	22	7.9	346	7.13	22	1	SG3	✓	11/13	[illegible]
6	7.0	347	6.96	22	7.0	342	7.03	21	1	YSI30C	✓	11/14	[illegible]
7	7.0	338	7.25	21	7.0	335	7.29	21	1	YSI30C	✓	11/15	[illegible]
8	8.0	347	7.25	21	8.0	351	7.29	21	1	YSI30C	✓	11/16	RP
9	7.1	366	7.26	21	7.1	381	7.20	21	1	YSI30C	✓	11/17	CS
10	7.0	260	6.88	22	7.0	322	6.99	22	1	YSI30C	✓	11/18	[illegible]
11	7.1	358	7.22	22	7.1	325	7.30	22	1	YSI30C	✓	11/19	CP
12	8.2	338	7.37	21	8.2	359	7.30	21	1	YSI30C	✓	11/20	CP
13	7.2	333	7.02	21	7.1	316	7.07	21	1	YSI30C	✓	11/21	[illegible]
14	7.6	320	7.11	21	7.6	318	7.33	21	1	YSI30C	✓	11/22	[illegible]
15	6.9	340	7.25	21	6.9	342	7.26	21	2	"	✓	11/23	
16		325		22		321		22	3	"	✓	11/24	KJB
17	6.9	344	6.89	22	7.0	342	7.00	22	2	"	✓	11/25	EG
18	6.9	344	6.85	22	7.1	343	6.94	22	2	YSI30C	✓	11/26	SJ
19	6.3	340	6.72	22	6.3	341	6.87	22	1	YSI30C	✓	11/27	CP
20	6.3	334	6.78	22	6.8	336	6.80	22	2	YSI30C	✓	11/28	CP
21	6.3	326	6.72	23	6.2	332	6.73	23	1	YSI30C	✓	11/29	EG
22	6.5	306	6.98	23	6.5	308	6.98	23	1	YSI30C	✓	11/30	[illegible]
23	6.7	319	7.03	23	6.9	313	7.02	23	2	YSI30	✓	12/1	CS
24	6.7	266	7.36	23	6.7	263	7.27	23	1	YSI30C	✓	12/2	[illegible]
25	6.8	266	7.25	22	6.9	306	7.34	22	1	YSI30C	✓	12/3	CP
26	7.4	267	7.46	22	7.6	280	7.42	22	1	YSI30C	✓	12/4	[illegible]
27	7.4	257	7.57	22	7.1	256	7.54	22	1	YSI30C	✓	12/5	[illegible]
28	7.7	267	7.60	22	7.4	281	7.54	22	1	YSI30C	✓	12/6	[illegible]

Pull Alkalinity, Hardness, Ammonia Day 0, 7, 14, 21, 28
23° C
Feed 1 mL of YCT/Replicate Daily
Two Volume Additions Daily

H. azteca SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY # 15061	Client: CH2M Hill	Overlying Water: MHR/Pond	START DATE: 11/08/06

DAY	-007 10%				-007 50%				Water Quality Station #	S/C Meter #	ΔH_2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	8.2	533	6.39	22	8.6	645	5.45	22	2	SG3		11/8/06	CP
1	8.1	475	6.94	22	8.4	468	6.58	22	3	SG3	✓	11/9/06	[illegible]
2	7.6	415	6.88	22	7.7	474	6.78	22	2	SG3	✓	11/10	CS
3	7.6	375	6.71	22	7.8	382	6.71	22	1	SG3	✓	11/11	EG
4	7.4	338	6.73	22	7.8	378	6.81	22	1	SG3	✓	11/12	SJ
5	8.0	364	6.79	22	8.1	373	6.80	22	1	SG3	✓	11/13	[illegible]
6	7.0	357	6.65	21	7.0	375	6.58	21	1	YSI 30C	✓	11/14	[illegible]
7	7.0	349	6.99	21	7.4	368	6.88	21	1	YSI 30C	✓	11/15	[illegible]
8	8.0	356	6.80	21	8.1	336	6.69	21	1	YSI 30C	✓	11/16	RP
9	6.9	356	6.99	21	6.9	471	6.70	21	1	YSI 30C	✓	11/17	CS
10	7.0	351	7.04	22	6.9	258	6.87	22	1	YSI 30C	✓	11/18	[illegible]
11	8.0	339	6.80	22	8.0	369	7.70	22	1	YSI 30C	✓	11/19	CP
12	8.3	322	7.15	21	8.4	394	7.03	21	1	YSI 30C	✓	11/20	CP
13	7.2	330	6.89	21	7.5	353	6.68	21	1	YSI 30C	✓	11/21	[illegible]
14	7.9	328	6.79	21	8.0	338	6.58	21	1	YSI 30C	✓	11/22	[illegible]
15	7.6	330	7.07	21	7.7	355	6.88	21	2	YSI 30C	✓	11/23	NT
16		328		22		355		22	3	"	✓	11/24	[illegible]
17	7.1	336	6.73	22	7.3	348	6.54	22	2	YSI 30C	✓	11/25	EG
18	7.1	337	6.69	22	7.3	350	6.61	22	2	YSI 30C	✓	11/26	SJ
19	6.2	327	6.65	22	6.4	336	6.52	22	1	YSI 30C	✓	11/27	CP
20	6.0	328	6.48	22	6.0	342	6.44	22	2	YSI 30C	✓	11/28	CP
21	6.9	320	6.50	23	6.6	327	6.44	23	1	YSI 30C	✓	11/29	EG
22	7.8	298	6.88	23	6.9	318	6.74	23	1	YSI 30C	✓	11/30	[illegible]
23	7.0	297	6.80	23	6.9	287	6.72	23	2	YSI 30C	✓	12/1	[illegible]
24	7.4	254	7.25	23	6.9	273	7.09	23	1	YSI 30C	✓	12/2	[illegible]
25	7.0	255	6.79	22	7.0	254	7.10	22	1	YSI 30C	✓	12/3	CP
26	7.5	258	7.31	22	7.7	259	7.14	22	1	YSI 30C	✓	12/4	[illegible]
27	7.1	250	7.44	22	7.5	254	7.34	22	1	YSI 30C	✓	12/5	[illegible]
28	7.6	269	7.47	22	7.9	259	7.39	22	1	YSI 30C	✓	12/6	[illegible]

Pull Alkalinity, Hardness, Ammonia Day 0, 7, 14, 21, 28
23° C
Feed 1 mL of YCT/Replicate Daily
Two Volume Additions Daily

H. azteca SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY # 15061	Client: CH2M Hill	Overlying Water: MHR/Pond	START DATE: 11/08/06

DAY	-007				-008 10%				Water Quality Station #	S/C Meter #	ΔH2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	8.7	1271	4.61	22	8.4	417	6.98	23	2	SG3		11/8/06	CP
1	8.5	830	6.25	22	8.4	429	7.06	22	3	SG3	✓	11/9	YL
2	8.1	721	6.70	22	8.2	396	7.05	22	2	SG3	✓	11/10	CS
3	7.9	487	6.73	22	7.6	361	6.92	22	1	SG3	✓	11/11	EG
4	7.8	478	6.80	22	7.6	325	6.75	22	1	SG3	✓	11/12	SJ
5	8.2	413	6.83	22	7.9	351	6.99	22	1	SG3	✓	11/13	m
6	7.5	400	6.69	21	7.5	344	6.95	21	1	YSI30C	✓	11/14	m
7	7.5	399	6.91	21	7.3	338	7.12	21	1	YSI30C	✓	11/15	m
8	8.3	412	6.88	21	8.2	335	7.26	21	1	YSI30C	✓	11/16	RP
9	6.7	521	6.60	21	6.8	358	7.29	21	1	YSI30C	✓	11/17	CS
10	7.0	212	6.81	22	7.0	222	7.06	22	1	YSI30C	✓	11/18	YL
11	7.0	412	6.70	22	7.0	352	6.70	22	1	YSI30C	✓	11/19	CP
12	8.6	326	6.99	21	8.7	341	7.07	21	1	YSI30C	✓	11/20	CP
13	7.7	373	6.71	21	7.6	306	6.98	21	1	YSI30C	✓	11/21	m
14	7.9	371	6.40	21	7.6	329	6.91	21	1	YSI30C	✓	11/22	m
15	7.3	346	6.30	21	7.2	330	6.91	21	2	YSI30C	✓	11/23	NT
16		383		22		337		22	3	"	✓	11/24	CVS
17	7.0	351	6.46	22	6.8	339	6.74	22	2	YSI30C	✓	11/25	EG
18	7.1	344	6.32	22	6.9	338	6.90	22	2	YSI30C	✓	11/26	SJ
19	6.9	348	6.43	22	6.3	330	6.71	22	1	YSI30C	✓	11/27	CP
20	6.8	328	6.48	22	6.3	332	6.66	22	2	YSI30C	✓	11/28	CP
21	6.5	307	6.24	23	6.4	330	6.62	23	1	YSI30C	✓	11/29	EG
22	7.0	321	6.69	23	6.9	304	6.88	23	1	YSI30C	✓	11/30	m
23	6.7	296	6.71	23	6.8	291	6.81	23	2	YSI30C	✓	12/1	CS
24	6.6	272	7.13	23	6.7	261	7.20	23	1	YSI30C	✓	12/2	YL
25	6.6	252	6.83	22	6.6	265	7.30	22	1	YSI30C	✓	12/3	CP
26	7.8	261	7.01	22	7.7	270	7.53	22	1	YSI30C	✓	12/4	m
27	7.0	266	7.19	22	7.2	259	7.40	22	1	YSI30C	✓	12/5	m
28	7.6	276	7.18	22	7.5	272	7.45	22	1	YSI30C	✓	12/6	m

Pull Alkalinity, Hardness, Ammonia Day 0, 7, 14, 21, 28
23° C
Feed 1 mL of YCT/Replicate Daily
Two Volume Additions Daily

H. azteca SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY # 15061	Client: CH2M Hill	Overlying Water: MHR/Pond	START DATE: 11/08/06

DAY	-008 50%				-008				Water Quality Station #	S/C Meter #	ΔH2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	8.3	460	7.60	22	8.3	441	8.04	22	2	SG3		11/8/06	CP
1	8.2	430	7.52	22	8.2	424	7.79	22	3	SG3	✓	11/9	[illegible]
2	8.0	393	7.42	22	8.1	380	7.59	22	2	SG3	✓	11/10	CS
3	7.8	371	7.16	22	7.6	360	7.34	22	1	SG3	✓	11/11	EG
4	8.0	345	6.92	22	7.7	330	7.31	22	1	SG3	✓	11/12	SJ
5	8.2	371	7.57	22	8.2	350	7.69	22	1	SG3	✓	11/13	[illegible]
6	7.3	373	7.32	21	7.3	357	7.52	21	1	YSI30C	✓	11/14	[illegible]
7	7.4	374	7.43	21	7.1	358	7.58	21	1	YSI30C	✓	11/15	[illegible]
8	8.2	373	7.67	21	8.2	360	7.83	21	1	YSI30	✓	11/16	RP
9	7.0	404	7.25	21	7.0	415	7.47	21	1	YSI30C	✓	11/17	CS
10	7.2	275	7.08	22	7.3	334	7.13	22	1	YSI30C	✓	11/18	[illegible]
11	8.0	375	7.70	22	8.0	351	7.81	22	1	YSI30C	✓	11/18	CP
12	8.5	340	7.15	21	8.4	353	7.33	21	1	YSI30C	✓	11/20	CP
13	7.5	348	7.20	21	7.5	358	7.43	21	1	YSI30C	✓	11/21	[illegible]
14	7.6	346	7.26	21	7.7	323	7.58	21	1	YSI30C	✓	11/22	[illegible]
15	7.1	347	7.35	21	7.2	372	7.59	21	2	"	—	11/23	
16		360		22		377		22	3	"	✓	11/24	[illegible]
17	7.0	358	7.11	22	6.9	371	7.40	22	2	YSI30C	✓	11/25	EG
18	7.2	360	7.12	22	7.0	372	7.66	22	2	YSI30C	✓	11/26	SJ
19	6.3	369	7.02	22	6.2	367	7.37	22	1	YSI30C	✓	11/27	CP
20	6.6	366	7.12	22	6.6	361	7.35	22	2	YSI30C	✓	11/28	CP
21	6.6	373	7.06	23	6.0	379	7.47	23	1	YSI30C	✓	11/29	EG
22	7.0	344	7.35	23	6.8	349	7.49	23	1	YSI30C	✓	11/30	[illegible]
23	6.8	325	7.09	23	7.2	335	7.45	23	2	YSI30C	✓	12/1	CS
24	6.7	303	7.59	23	7.1	320	7.66	23	1	YSI30C	✓	12/2	[illegible]
25	6.8	298	7.71	22	7.0	332	7.66	22	1	YSI30C	✓	12/3	CP
26	7.9	308	7.87	22	8.0	326	7.92	22	1	YSI30C	✓	12/4	[illegible]
27	7.5	279	7.82	22	7.4	290	7.86	22	1	YSI30C	✓	12/5	[illegible]
28	7.8	297	7.72	22	7.8	317	7.79	22	1	YSI30C	✓	12/6	[illegible]

Pull Alkalinity, Hardness, Ammonia Day 0, 7, 14, 21, 28
23° C
Feed 1 mL of YCT/Replicate Daily
Two Volume Additions Daily

H. azteca SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY # 15061	Client: CH2M Hill	Overlying Water: MHR/Pond	START DATE: 11/08/06

DAY	-010 10%				-010 50%				Water Quality Station #	S/C Meter #	ΔH2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	8.4	444	7.00	22	8.1	500	7.07	22	2	SG3		11/8/06	CP
1	8.2	414	7.13	22	8.2	459	7.17	22	3	SG3	✓	11/9	[illegible]
2	8.0	373	7.00	22	7.9	410	7.07	22	2	SG3	✓	11/10	CS
3	7.5	354	6.83	22	7.4	373	6.93	22	1	SG3	✓	11/11	EG
4	7.4	321	7.35	22	7.5	327	6.95	22	1	SG3	✓	11/12	SJ
5	8.0	345	7.07	22	8.0	358	7.18	22	1	SG3	✓	11/13	m
6	7.1	342	7.11	21	7.2	355	7.12	22	1	YSI30C	✓	11/14	m
7	7.1	341	7.36	21	7.0	356	7.33	21	1	YSI30C	✓	11/15	m
8	8.2	345	7.34	21	8.2	362	7.46	21	1	YSI30	✓	11/16	RP
9	7.3	363	7.29	21	7.0	389	7.19	21	1	YSI30C	✓	11/17	CS
10	7.3	242	7.21	22	7.1	290	7.36	22	1	YSI30C	✓	11/18	[illegible]
11	8.0	304	7.37	22	8.0	357	7.34	22	1	YSI30C	✓	11/19	CP
12	8.4	268	7.35	21	8.4	332	7.31	21	1	YSI30C	✓	11/20	CP
13	7.5	307	7.14	21	7.5	333	7.15	21	1	YSI30C	✓	11/21	m
14	7.6	245	7.05	21	7.5	338	7.26	21	1	YSI30C	✓	11/22	m
15	6.9	316	7.23	21	7.0	308	7.21	21	2	YSI30C	✓	11/23	[illegible]
16		323		22		344		22	3	*	✓	11/24	[illegible]
17	6.6	329	6.78	22	6.6	337	6.87	22	2	YSI30C	✓	11/25	EG
18	6.8	330	7.00	22	6.8	337	7.15	22	2	YSI30C	✓	11/26	SJ
19	5.8	299	6.84	22	5.9	311	6.87	22	1	YSI30C	✓	11/27	CP
20	6.0	321	6.72	22	6.1	310	6.81	22	2	YSI30C	✓	11/28	CP
21	6.0	317	6.74	23	6.1	308	6.80	23	1	YSI30C	✓	11/29	EG
22	6.6	304	7.26	23	6.9	306	7.19	23	1	YSI30C	✓	11/30	m
23	7.0	287	7.09	23	6.6	288	6.98	23	2	YSI30C	✓	12/1	CS
24	7.0	278	7.50	23	7.0	279	7.44	23	1	YSI30C	✓	12/2	[illegible]
25	7.0	279	7.36	22	7.0	292	6.83	22	1	YSI30C	✓	12/3	CP
26	7.9	276	7.74	22	7.9	283	7.67	22	1	YSI30C	✓	12/4	m
27	7.6	258	7.74	22	7.7	265	7.67	22	1	YSI30C	✓	12/5	m
28	8.0	271	7.81	22	8.0	275	7.77	22	1	YSI30C	✓	12/6	m

Pull Alkalinity, Hardness, Ammonia Day 0, 7, 14, 21, 28
23° C
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Two Volume Additions Daily

H. azteca SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY # 15061	Client: CH2M Hill	Overlying Water: MHR/Pond	START DATE: 11/08/06

DAY	-010				-011 10%				Water Quality Station #	S/C Meter #	ΔH2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	5.3	768	7.51	22	8.2	~~579~~ 514	7.78	23	2	SG3		11/8/06	CP
1	6.3	488	7.31	22	7.4	466	7.61	22	3	SG3	✓	11/9	[illegible]
2	7.9	419	7.27	22	8.0	435	7.51	22	2	SG3	✓	11/10	CS
3	7.8	373	7.13	22	8.0	386	7.34	22	1	SG3	✓	11/11	EG
4	7.7	345	7.04	22	7.8	349	7.16	22	1	SG3	✓	11/12	SJ
5	8.0	359	7.40	22	8.1	353	7.62	22	1	SG3	✓	11/13	m
6	6.7	370	7.29	22	7.0	370	7.48	22	1	YSI30C	✓	11/14	m
7	6.9	367	7.39	21	7.0	367	7.58	22	1	YSI30C	✓	11/15	m
8	8.0	372	7.48	21	8.0	372	7.74	22	1	YSI30C	✓	11/16	RP
9	6.6	419	~~6.68~~ 7.28	21	6.9	366	7.56	21	1	YSI30C	✓	11/17	CS
10	6.9	304	7.24	22	6.9	250	7.19	22	1	YSI30C	✓	11/18	[illegible]
11	7.0	360	7.40	22	7.0	387	7.59	22	1	YSI30C	✓	11/19	CP
12	8.4	344	7.31	21	8.5	353	7.41	21	1	YSI30C	✓	11/20	CP
13	7.5	343	7.22	21	7.5	353	7.42	21	1	YSI30C	✓	11/21	m
14	7.9	295	7.28	21	7.9	348	7.56	21	1	YSI30C	✓	11/22	m
15	7.0	290	7.39	21	7.3	390	7.62	22	2	YSI30C	✓	11/23	NT
16		360		22		373		22	3	"	✓	11/24	[illegible]
17	6.8	358	7.14	23	7.1	379	7.44	23	2	YSI30C	✓	11/25	EG
18	6.7	359	7.29	22	6.9	381	7.65	22	2	YSI30C	✓	11/26	SJ
19	6.2	301	7.12	22	7.0	324	7.51	22	1	YSI30C	✓	11/27	CP
20	6.3	329	7.05	22	6.6	348	7.44	23	2	YSI30C	✓	11/28	CP
21	6.2	333	7.15	23	6.3	371	7.51	23	1	YSI30C	✓	11/29	EG
22	6.7	329	7.26	23	6.9	331	7.60	23	1	YSI30C	✓	11/30	m
23	6.5	321	7.20	23	6.6	334	7.50	23	2	YSI30C	✓	12/1	CS
24	6.4	304	7.51	23	6.5	329	7.77	23	1	YSI30C	✓	12/2	[illegible]
25	6.3	288	7.41	22	6.7	338	7.62	23	1	YSI30C	✓	12/3	CP
26	7.7	298	7.74	22	7.6	330	7.99	23	1	YSI30C	✓	12/4	m
27	7.6	279	7.71	22	7.6	309	8.11	22	1	YSI30C	✓	12/5	m
28	8.0	281	7.76	22	8.0	352	8.05	22	1	YSI30C	✓	12/6	m

Pull Alkalinity, Hardness, Ammonia Day 0, 7, 14, 21, 28
23° C
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Daily Water Quality Measurements & Feeding Record

STUDY # 15061	Client: CH2M Hill	Overlying Water: MHR/Pond	START DATE: 11/08/06

DAY	-011 50%				-011				Water Quality Station #	S/C Meter #	ΔH_2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)					
0	8.2	579	7.90	23	8.4	622	8.16	23	2	SG3		11/8/06	CP
1	7.6	470	7.85	22	7.6	582	7.96	23	2	SG3	✓	11/9	[illegible]
2	8.1	494	7.64	22	8.0	506	7.74	22	2	SG3	✓	11/10	CJ
3	8.0	381	7.39	22	8.0	416	7.43	22	1	SG3	✓	11/11	EG
4	8.0	369	7.32	22	8.1	381	7.43	22	1	SG3	✓	11/12	SJ
5	8.2	378	7.82	22	8.4	415	7.86	22	1	SG3	✓	11/13	[illegible]
6	7.5	384	7.59	22	7.6	396	7.60	22	1	YSI 30C	✓	11/14	[illegible]
7	7.2	374	7.68	22	7.2	390	7.73	22	1	YSI 30C	✓	11/15	[illegible]
8	8.0	379	7.74	22	8.2	395	7.82	22	1	YSI 30C	✓	11/16	RP
9	6.6	500	7.54	21	6.9	432	7.69	21	1	YSI 30C	✓	11/17	CS
10	6.9	283	7.22	22	6.8	298	7.35	22	1	YSI 30C	✓	11/18	[illegible]
11	7.0	379	7.69	22	7.0	398	7.74	22	1	YSI 30C	✓	11/19	CP
12	8.5	353	7.56	21	8.4	492	7.64	22	1	YSI 30C	✓	11/20	CP
13	7.5	362	7.56	21	7.9	351	7.56	21	1	YSI 30C	✓	11/21	[illegible]
14	7.7	353	7.60	21	7.9	323	7.67	21	1	YSI 30C	✓	11/22	[illegible]
15	7.5	365	7.76	21	7.9	360	7.85	22	2	YSI 30C	✓	11/23	NT
16		381		22		375		22	3	"	✓	11/24	KHS
17	8.2	374	7.54	22	8.0	365	7.72	22	2	YSI 30C	✓	11/25	EG
18	8.1	366	7.64	22	8.1	382	7.72	22	2	YSI 30C	✓	11/26	SJ
19	7.6	353	7.54	22	8.1	330	7.88	22	1	YSI 30C	✓	11/27	CP
20	7.6	348	7.69	23	8.7	330	7.96	23	2	YSI 30C	✓	11/28	CP
21	6.4	370	7.72	23	7.9	350	7.91	23	1	YSI 30C	✓	11/29	EG
22	7.7	325	7.80	23	8.0	324	7.48	23	1	YSI 30C	✓	11/30	[illegible]
23	6.9	332	7.71	23	7.9	322	7.85	23	2	YSI 30C	✓	12/1	CS
24	6.7	318	7.99	23	7.7	303	8.23	23	1	YSI 30C	✓	12/2	[illegible]
25	7.0	332	6.99	23	7.5	294	7.95	23	1	YSI 30C	✓	12/3	CP
26	8.0	333	8.24	23	8.4	304	8.31	22	1	YSI 30C	✓	12/4	[illegible]
27	8.0	306	8.21	22	8.1	264	8.16	22	1	YSI 30C	✓	12/5	[illegible]
28	8.4	313	8.25	22	8.6	308	8.33	22	1	YSI 30C	✓	12/6	[illegible]

Pull Alkalinity, Hardness, Ammonia Day 0, 7, 14, 21, 28
23° C
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Two Volume Additions Daily

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Daily Water Quality Measurements & Feeding Record

STUDY # 15061	Client: CH2M Hill	Overlying Water: MHR/Pond	START DATE: 11/08/06

DAY	-048 10%				-048 50%				Water Quality Station #	S/C Meter #	ΔH2O fed	DATE	INIT
	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm) 1052	pH (SU)	TEMP (°C)					
0	7.5	643	7.76	23	7.6	~~627~~ 768	7.88	22	2	SG3		11/8/06	CP
1	7.2	540	7.81	23	7.5	543	7.85	23	3	SG3	✓	11/9	[illegible]
2	8.1	462	7.62	22	8.1	459	7.72	22	2	SG3	✓	11/10	CS
3	8.0	416	7.43	22	7.9	409	7.49	22	1	SG3	✓	11/11	EG
4	8.1	308	7.41	22	8.1	175	7.47	22	1	SG3	✓	11/12	SJ
5	8.2	~~415~~ 386	7.68	22	8.2	368	7.75	22	1	SG3	✓	11/13	[illegible]
6	7.6	388	7.55	22	7.7	375	7.61	22	1	YSI30C	✓	11/14	[illegible]
7	7.0	385	7.66	22	7.1	368	7.73	22	1	YSI30C	✓	11/15	[illegible]
8	8.1	381	7.85	22	8.1	375	7.87	22	1	YSI30C	✓	11/16	RP
9	7.2	448	7.59	21	7.3	415	7.61	21	1	YSI30C	✓	11/17	CS
10	7.1	305	7.45	22	7.2	272	7.52	22	1	YSI30C	✓	11/18	[illegible]
11	7.2	382	7.67	22	7.2	369	7.74	22	1	YSI30C	✓	11/19	CP
12	8.4	391	7.61	21	8.5	394	7.65	21	1	YSI30C	✓	11/20	CP
13	8.0	385	7.67	21	8.0	363	7.61	21	1	YSI30C	✓	11/21	[illegible]
14	7.6	373	7.71	21	7.6	389	7.72	21	1	YSI30C	✓	11/22	[illegible]
15	7.8	399	7.82	22	7.8	373	7.92	22	2	YSI30C	✓	11/23	NT
16		394		22		382		22	3	"	✓	11/24	[illegible]
17	8.1	397	7.81	22	8.3	387	7.78	22	2	YSI30C	✓	11/25	EG
18	8.0	380	7.78	22	8.2	387	7.77	22	2	YSI30C	✓	11/26	SJ
19	8.4	358	7.94	22	8.3	369	8.01	22	1	YSI30C	✓	11/27	CP
20	8.8	367	8.08	22	8.8	349	8.13	22	2	YSI30C	✓	11/28	CP
21	7.1	392	7.81	23	7.6	385	8.06	23	1	YSI30C	✓	11/29	EG
22	8.0	355	8.04	23	7.8	347	8.04	23	1	YSI30C	✓	11/30	[illegible]
23	7.8	345	7.95	23	7.2	346	8.12	23	2	YSI30C	✓	12/1	CS
24	7.7	324	8.05	23	7.3	319	8.13	23	1	YSI30C	✓	12/2	[illegible]
25	8.0	346	7.93	23	8.0	341	8.08	23	1	YSI30C	✓	12/3	CP
26	8.6	352	8.29	22	8.6	334	8.47	22	1	YSI30C	✓	12/4	[illegible]
27	8.1	306	8.13	22	7.9	299	8.24	22	1	YSI30C	✓	12/5	[illegible]
28	8.6	331	8.35	22	8.6	340	8.45	22	1	YSI30C	✓	12/6	[illegible]

Pull Alkalinity, Hardness, Ammonia Day 0, 7, 14, 21, 28
23° C
Feed 1 mL of YCT/Replicate Daily
Two Volume Additions Daily

H. azteca SEDIMENT ASSAY
Daily Water Quality Measurements & Feeding Record

STUDY # 15061	Client: CH2M Hill	Overlying Water: MHR/Pond	START DATE: 11/08/06

DAY	-048 D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	Temp. (°C)	D.O. (mg/L)	Cond. (µMHOS/cm)	pH (SU)	TEMP (°C)	Water Quality Station #	S/C Meter #	ΔH2O fed	DATE	INIT
0	8.2	519	8.16	22					2	SG3		11/8/06	CP
1	8.0	477	8.00	22					3	SG3	✓	11/9	[illegible]
2	8.4	410	7.81	22					2	SG3	✓	11/10	CS
3	8.0	379	7.51	22					1	SG3	✓	11/11	EG
4	8.1	173	7.50	22					1	SG3	✓	11/12	SJ
5	8.3	361	7.79	22					1	SG3	✓	11/13	[illegible]
6	7.5	363	7.65	22					1	YSI30C	✓	11/14	[illegible]
7	7.2	358	7.82	22					1	YSI30C	✓	11/15	[illegible]
8	8.2	358	7.89	22					1	YSI30C	✓	11/16	RP
9	7.3	406	7.64	22					1	YSI30C	✓	11/17	CS
10	7.2	319	7.52	22					1	YSI30C	✓	11/18	[illegible]
11	7.2	360	7.83	22					1	YSI30C	✓	11/19	CP
12	8.5	376	7.70	21					1	YSI30C	✓	11/20	CP
13	8.0	368	7.77	21					1	YSI30C	✓	11/21	[illegible]
14	8.0	366	7.64	21					1	YSI30C	✓	11/22	[illegible]
15	7.7	353	7.85	22					2	YSI30C	✓	11/23	NT
16		378		22					3	[illegible]	✓	11/24	[illegible]
17	8.0	373	7.86	22					2	YSI30C	✓	11/25	EG
18	8.1	378	7.80	22					2	YSI30C	✓	11/26	SJ
19	8.2	359	8.08	22					1	YSI30C	✓	11/27	CP
20	8.6	364	8.18	22					2	YSI30C	✓	11/28	CP
21	8.5	358	8.18	23					1	YSI30C	✓	11/29	EG
22	8.0	324	7.99	23					1	YSI30C	✓	11/30	[illegible]
23	7.6	324	7.75	23					2	YSI30C	✓	12/1	CS
24	7.4	300	8.14	23					1	YSI30C	✓	12/2	[illegible]
25	8.0	288	8.19	23					1	YSI30C	✓	12/3	CP
26	8.7	305	8.39	22					1	YSI30C	✓	12/4	[illegible]
27	7.9	277	8.20	22					1	YSI30C	✓	12/5	[illegible]
28	8.9	309	8.47	22					1	YSI30C	✓	12/6	[illegible]

Pull Alkalinity, Hardness, Ammonia Day 0, 7, 14, 21, 28
23° C
Feed 1 mL of YCT/Replicate Daily
Two Volume Additions Daily

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
LABA	1348	11	
LAB B		7	
lab C		8	
LAB D		9	
LAB E		8	
LAB F		7	
LAB G		9	
LAB H	1359	9	

ANALYST: CS
DATE: 12/6/06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28: 15061

SAMPLE ID	TIME	#LIVE	COMMENTS
10% -001A	1040	8	
-001B 10%	1043	10	
-001C 10%	1045	8	
-001D 10%	1049	9	
-001E 10%	1053	8	
-001F 10%	1054	10	
-001G 10%	1058	9	
-001H 10%	1100	9	
-001A 50%	1103	7	
-001B 50%	1106	9	
-001C 50%	1110	8	
-001D 50%	1112	5	
-001E 50%	1115	2	
-001F 50%	1120	7	
-001G 50%	1123	4	
-001H 50%	1125	6	

ANALYST: JN
DATE: 12/6/06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
-001A	1130	8	
-001B	1133	7	
-001C	1137	7	
-001D	1140	5	
-001E	1143	5	
-001F	1145	6	
-001G	1148	4	
-001H	1150	7	
-004A 10%	1151	7	
-004B 10%	1153	6	
-004C 10%	1155	7	
-004D 10%	1157	6	
-004E 10%	1159	3	
-004F 10%	1202	4	
-004G 10%	1205	5	
-004H 10%	1207	5	

ANALYST: [illegible]
DATE: 12/6/06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
-004A 50%	1210	2	
-004B 50%	1212	1	
-004C 50%	1214	1	
-004D 50%	1216	3	
-004E 50%	1219	0	
-004F 50%	1221	0	
-004~~A~~G 50%	1225	2	
-004~~G~~H 50%	1227	2	
-004A	1230	1	
-004B	1232	3	
-004C	1234	3	
-004D	1235	0	
-004E	1237	2	
-004F	1239	0	
-004~~A~~G	1241	~~0~~ 1	
-004~~H~~H	1245	~~2~~ 0	

ANALYST: yr
DATE: 12/6/06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
-005A 10%	1246	7	
-005B 10%	1248	9	
-005C 10%	1251	9	
-005D 10%	1253	7	
-005E 10%	1255	9	
-005F 10%	1258	7	
-005G 10%	1303	8	
-005H 10%	1259	6	

ANALYST: yn
DATE: 12/6/06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
-005 50% A	1255	4	
B		4	
C		5	
D		4	
E		6	
F		4	
G		3	
H	1310	5	

ANALYST: m
DATE: 12/6/06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
-605 100% A	1225	2	
B		3	
C		1	
D		4	
E		6	
F		6	
G		1	
H	1245	2	

ANALYST: m
DATE: 12/6/06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
-0071090 A	1321	0	
B		0	
C		0	
D		7	
E		7	
F		8	
G		7	
H	1339	9	
-0075080 A	1340	7	
B		6	
C		5+1=6	
D		4	
E		3	
F		2	
G		7	
H	1350	6	

ANALYST: lm
DATE: 12/6/06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
-007A	1330	6	
-007B	1335	8	
-007C	1340	5	
-007D	1342	3	
-007E	1345	5	
-007F	1348	1	
-007G	1350	0	
-007H	1352	0	
-008A 10%	1355	9	
-008B 10%	1358	9	
-008C 10%	1405	10	
-008D 10%	1412	10	
-008E 10%	1415	7	
-008F 10%	1417	6	
-008G 10%	1420	7	
-008H 10%	1422	9	

ANALYST: VM
DATE: 12/16/06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
50% -008A	1305	7	
50% -008B		6	
50% -008C		9	
50% -008D		10	
50% -008E		8	
50% -008F		7	
50% -008G		9	
50% -008H	1322	7	
-008A	1325	8	
-008B		7	
-008C		5	
-008D		4	
-008E		5	
-008F		8	
-008G		7	
-008H	1338	9	

ANALYST: CS
DATE: 12/6/06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
-010 10%A	1460	17	
B		14	
C		20	
D		18	
E		19	
F		20	
G		19	
H	1415	18	
-010 50% A	1418	9	
B		7	
C		5	
D		8	
E		9	
F		8	
G		9	
H	1441	9	

ANALYST: m
DATE: 12-6-06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
-010A	1410	9	
-010B	1412	9	
-010C	1414	7	
-010D	1316	8	
-010E	1318	8	
-010F		7	
-010G		8	
-010H	1340	10	

ANALYST: CS
DATE: 12/6/06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
100% -011A	1440	10	
100% -011B		9	
-100% -011C		9	
-100% -011D		10	
100% -011E		7	
100% -011F		7	
100% -011G		8	
100% -011H	1450	8	

ANALYST: CS
DATE: 12/6/06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
50% -011A	1400	~~11~~ 8	
50% -011B		~~7~~ 0	
50% -011C		~~8~~ 9	
50% -011D		~~9~~ 3	
50% -011E		~~8~~ 7	
50% -011F		~~7~~ 6	
50% -011G		~~9~~ 5	
50% -011H	1413	~~9~~ 9	

ANALYST: _____

DATE: _____

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
-011 0070 A	1452	2	
B		3	
C		1	
D		7	
E		3	
F		0	
G		1	
H	1456	5	

ANALYST: LM
DATE: 12/6/06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
10% -048A	1455	7	
10% -048B		8	
10% -048 C		5	
10% -048D		5	
10% -048E		~~6~~ 7	
10% -048F		6	
10% -048G		5	
10% -048H	1503	5	

ANALYST: CS
DATE: 12/6/06

ESI STUDY# 15061 CH2M Hill
***H. azteca* SEDIMENT ASSAY**

DAY 28:

SAMPLE ID	TIME	#LIVE	COMMENTS
-0485050A	1500	8	
B		7	
C		7	
D		3	
E		2	
F		5	
G		3	
H		5	
-0481008 A	1507	3	
B		9	
C		3	
D		5	
E		6	
F		7	
G		8	
H		7	

ANALYST: m
DATE: 12/6/06

Hyalella azteca Assay
GROWTH DATA

STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

ESI SAMPLE ID	REP	FOIL TARE WEIGHT (mg)	*H. azteca* + FOIL (mg)
LAB	A	209.91	216.12
	B	208.46	211.89
	C	209.33	213.02
	D	208.39	212.43
	E	208.48	211.74
	F	208.72	211.34
	G	208.31	211.38
	H	209.07	214.11
-001 10%	A	207.62	211.45
	B	207.91	212.83
	C	206.02	210.62
	D	209.08	212.65
	E	208.11	211.94
	F	207.37	210.43
	G	211.77	214.83
	H	208.79	212.12
-001 50%	A	209.27	213.21
	B	208.46	210.88
	C	208.90	211.58
	D	207.11	208.70
	E	209.36	209.92
	F	207.55	209.89
	G	210.61	211.56
	H	207.95	210.26
-001	A	208.48	211.00
	B	209.47	211.91
	C	207.46	209.27
	D	207.35	209.15
	E	208.73	210.38
	F	206.64	208.17
	G	208.04	208.93
	H	209.87	211.67
RECORDED BY:		EG	GL
DATE:		12/6/06	12/7

ESI SAMPLE ID	REP	FOIL TARE WEIGHT (mg)	*H. azteca* + FOIL (mg)
-004 10%	A	209.72	212.09
	B	209.04	210.08
	C	208.53	210.33
	D	207.63	209.93
	E	208.41	209.11
	F	208.20	209.67
	G	208.76	210.56
	H	209.84	211.27
-004 50%	A	211.16	211.94
	B	211.84	212.96 (63)
	C	210.42	210.73
	D	211.19	211.86
	E	210.95	—
	F	211.19	—
	G	210.45	210.79
	H	210.04	210.42
-004	A	211.12	211.20
	B	211.77	212.52
	C	210.79	211.35
	D	211.02	—
	E	210.77	211.15
	F	210.46	—
	G	211.48	211.63
	H	210.32	—
-005 10%	A	210.66	213.27
	B	212.44	215.22
	C	211.56	213.64
	D	210.99	212.74
	E	209.18	211.85
	F	210.75	212.72
	G	212.09	214.36
	H	209.88	212.17
RECORDED BY:		EG	GL
DATE:		12/6/06	12/7

NOTES:

Hyalella azteca Assay
GROWTH DATA

STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

ESI SAMPLE ID	REP	FOIL TARE WEIGHT (mg)	*H. azteca* + FOIL (mg)
-005 50%	A	209.27	210.97
	B	211.34	212.57
	C	210.41	212.85
	D	211.18	212.05
	E	210.78	212.36
	F	210.66	211.52
	G	210.97	212.01
211.10	H	209.48	~~210.97~~ (E3)
-005	A	212.26	212.87
	B	211.36	212.07
	C	211.37	211.67
	D	212.19	213.02
	E	209.50	211.39
	F	210.93	212.53
	G	210.52	211.10
	H	209.12	209.65
E=210.42 -007 10%	A	209.11	—
	B	208.52	—
	C	211.69	—
	D	208.40	210.09
	E	208.39	~~210.17~~ (E3)
	F	208.41	211.10
	G	208.45	211.08
	H	208.87	211.23
-007 50%	A	208.87	211.80
	B	208.18	210.24
	C	207.13	209.29
	D	208.33	209.21
	E	209.25	210.41
	F	209.63	210.49
	G	208.61	210.39
	H	207.69	210.46
RECORDED BY:		EG	GL
DATE:		12/6/06	12/7

ESI SAMPLE ID	REP	FOIL TARE WEIGHT (mg)	*H. azteca* + FOIL (mg)
-007	A	209.33	211.51
	B	208.85	211.81
	C	209.69	211.55
	D	208.64	210.04
	E	208.53	210.10
	F	208.32	208.92
	G	208.34	—
	H	208.84	—
-008 10%	A	209.31	212.21
	B	208.12	210.38
	C	209.39	211.82
	D	210.67	213.71
	E	208.53	210.47
	F	207.45	208.28
	G	208.70	210.47
	H	208.79	210.82
-008 50%	A	209.39	211.50
	B	209.22	210.85
	C	209.11	211.14
	D	209.40	212.48
	E	209.20	211.44
	F	206.76	207.98
	G	208.45	211.80
	H	208.73	209.44
-008	A	210.86	213.03
	B	207.10	209.21
	C	209.21	211.11
	D	208.65	210.18
	E	207.74	209.74
	F	209.12	211.12
	G	209.77	211.67
		209.38	212.28
RECORDED BY:		EG	GL
DATE:		12/6/06	12/7

NOTES:

Hyalella azteca Assay
GROWTH DATA

STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

ESI SAMPLE ID	REP	FOIL TARE WEIGHT (mg)	*H. azteca* + FOIL (mg)
214.73 -010 10%	A	210.32	~~215.88~~ (E3)
	B	210.77	213.77
	C	210.35	213.67
	D	211.45	214.76
	E	210.84	216.08
	F	211.42	215.89
	G	210.80	213.05
	H	210.95	214.53
213.28 -010 50%	A	211.91	213.48
	B	210.79	~~213.19~~ (E3)
	C	210.05	211.69
	D	210.52	213.35
	E	210.17	214.39
	F	211.08	213.50
	G	208.97	213.09
	H	211.45	213.77
-010	A	210.87	212.56
	B	210.68	213.17
	C	212.15	214.55
	D	211.06	213.67
	E	208.06	208.98
	F	209.72	212.63
	G	210.87	213.12
	H	212.01	214.45
-011 10%	A	208.61	212.64
	B	208.11	211.60
	C	208.38	211.97
	D	208.10	211.41
	E	207.52	211.35
	F	204.32	207.52
	G	209.66	213.39
	H	209.71	213.28
RECORDED BY:		EG	GL
DATE:		12/6/06	12/7

ESI SAMPLE ID	REP	FOIL TARE WEIGHT (mg)	*H. azteca* + FOIL (mg)
-011 50%	A	210.70	214.64
	B	211.90	—
	C	210.79	214.40
	D	210.47	212.85
	E	210.81	213.86
	F	208.02	211.60
	G	209.11	211.72
	H	206.96	210.36
-011	A	208.05	210.15
	B	209.03	211.13
	C	208.96	~~200.~~ (E3) 210.06
	D	206.85	209.63
	E	207.83	208.64
	F	208.68	—
	G	209.65	210.01
	H	208.33	210.22
-048 10%	A	210.44	215.17
	B	206.96	210.73
	C	208.70	212.71
	D	207.12	211.17
	E	207.80	210.36
	F	207.57	210.17
	G	209.65	212.14
	H	208.82	210.68
-048 50%	A	209.95	213.53
	B	209.02	212.24
	C	208.98	212.52
	D	209.66	212.93
	E	209.32	210.00
	F	209.76	215.90
	G	209.41	~~211.25~~ 212.25
	H	210.62	213.02
RECORDED BY:		EG	GL
DATE:		12/6/06	12/7

NOTES:

Hyalella azteca Assay
GROWTH DATA

STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

ESI SAMPLE ID	REP	FOIL TARE WEIGHT (mg)	*H. azteca* + FOIL (mg)
-048	A	209.32	211.78
	B	209.13	213.09
	C	208.27	210.99
	D	208.67	212.99
	E	208.77	211.85
	F	208.22	210.87
	G	209.02	211.77
	H	208.74	210.39
	A		
	B		
	C		
	D		
	E		
	F		
	G		
	H		
	A		
	B		
	C		
	D		
	E		
	F		
	G		
	H		
	A		
	B		
	C		
	D		
	E		
	F		
	G		
	H		
RECORDED BY:			GL
DATE:			12/7/06

ESI SAMPLE ID	REP	FOIL TARE WEIGHT (mg)	*H. azteca* + FOIL (mg)
	A		
	B		
	C		
	D		
	E		
	F		
	G		
	H		
	A		
	B		
	C		
	D		
	E		
	F		
	G		
	H		

STUDY: 15061
CLIENT: CH2M
PROJECT: Great Lakes Sweepings Characterization
ASSAY: 28-Day Hyalella azteca Assay
TASK: Start Weights

Sample ID	Replicate	Tare Wt (g)	Final Wt (g)	Net Dry Wt (g)	# Amphipod	Mean Dry Wt (mg)	Overall Mean Dry Wt (mg)
Start Organisms	A	0.20756	0.20773	0.00017	10	0.017	0.019
	B	0.20562	0.20587	0.00025	10	0.025	
	C	0.20619	0.20637	0.00018	10	0.018	
	D	0.2054	0.20556	0.00016	10	0.016	

STUDY NUMBER: 15061 ***Hyalella azteca* Assay** **CLIENT:** CH2M

ESI SAMPLE ID	REP	TARE WEIGHT (G)	*H. azteca* + FOIL (G)	NET WEIGHT (MG)	# *H. azteca*	MEAN DRY WEIGHT PER *H. azteca* (MG)
START ORGANISMS	A	0.20756	0.20773		10	
	B	0.20562	0.20587		10	
	C	0.20619	0.20637		10	
	D	0.20540	0.20556		10	
RECORDED BY:		BB	BB			
DATE:						

NOTES:

CETIS Test Summary

Report Date: 07 Dec-06 9:26 PM
Link: 07-2833-9332

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Test No:	15-9826-1552	**Test Type:**	Survival-Growth	**Duration:**	28d 0h
Start Date:	08 Nov-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	06 Dec-06 12:00 PM	**Dil Water:**	50/50 Mix of Surface Water and MHR	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	08 Nov-06 12:00 PM	**Brine:**	Not Applicable		

Sample No:	03-3366-6980	**Material:**	Freshwater Sediment	**Client:**	CH2M Hill
Sample Date:	25 Oct-06 12:00 PM	**Code:**	15061-000	**Project:**	Ecological Risk Assessment
Receive Date:	25 Oct-06 12:00 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	14d 0h	**Station:**	Lab Control; 15061-000		
Sample No:	04-1225-4609	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	01 Oct-06 04:40 PM	**Code:**	15061-001	**Project:**	Ecological Risk Assessment
Receive Date:	03 Oct-06 12:00 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	37d 19h	**Station:**	DLHTV1-DS-1; 15061-001		
Sample No:	10-2183-2337	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	03 Oct-06 12:00 PM	**Code:**	15061-004	**Project:**	Ecological Risk Assessment
Receive Date:	05 Oct-06 10:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	36d 0h	**Station:**	DHLCV1-DS-1; 15061-004		
Sample No:	09-3432-1084	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	04 Oct-06 11:00 PM	**Code:**	15061-005	**Project:**	Ecological Risk Assessment
Receive Date:	07 Oct-06 11:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	34d 13h	**Station:**	DLHCV2-DS-1; 15061-005		
Sample No:	16-1815-3147	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	06 Oct-06 01:00 PM	**Code:**	15061-007	**Project:**	Ecological Risk Assessment
Receive Date:	07 Oct-06 11:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	32d 23h	**Station:**	CLECV3-DS-1; 15061-007		
Sample No:	15-8347-4253	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	03 Oct-06 01:00 PM	**Code:**	15061-008	**Project:**	Ecological Risk Assessment
Receive Date:	09 Oct-06 09:45 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	35d 23h	**Station:**	DLHTV2-DS-1; 15061-008		
Sample No:	06-7315-6010	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	09 Oct-06 04:00 PM	**Code:**	15061-010	**Project:**	Ecological Risk Assessment
Receive Date:	11 Oct-06 10:00 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	29d 20h	**Station:**	CLECV4-DS-1; 15061-010		
Sample No:	16-2334-8319	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	10 Oct-06 09:00 AM	**Code:**	15061-011	**Project:**	Ecological Risk Assessment
Receive Date:	11 Oct-06 10:00 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	29d 3h	**Station:**	CLELV1-DS-1; 15061-011		
Sample No:	00-8986-6754	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	27 Oct-06 10:00 AM	**Code:**	15061-048	**Project:**	Ecological Risk Assessment
Receive Date:	28 Oct-06 10:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	12d 2h	**Station:**	CLELV2-DS-1; 15061-049		

CETIS Test Summary

Report Date: 07 Dec-06 9:26 PM
Link: 07-2833-9332

Mean Dry Weight-mg Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
15061-000	8	0.45595	0.34111	0.56454	0.02868	0.08112	17.79%
15061-001	8	0.29335	0.22250	0.36000	0.01808	0.05115	17.44%
15061-004	8	0.17134	0.08000	0.25000	0.02790	0.06239	36.41%
15061-005	8	0.30823	0.20750	0.58000	0.04093	0.11577	37.56%
15061-007	8	0.41433	0.31400	0.59999	0.04228	0.10357	25.00%
15061-008	8	0.32235	0.25000	0.40000	0.02064	0.05837	18.11%
15061-010	8	0.27369	0.11500	0.41571	0.03307	0.09353	34.17%
15061-011	8	0.60788	0.27000	1.09999	0.13084	0.34617	56.95%
15061-048	8	0.56275	0.23571	0.90667	0.09273	0.26228	46.61%

Proportion Survived Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
15061-000	8	0.83750	0.70000	1.00000	0.03750	0.10607	12.66%
15061-001	8	0.61250	0.40000	0.80000	0.04795	0.13562	22.14%
15061-004	8	0.12500	0.00000	0.30000	0.04532	0.12817	102.54
15061-005	8	0.31250	0.10000	0.60000	0.07181	0.20310	64.99%
15061-007	8	0.35000	0.00000	0.80000	0.10522	0.29761	85.03%
15061-008	8	0.66250	0.40000	0.90000	0.06250	0.17678	26.68%
15061-010	8	0.82500	0.70000	1.00000	0.03660	0.10351	12.55%
15061-011	8	0.27500	0.00000	0.70000	0.08183	0.23146	84.17%
15061-048	8	0.60000	0.30000	0.90000	0.07792	0.22039	36.73%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
15061-000	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000
15061-001	0.31500	0.34857	0.25857	0.36000	0.33000	0.25500	0.22250	0.25714
15061-004	0.08000	0.25000	0.18667	N/A	0.18999	N/A	0.15001	N/A
15061-005	0.30500	0.23667	0.30000	0.20750	0.31500	0.26667	0.58000	0.25500
15061-007	0.36333	0.37000	0.37200	0.46666	0.31400	0.59999	N/A	N/A
15061-008	0.27125	0.30143	0.38000	0.38250	0.40000	0.25000	0.27143	0.32222
15061-010	0.18778	0.27667	0.34286	0.32625	0.11500	0.41571	0.28125	0.24400
15061-011	1.05000	0.70000	1.09999	0.39714	0.27000	N/A	0.36000	0.37800
15061-048	0.82000	0.44000	0.90667	0.86400	0.51333	0.37857	0.34375	0.23571

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
15061-000	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000
15061-001	0.80000	0.70000	0.70000	0.50000	0.50000	0.60000	0.40000	0.70000
15061-004	0.10000	0.30000	0.30000	0.00000	0.20000	0.00000	0.10000	0.00000
15061-005	0.20000	0.30000	0.10000	0.40000	0.60000	0.60000	0.10000	0.20000
15061-007	0.60000	0.80000	0.50000	0.30000	0.50000	0.10000	0.00000	0.00000
15061-008	0.80000	0.70000	0.50000	0.40000	0.50000	0.80000	0.70000	0.90000
15061-010	0.90000	0.90000	0.70000	0.80000	0.80000	0.70000	0.80000	1.00000
15061-011	0.20000	0.30000	0.10000	0.70000	0.30000	0.00000	0.10000	0.50000
15061-048	0.30000	0.90000	0.30000	0.50000	0.60000	0.70000	0.80000	0.70000

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:21 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.08722	8.88539	0.91499	Equal Variances
Distribution	Shapiro-Wilk W	0.93599	0.84420	0.29595	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.2864927	0.2864927	1	13.67	0.00239	Significant Effect
Error	0.2934304	0.0209593	14			
Total	0.57992306	0.3074520	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-001	3.69716	1.76131	0.0012	0.1275	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.83750	0.70000	1.00000	0.10607	1.17040	0.99116	1.41946	0.14777
15061-001	8	0.61250	0.40000	0.80000	0.13562	0.90278	0.68472	1.10715	0.14172

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000		
15061-001	0.80000	0.70000	0.70000	0.50000	0.50000	0.60000	0.40000	0.70000		

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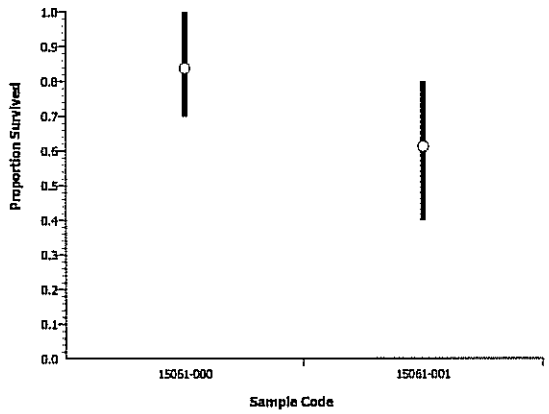
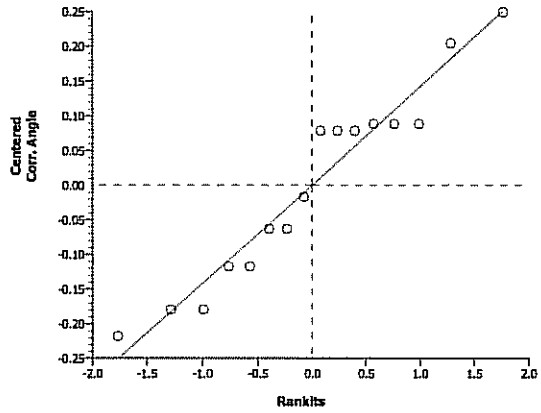




CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:21 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.49998	8.88539	0.60591	Equal Variances
Distribution	Shapiro-Wilk W	0.88560	0.84420	0.04714	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	2.739391	2.739391	1	100.37	0.00000	Significant Effect
Error	0.3821123	0.0272937	14			
Total	3.12150362	2.7666851	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-004	10.0183	1.76131	0.0000	0.14549	Significant Effect

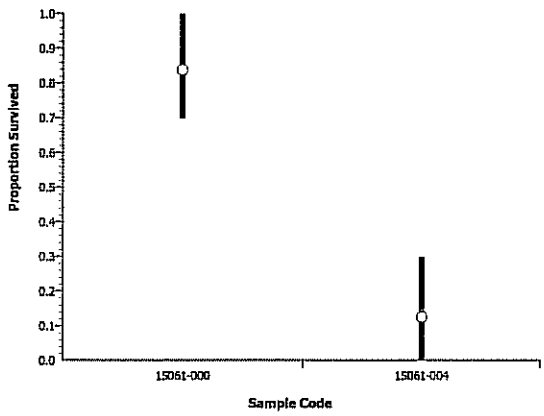
Data Summary

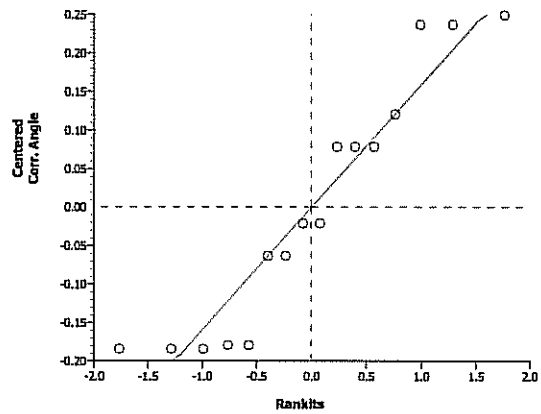
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.83750	0.70000	1.00000	0.10607	1.17040	0.99116	1.41946	0.14777
15061-004	8	0.12500	0.00000	0.30000	0.12817	0.34285	0.15878	0.57964	0.18098

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000		
15061-004	0.10000	0.30000	0.30000	0.00000	0.20000	0.00000	0.10000	0.00000		

Graphics





CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:21 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.34655	8.88539	0.28299	Equal Variances
Distribution	Shapiro-Wilk W	0.93444	0.84420	0.28051	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	1.413663	1.413663	1	38.69	0.00002	Significant Effect
Error	0.5115064	0.0365362	14			
Total	1.92516923	1.450199	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-005	6.22030	1.76131	0.0000	0.16833	Significant Effect

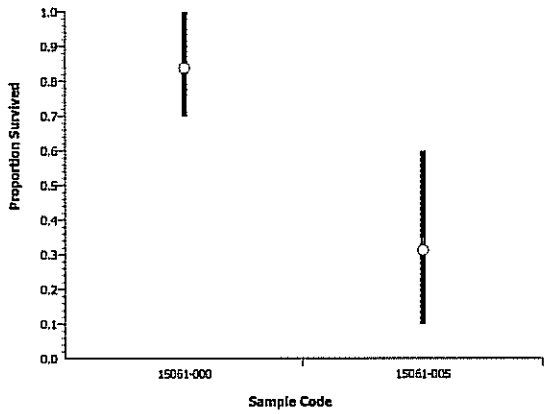
Data Summary

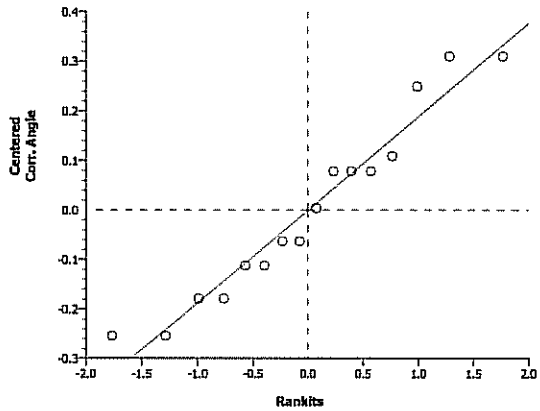
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.83750	0.70000	1.00000	0.10607	1.17040	0.99116	1.41946	0.14777
15061-005	8	0.31250	0.10000	0.60000	0.20310	0.57591	0.32175	0.88608	0.22636

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000		
15061-005	0.20000	0.30000	0.10000	0.40000	0.60000	0.60000	0.10000	0.20000		

Graphics





CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:21 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	5.72429	8.88539	0.03481	Equal Variances
Distribution	Shapiro-Wilk W	0.97285	0.84420	0.84982	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	1.311162	1.311162	1	17.86	0.00085	Significant Effect
Error	1.027782	0.073413	14			
Total	2.33894348	1.3845746	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-007	4.22612	1.76131	0.0004	0.23861	Significant Effect

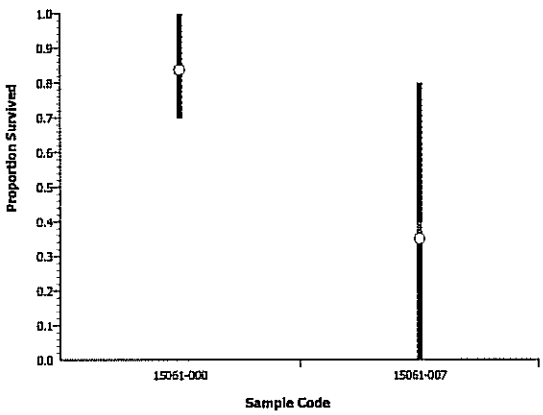
Data Summary

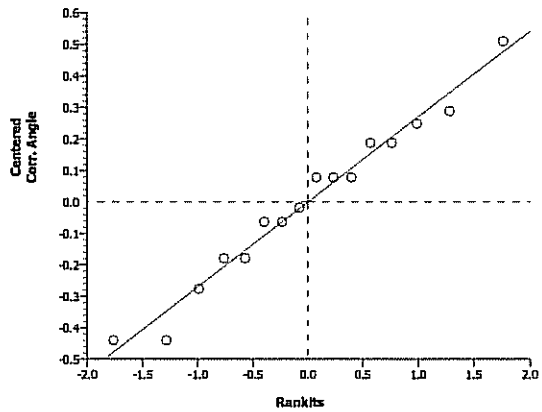
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.83750	0.70000	1.00000	0.10607	1.17040	0.99116	1.41946	0.14777
15061-007	8	0.35000	0.00000	0.80000	0.29761	0.59787	0.15878	1.10715	0.35354

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000		
15061-007	0.60000	0.80000	0.50000	0.30000	0.50000	0.10000	0.00000	0.00000		

Graphics





CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:22 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.73697	8.88539	0.48353	Equal Variances
Distribution	Shapiro-Wilk W	0.94859	0.84420	0.45000	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.1726485	0.1726485	1	5.78	0.03065	Significant Effect
Error	0.4183356	0.0298811	14			
Total	0.59098406	0.2025296	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-008	2.40372	1.76131	0.0153	0.15223	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.83750	0.70000	1.00000	0.10607	1.17040	0.99116	1.41946	0.14777
15061-008	8	0.66250	0.40000	0.90000	0.17678	0.96265	0.68472	1.24905	0.19475

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000		
15061-008	0.80000	0.70000	0.50000	0.40000	0.50000	0.80000	0.70000	0.90000		

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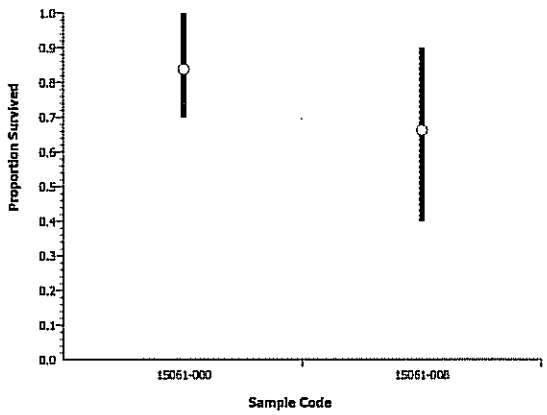

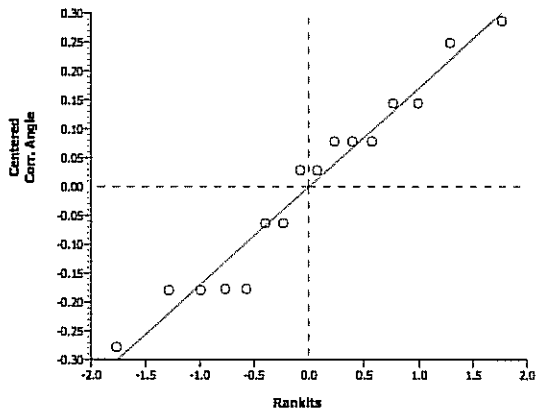

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:22 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.05981	8.88539	0.94088	Equal Variances
Distribution	Shapiro-Wilk W	0.91114	0.84420	0.12153	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.001394	0.001394	1	0.07	0.80144	Non-Significant Effect
Error	0.2970657	0.021219	14			
Total	0.29845972	0.022613	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-010	0.25631	1.76131	0.4007	0.12828	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.83750	0.70000	1.00000	0.10607	1.17040	0.99116	1.41946	0.14777
15061-010	8	0.82500	0.70000	1.00000	0.10351	1.15173	0.99116	1.41202	0.14354

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000		
15061-010	0.90000	0.90000	0.70000	0.80000	0.80000	0.70000	0.80000	1.00000		

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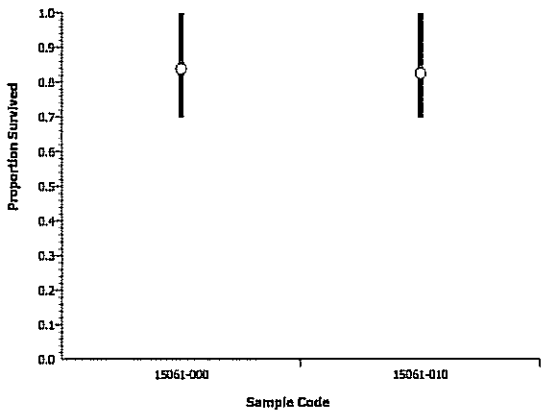
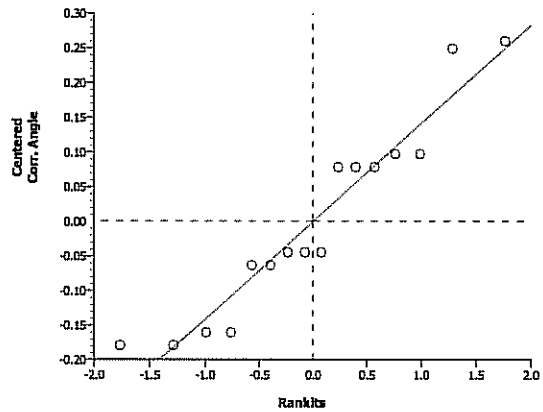




CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:22 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	3.34704	8.88539	0.13349	Equal Variances
Distribution	Shapiro-Wilk W	0.95916	0.84420	0.61713	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	1.665034	1.665034	1	35.08	0.00004	Significant Effect
Error	0.6644275	0.0474591	14			
Total	2.32946193	1.7124935	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-011	5.92314	1.76131	0.0000	0.19185	Significant Effect

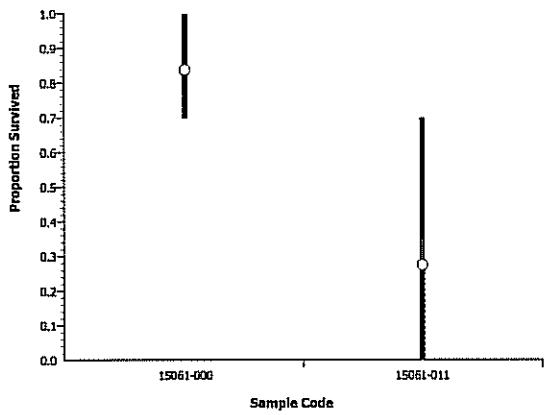
Data Summary

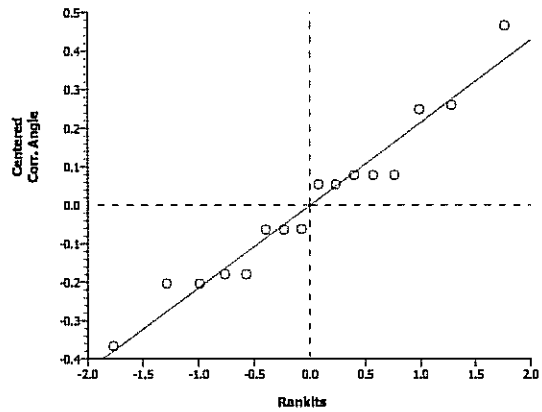
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.83750	0.70000	1.00000	0.10607	1.17040	0.99116	1.41946	0.14777
15061-011	8	0.27500	0.00000	0.70000	0.23146	0.52522	0.15878	0.99116	0.27034

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000		
15061-011	0.20000	0.30000	0.10000	0.70000	0.30000	0.00000	0.10000	0.50000		

Graphics





CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:22 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.61592	8.88539	0.22783	Equal Variances
Distribution	Shapiro-Wilk W	0.96492	0.84420	0.71722	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.3008383	0.3008383	1	7.62	0.01532	Significant Effect
Error	0.5526794	0.0394771	14			
Total	0.85351768	0.3403154	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-048	2.76054	1.76131	0.0077	0.17498	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.83750	0.70000	1.00000	0.10607	1.17040	0.99116	1.41946	0.14777
15061-048	8	0.60000	0.30000	0.90000	0.22039	0.89616	0.57964	1.24905	0.23900

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000		
15061-048	0.30000	0.90000	0.30000	0.50000	0.60000	0.70000	0.80000	0.70000		

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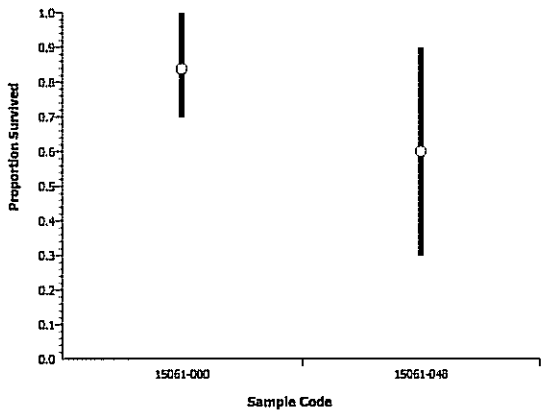

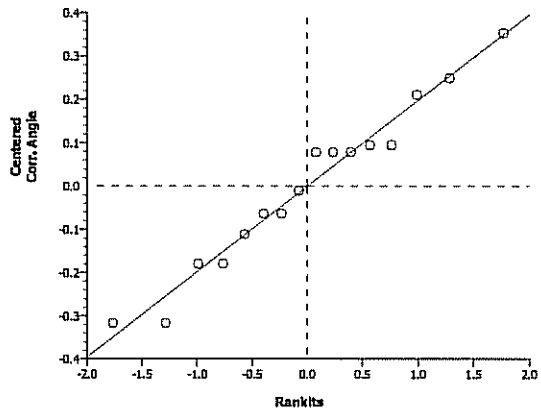

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:22 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.51499	8.88539	0.24678	Equal Variances
Distribution	Shapiro-Wilk W	0.97347	0.84420	0.85935	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.105754	0.105754	1	23.00	0.00028	Significant Effect
Error	0.0643750	0.0045982	14			
Total	0.17012903	0.1103522	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-001	4.79572	1.76131	0.0001	0.05972	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.45595	0.34111	0.56454	0.08112				
15061-001	8	0.29335	0.22250	0.36000	0.05115				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
15061-001	0.31500	0.34857	0.25857	0.36000	0.33000	0.25500	0.22250	0.25714		

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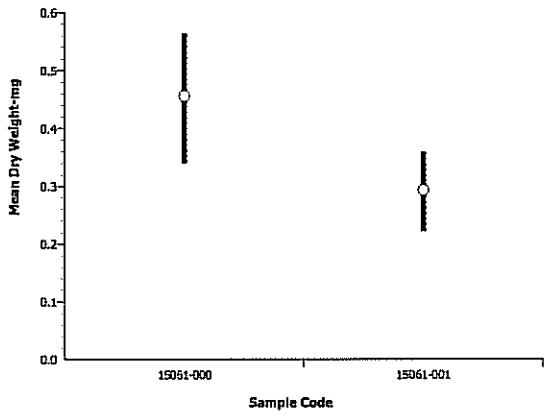

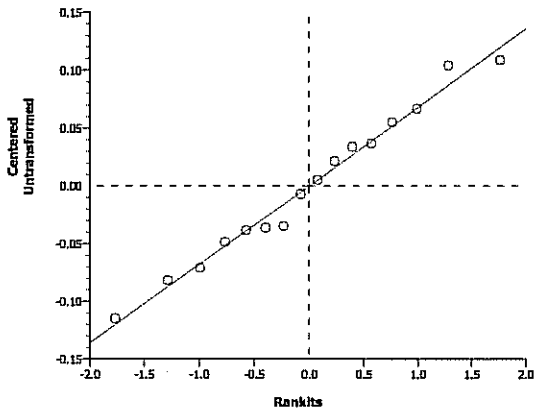

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:22 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.69066	21.62169	0.63995	Equal Variances
Distribution	Shapiro-Wilk W	0.95860	0.81445	0.69127	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.2492432	0.2492432	1	44.49	0.00004	Significant Effect
Error	0.0616287	0.0056026	11			
Total	0.31087188	0.2548458	12			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-004	6.66986	1.79589	0.0000	0.07663	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.45595	0.34111	0.56454	0.08112				
15061-004	5	0.17134	0.08000	0.25000	0.06239				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
15061-004	0.08000	0.25000	0.18667	0.18999	0.15001					

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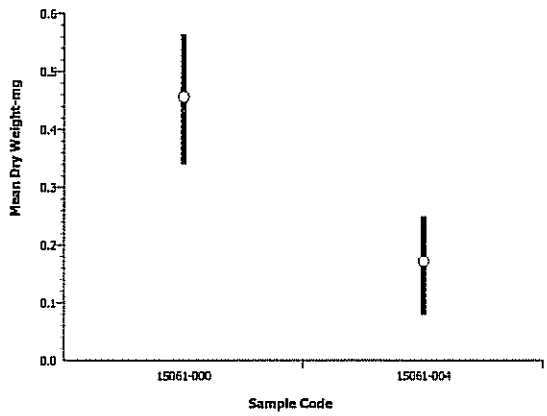

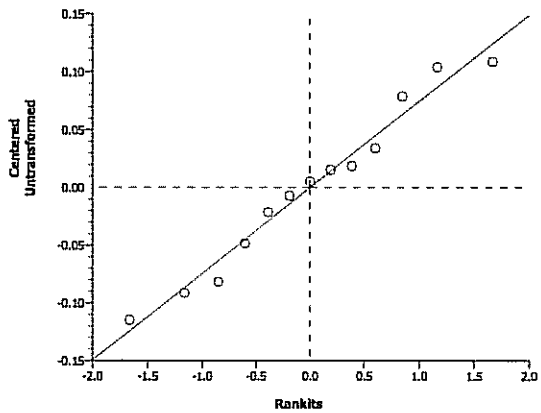

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:22 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.03670	8.88539	0.36858	Equal Variances
Distribution	Shapiro-Wilk W	0.86588	0.84420	0.02255	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0872807	0.0872807	1	8.74	0.01043	Significant Effect
Error	0.1398722	0.0099909	14			
Total	0.22715295	0.0972716	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-005	2.95568	1.76131	0.0052	0.08803	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.45595	0.34111	0.56454	0.08112				
15061-005	8	0.30823	0.20750	0.58000	0.11577				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
15061-005	0.30500	0.23667	0.30000	0.20750	0.31500	0.26667	0.58000	0.25500		

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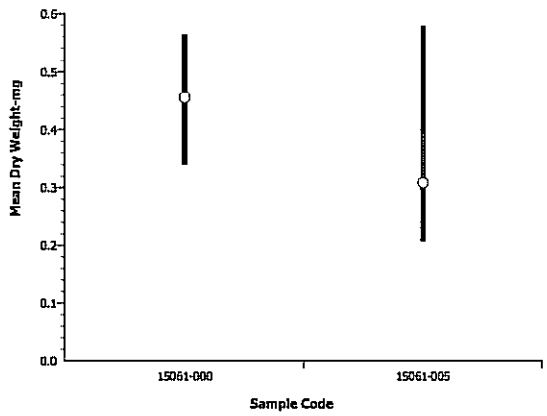
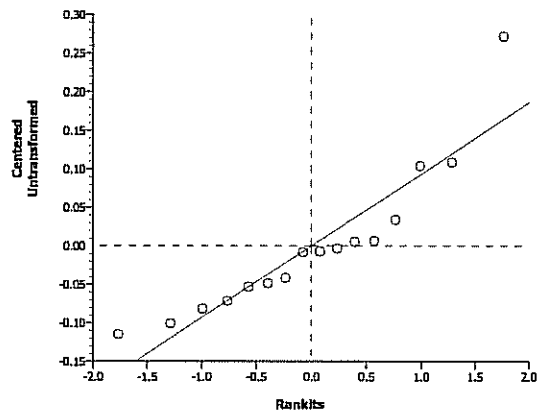




CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:22 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.63015	9.52206	0.53678	Equal Variances
Distribution	Shapiro-Wilk W	0.93987	0.82506	0.40780	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0059379	0.0059379	1	0.71	0.41441	Non-Significant Effect
Error	0.0996931	0.0083078	12			
Total	0.10563103	0.0142457	13			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-007	0.84543	1.78229	0.2072	0.08773	Non-Significant Effect

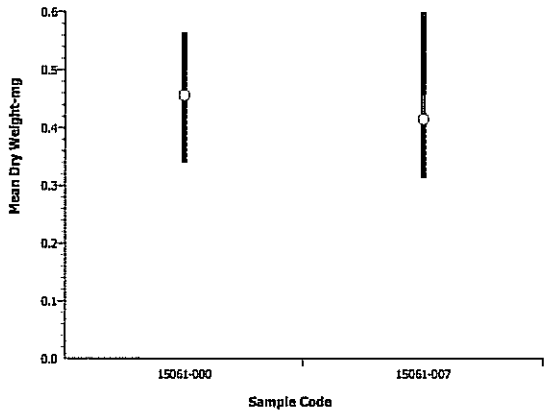
Data Summary

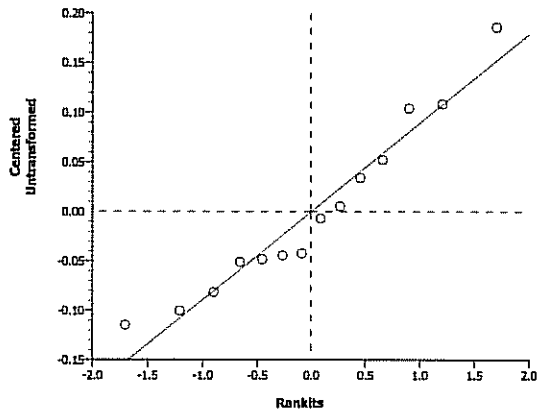
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.45595	0.34111	0.56454	0.08112				
15061-007	6	0.41433	0.31400	0.59999	0.10357				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
15061-007	0.36333	0.37000	0.37200	0.46666	0.31400	0.59999				

Graphics





CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:22 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.93147	8.88539	0.40471	Equal Variances
Distribution	Shapiro-Wilk W	0.96064	0.84420	0.64263	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0713896	0.0713896	1	14.30	0.00203	Significant Effect
Error	0.0699080	0.0049934	14			
Total	0.14129763	0.0763830	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-008	3.7811	1.76131	0.0010	0.06223	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.45595	0.34111	0.56454	0.08112				
15061-008	8	0.32235	0.25000	0.40000	0.05837				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
15061-008	0.27125	0.30143	0.38000	0.38250	0.40000	0.25000	0.27143	0.32222		

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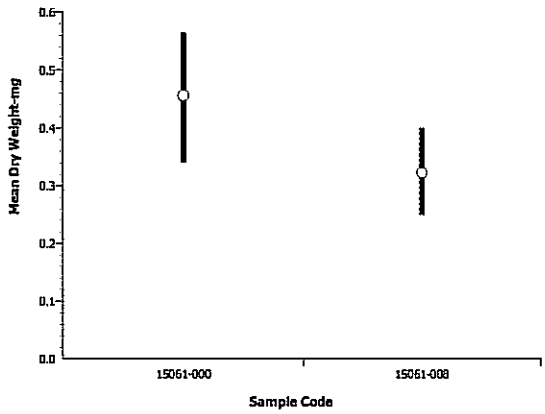

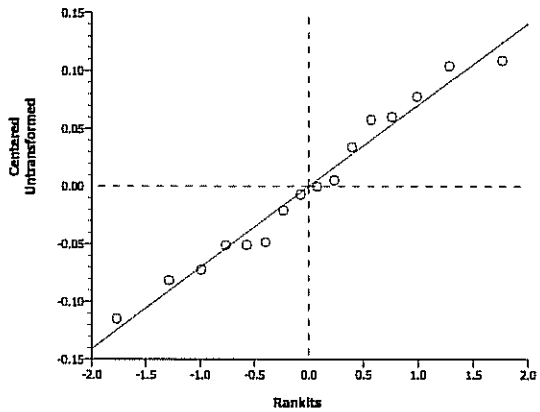

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:22 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.32931	8.88539	0.71674	Equal Variances
Distribution	Shapiro-Wilk W	0.98219	0.84420	0.96293	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.1328713	0.1328713	1	17.34	0.00096	Significant Effect
Error	0.1072894	0.0076635	14			
Total	0.24016074	0.1405349	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-010	4.16391	1.76131	0.0005	0.07709	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.45595	0.34111	0.56454	0.08112				
15061-010	8	0.27369	0.11500	0.41571	0.09353				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
15061-010	0.18778	0.27667	0.34286	0.32625	0.11500	0.41571	0.28125	0.24400		

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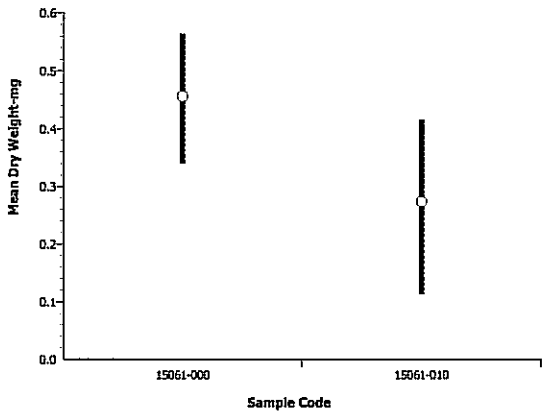
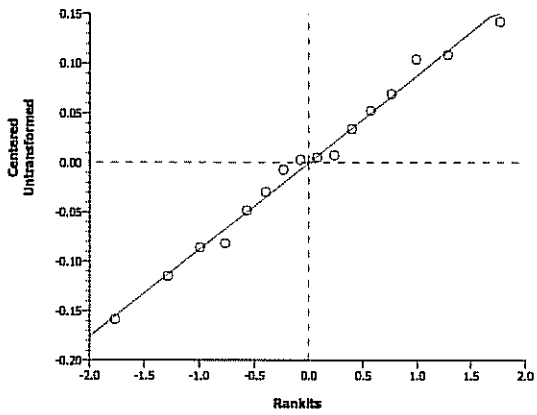




CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:22 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Unequal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	18.21123	9.15534	0.00120	Unequal Variances
Distribution	Shapiro-Wilk W	0.92149	0.83526	0.20509	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0861737	0.0861737	1	1.46	0.24779	Non-Significant Effect
Error	0.7650489	0.0588499	13			
Total	0.85122257	0.1450236	14			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-011	-1.1343	1.94318	0.8500	0.26028	Non-Significant Effect

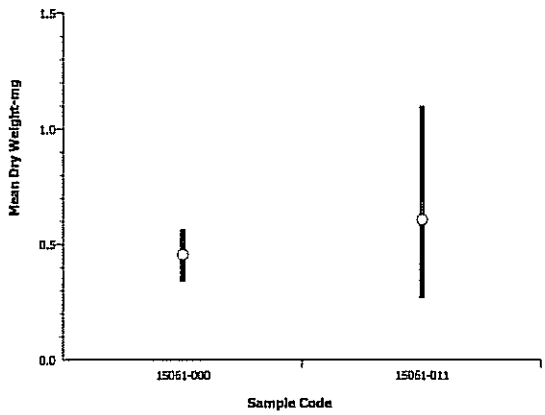
Data Summary

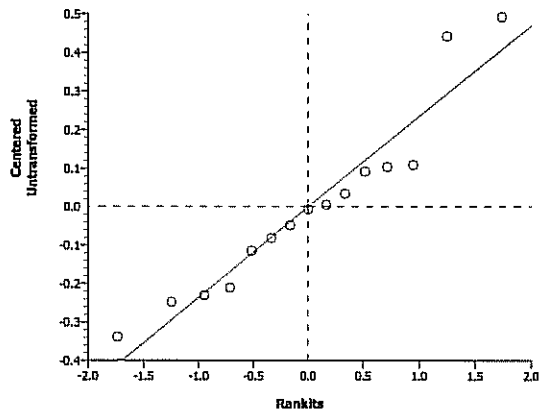
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.45595	0.34111	0.56454	0.08112				
15061-011	7	0.60788	0.27000	1.09999	0.34617				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
15061-011	1.05000	0.70000	1.09999	0.39714	0.27000	0.36000	0.37800			

Graphics





CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	07-2833-9332	07-2833-9332	07 Dec-06 9:22 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Unequal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	10.45478	8.88539	0.00615	Unequal Variances
Distribution	Shapiro-Wilk W	0.96595	0.84420	0.73519	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0456306	0.0456306	1	1.21	0.28974	Non-Significant Effect
Error	0.5276138	0.0376867	14			
Total	0.57324442	0.0833173	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
15061-000		15061-048	-1.1004	1.85955	0.8484	0.1805	Non-Significant Effect

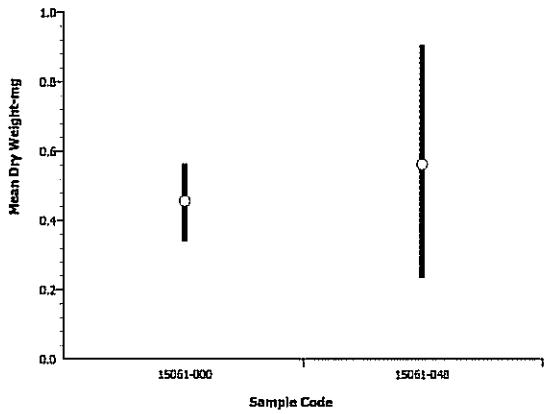
Data Summary

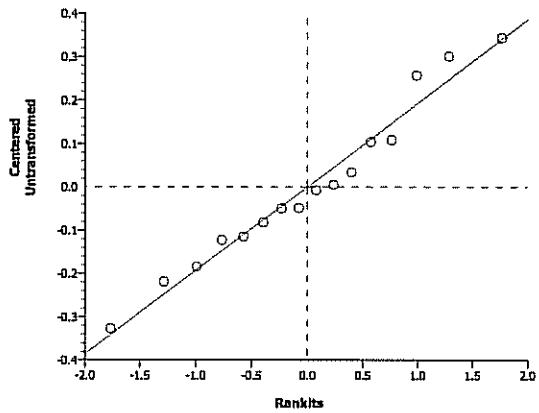
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
15061-000	8	0.45595	0.34111	0.56454	0.08112				
15061-048	8	0.56275	0.23571	0.90667	0.26228				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
15061-000	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
15061-048	0.82000	0.44000	0.90667	0.86400	0.51333	0.37857	0.34375	0.23571		

Graphics





CETIS Test Summary

Report Date: 01 Jan-07 10:01 PM
Link: 01-8786-0937

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	15-9826-1552	**Test Type:**	Survival-Growth	**Duration:**	28d 0h
Start Date:	08 Nov-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	06 Dec-06 12:00 PM	**Dil Water:**	50/50 Mix of Surface Water and MHR	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	08 Nov-06 12:00 PM	**Brine:**	Not Applicable		

Sample No:	04-1225-4609	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	01 Oct-06 04:40 PM	**Code:**	15061-001	**Project:**	Ecological Risk Assessment
Receive Date:	03 Oct-06 12:00 PM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	37d 19h	**Station:**	DLHTV1-DS-1; 15061-001		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
08-7262-8246	Mean Dry Weight-mg	10	50	22.361	19.67%	Dunnett's Multiple Comparison
11-9676-7947	Proportion Survived	10	50	22.361	17.20%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
15-6547-7755	Mean Dry Biomass-mg	50	78.71737	40.70372	N/A	Linear Interpolation
07-9671-5531	Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

Mean Dry Biomass-mg Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.38494	0.26200	0.56454	0.03622	0.10245	26.61%
10		8	0.37750	0.30600	0.49200	0.02413	0.06825	18.08%
50		8	0.20863	0.05600	0.39400	0.03742	0.10584	50.73%
100		8	0.18050	0.08900	0.25200	0.01818	0.05143	28.49%

Mean Dry Weight-mg Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.45595	0.34111	0.56454	0.02868	0.08112	17.79%
10		8	0.42965	0.30600	0.57500	0.03213	0.09088	21.15%
50		8	0.33841	0.23750	0.56286	0.03579	0.10124	29.92%
100		8	0.29335	0.22250	0.36000	0.01808	0.05115	17.44%

Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.83750	0.70000	1.00000	0.03750	0.10607	12.66%
10		8	0.88750	0.80000	1.00000	0.02950	0.08345	9.40%
50		8	0.60000	0.20000	0.90000	0.08018	0.22678	37.80%
100		8	0.61250	0.40000	0.80000	0.04795	0.13562	22.14%

CETIS Test Summary

Report Date: 01 Jan-07 10:01 PM
Link: 01-8786-0937

Mean Dry Biomass-mg Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	0.56454	0.34300	0.36900	0.40400	0.32600	0.26200	0.30700	0.50400
10		0.38300	0.49200	0.46000	0.35700	0.38300	0.30600	0.30600	0.33300
50		0.39400	0.24200	0.26800	0.15900	0.05600	0.22400	0.09500	0.23100
100		0.25200	0.24400	0.18100	0.18000	0.16500	0.15300	0.08900	0.18000

Mean Dry Weight-mg Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000
10		0.47875	0.49200	0.57500	0.39667	0.47875	0.30600	0.34000	0.37000
50		0.56286	0.26889	0.33500	0.31800	0.28000	0.32000	0.23750	0.38500
100		0.31500	0.34857	0.25857	0.36000	0.33000	0.25500	0.22250	0.25714

Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000
10		0.80000	1.00000	0.80000	0.90000	0.80000	1.00000	0.90000	0.90000
50		0.70000	0.90000	0.80000	0.50000	0.20000	0.70000	0.40000	0.60000
100		0.80000	0.70000	0.70000	0.50000	0.50000	0.60000	0.40000	0.70000

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	01-8786-0937	01-8786-0937	07 Dec-06 8:57 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Untransformed		10	50	10.00	22.361	19.67%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	3.01837	11.34487	0.38880	Equal Variances
Distribution	Shapiro-Wilk W	0.95897	0.90435	0.30492	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.1397565	0.0465855	3	6.73	0.00147	Significant Effect
Error	0.1939255	0.0069259	28			
Total	0.33368202	0.0535114	31			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	MSD	Decision(0.05)
Control Sed		10	0.63209	2.15571	> 0.0500	0.08970	Non-Significant Effect
		50	2.82478	2.15571	<= 0.0500	0.08970	Significant Effect
		100	3.9076	2.15571	<= 0.0500	0.08970	Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.08112				
10		8	0.42965	0.30600	0.57500	0.09088				
50		8	0.33841	0.23750	0.56286	0.10124				
100		8	0.29335	0.22250	0.36000	0.05115				

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
10		0.47875	0.49200	0.57500	0.39667	0.47875	0.30600	0.34000	0.37000		
50		0.56286	0.26889	0.33500	0.31800	0.28000	0.32000	0.23750	0.38500		
100		0.31500	0.34857	0.25857	0.36000	0.33000	0.25500	0.22250	0.25714		

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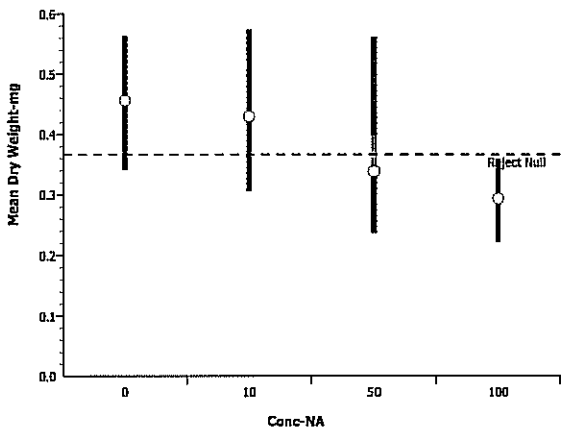

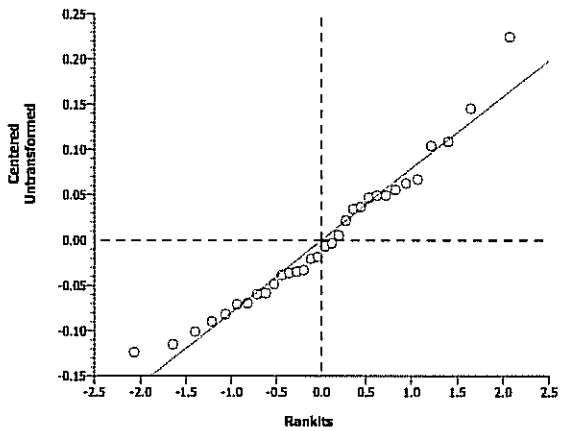

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	01-8786-0937	01-8786-0937	07 Dec-06 8:58 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		10	50	10.00	22.361	17.20%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	4.03634	11.34487	0.25757	Equal Variances
Distribution	Shapiro-Wilk W	0.97901	0.90435	0.80649	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.7605286	0.2535096	3	8.48	0.00036	Significant Effect
Error	0.836932	0.0298904	28			
Total	1.59746063	0.2834	31			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	MSD	Decision(0.05)
Control Sed		10	-0.7655	2.15571	> 0.0500	0.18635	Non-Significant Effect
		50	3.18827	2.15571	<= 0.0500	0.18635	Significant Effect
		100	3.09593	2.15571	<= 0.0500	0.18635	Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Control Sed	8	0.83750	0.70000	1.00000	0.10607	1.17040	0.99116	1.41946	0.14777
10		8	0.88750	0.80000	1.00000	0.08345	1.23658	1.10715	1.41202	0.12665
50		8	0.60000	0.20000	0.90000	0.22678	0.89479	0.46365	1.24905	0.24820
100		8	0.61250	0.40000	0.80000	0.13562	0.90278	0.68472	1.10715	0.14172

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control Sed	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000		
10		0.80000	1.00000	0.80000	0.90000	0.80000	1.00000	0.90000	0.90000		
50		0.70000	0.90000	0.80000	0.50000	0.20000	0.70000	0.40000	0.60000		
100		0.80000	0.70000	0.70000	0.50000	0.50000	0.60000	0.40000	0.70000		

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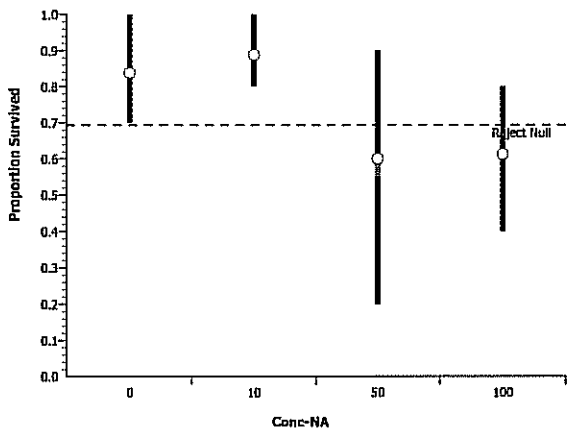

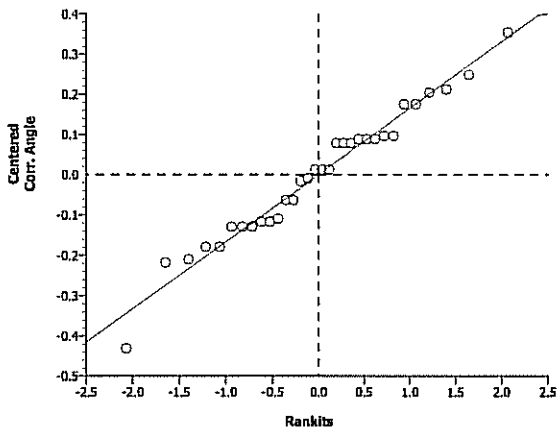

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Linear Interpolation	01-8786-0937	01-8786-0937	07 Dec-06 8:58 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	3019480	200	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Control Sed	8	0.83750	0.70000	1.00000	0.02165	0.10607	68	81
10		8	0.88750	0.80000	1.00000	0.01703	0.08345	71	80
50		8	0.60000	0.20000	0.90000	0.04629	0.22678	48	80
100		8	0.61250	0.40000	0.80000	0.02768	0.13562	49	80

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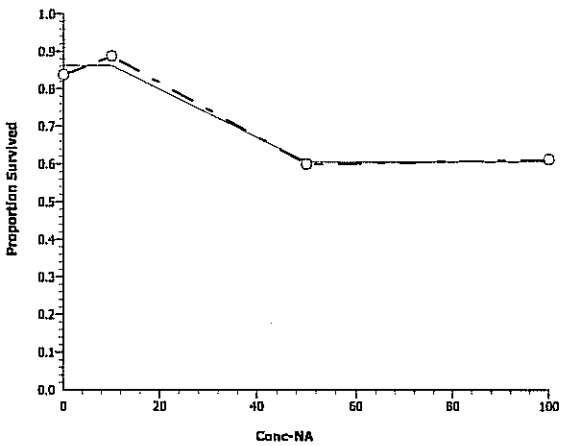

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Linear Interpolation	01-8786-0937	01-8786-0937	01 Jan-07 10:00 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7055475	200	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	78.71737	40.70372	N/A

Data Summary

			Calculated Variate				
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Control Sed	8	0.38494	0.26200	0.56454	0.02091	0.10245
10		8	0.37750	0.30600	0.49200	0.01393	0.06825
50		8	0.20863	0.05600	0.39400	0.02160	0.10584
100		8	0.18050	0.08900	0.25200	0.01050	0.05143

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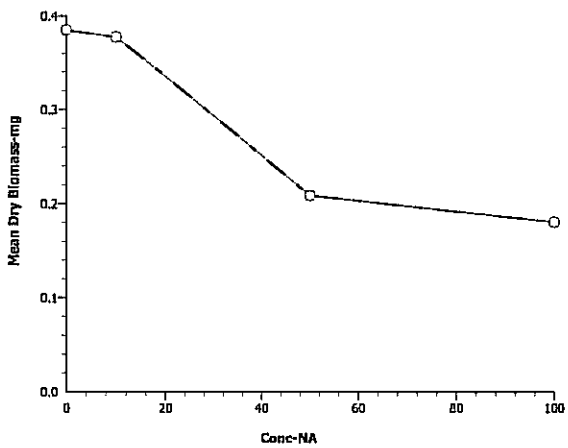

CETIS Test Summary

Report Date: 01 Jan-07 9:57 PM
Link: 16-4990-4311

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	15-9826-1552	Test Type:	Survival-Growth	Duration:	28d 0h
Start Date:	08 Nov-06 12:00 PM	Protocol:	EPA/600/R-99/064 (2000)	Species:	Hyalella azteca
Ending Date:	06 Dec-06 12:00 PM	Dil Water:	50/50 Mix of Surface Water and MHR	Source:	ARO - Aquatic Research Organisms, N
Setup Date:	08 Nov-06 12:00 PM	Brine:	Not Applicable		

Sample No:	10-2183-2337	Material:	Solid Sample - Sweeping	Client:	CH2M Hill
Sample Date:	03 Oct-06 12:00 PM	Code:	15061-004	Project:	Ecological Risk Assessment
Receive Date:	05 Oct-06 10:30 AM	Source:	Great Lakes Sweepings Characterizati		
Sample Age:	36d 0h	Station:	DHLCV1-DS-1; 15061-004		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
19-1859-8318	Mean Dry Weight-mg	< 10	10	N/A	51.30%	Bonferroni Adj Wilcoxon Rank Sum
10-5472-5819	Proportion Survived	< 10	10	N/A	15.35%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
16-7921-1556	Mean Dry Weight-mg	50	84.16985	38.71592	N/A	Linear Interpolation
05-2468-8467	Proportion Survived	50	15.66332	8.65038	22.88974	Linear Regression
17-1849-7198	Proportion Survived	50	16.06031	12.27613	21.01098	Trimmed Spearman-Karber

Mean Dry Weight-mg Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.45595	0.34111	0.56454	0.02868	0.08112	17.79%
10		8	0.29990	0.17333	0.38333	0.02643	0.07475	24.92%
50		8	0.40056	0.17000	1.12001	0.14774	0.36189	90.35%
100		8	0.17134	0.08000	0.25000	0.02790	0.06239	36.41%

Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.83750	0.70000	1.00000	0.03750	0.10607	12.66%
10		8	0.53750	0.30000	0.70000	0.04978	0.14079	26.19%
50		8	0.13750	0.00000	0.30000	0.03750	0.10607	77.14%
100		8	0.12500	0.00000	0.30000	0.04532	0.12817	102.54

Mean Dry Weight-mg Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000
10		0.33857	0.17333	0.25714	0.38333	0.23333	0.36750	0.36000	0.28600
50		0.39000	1.12001	0.31000	0.22333	N/A	N/A	0.17000	0.19000
100		0.08000	0.25000	0.18667	N/A	0.18999	N/A	0.15001	N/A

Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000
10		0.70000	0.60000	0.70000	0.60000	0.30000	0.40000	0.50000	0.50000
50		0.20000	0.10000	0.10000	0.30000	0.00000	0.00000	0.20000	0.20000
100		0.10000	0.30000	0.30000	0.00000	0.20000	0.00000	0.10000	0.00000

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	16-4990-4311	16-4990-4311	07 Dec-06 8:53 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Bonferroni Adj Wilcoxon Rank Sum	C > T	Untransformed		<10	10		N/A	51.30%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	23.46834	11.34487	0.00003	Unequal Variances
Distribution	Shapiro-Wilk W	0.72553	0.89369	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.2840593	0.0946864	3	2.88	0.05774	Non-Significant Effect
Error	0.7555628	0.0328506	23			
Total	1.0396221	0.127537	26			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Control Sed		10	40		0.0009	0	Significant Effect
		50	31		0.0406	0	Non-Significant Effect
		100	15		0.0008	0	Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.08112				
10		8	0.29990	0.17333	0.38333	0.07475				
50		6	0.40056	0.17000	1.12001	0.36189				
100		5	0.17134	0.08000	0.25000	0.06239				

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
10		0.33857	0.17333	0.25714	0.38333	0.23333	0.36750	0.36000	0.28600		
50		0.39000	1.12001	0.31000	0.22333	0.17000	0.19000				
100		0.08000	0.25000	0.18667	0.18999	0.15001					

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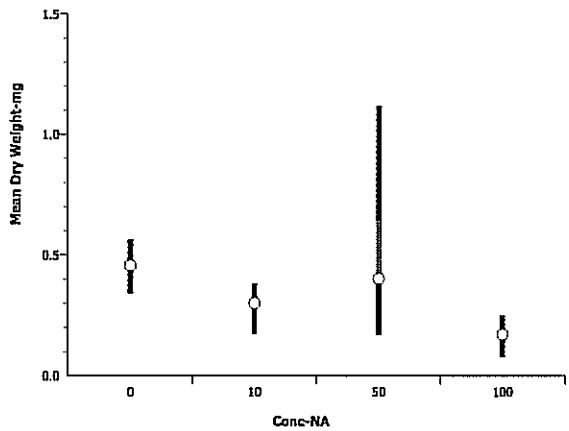

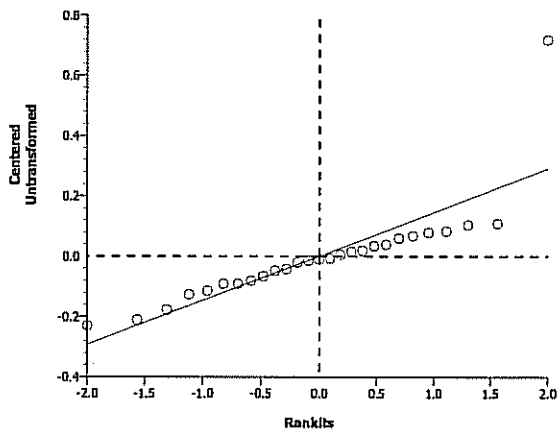

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Linear Interpolation	16-4990-4311	16-4990-4311	07 Dec-06 10:02 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	140176	200	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	84.16985	38.71592	N/A

Data Summary

			Calculated Variate				
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.01656	0.08112
10		8	0.29990	0.17333	0.38333	0.01526	0.07475
50		6	0.40056	0.17000	1.12001	0.07387	0.36189
100		5	0.17134	0.08000	0.25000	0.01273	0.06239

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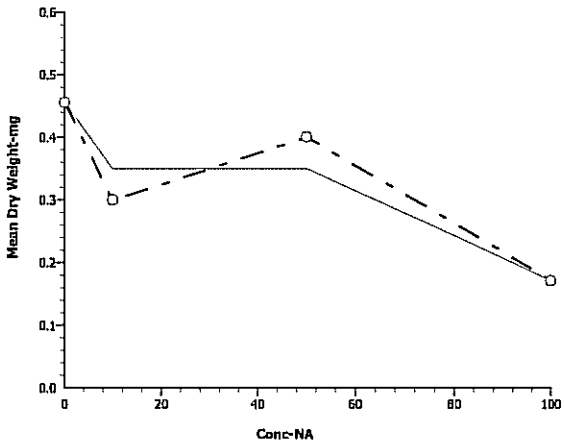


CETIS Test Summary

Report Date: 01 Jan-07 9:55 PM
Link: 14-3781-1834

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	15-9826-1552	**Test Type:**	Survival-Growth	**Duration:**	28d 0h
Start Date:	08 Nov-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	06 Dec-06 12:00 PM	**Dil Water:**	50/50 Mix of Surface Water and MHR	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	08 Nov-06 12:00 PM	**Brine:**	Not Applicable		

Sample No:	09-3432-1084	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	04 Oct-06 11:00 PM	**Code:**	15061-005	**Project:**	Ecological Risk Assessment
Receive Date:	07 Oct-06 11:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	34d 13h	**Station:**	DLHCV2-DS-1; 15061-005		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
15-7358-9217	Mean Dry Weight-mg	< 10	10	N/A	20.88%	Dunnett's Multiple Comparison
11-4785-2159	Proportion Survived	10	50	22.361	15.71%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
01-3248-0575	Mean Dry Weight-mg	50	> 100.00000	N/A	N/A	Linear Interpolation
19-1885-2910	Proportion Survived	50	55.97654	27.55598	113.70930	Trimmed Spearman-Karber

Mean Dry Weight-mg Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.45595	0.34111	0.56454	0.02868	0.08112	17.79%
10		8	0.30080	0.23111	0.38167	0.01886	0.05334	17.73%
50		8	0.27338	0.12400	0.42500	0.03237	0.09156	33.49%
100		8	0.30823	0.20750	0.58000	0.04093	0.11577	37.56%

Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.83750	0.70000	1.00000	0.03750	0.10607	12.66%
10		8	0.77500	0.60000	0.90000	0.04119	0.11650	15.03%
50		8	0.43750	0.30000	0.60000	0.03239	0.09161	20.94%
100		8	0.31250	0.10000	0.60000	0.07181	0.20310	64.99%

Mean Dry Weight-mg Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000
10		0.37286	0.30889	0.23111	0.25000	0.29667	0.28143	0.28375	0.38167
50		0.42500	0.30750	0.28800	0.21750	0.26333	0.21500	0.34666	0.12400
100		0.30500	0.23667	0.30000	0.20750	0.31500	0.26667	0.58000	0.25500

Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000
10		0.70000	0.90000	0.90000	0.70000	0.90000	0.70000	0.80000	0.60000
50		0.40000	0.40000	0.50000	0.40000	0.60000	0.40000	0.30000	0.50000
100		0.20000	0.30000	0.10000	0.40000	0.60000	0.60000	0.10000	0.20000

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	14-3781-1834	14-3781-1834	07 Dec-06 8:44 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Untransformed		<10	10		N/A	20.88%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	3.74262	11.34487	0.29063	Equal Variances
Distribution	Shapiro-Wilk W	0.93629	0.90435	0.07520	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.1624931	0.0541644	3	6.94	0.00123	Significant Effect
Error	0.2184716	0.0078026	28			
Total	0.3809647	0.0619669	31			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	MSD	Decision(0.05)
Control Sed		10	3.51291	2.15571	<= 0.0500	0.09521	Significant Effect
		50	4.13376	2.15571	<= 0.0500	0.09521	Significant Effect
		100	3.34457	2.15571	<= 0.0500	0.09521	Significant Effect

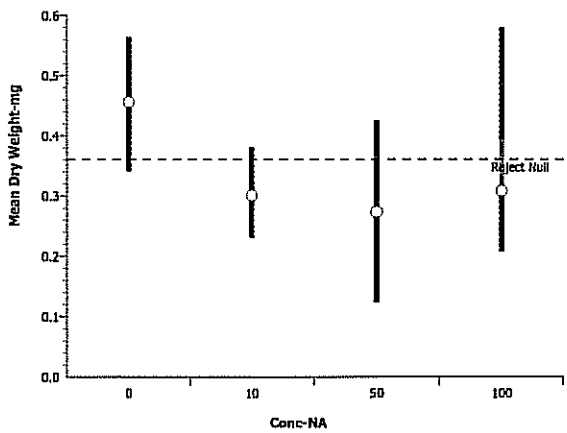
Data Summary

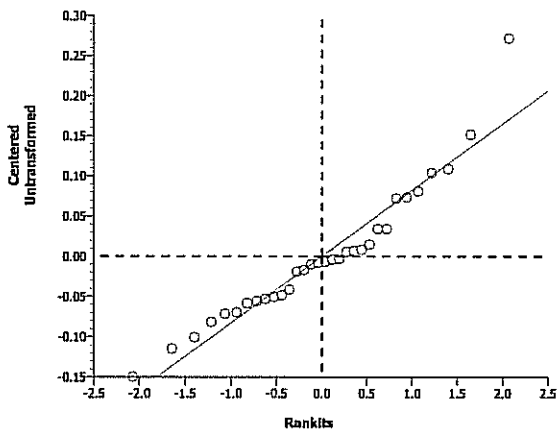
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.08112				
10		8	0.30080	0.23111	0.38167	0.05334				
50		8	0.27338	0.12400	0.42500	0.09156				
100		8	0.30823	0.20750	0.58000	0.11577				

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
10		0.37286	0.30889	0.23111	0.25000	0.29667	0.28143	0.28375	0.38167		
50		0.42500	0.30750	0.28800	0.21750	0.26333	0.21500	0.34666	0.12400		
100		0.30500	0.23667	0.30000	0.20750	0.31500	0.26667	0.58000	0.25500		

Graphics





CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Linear Interpolation	14-3781-1834	14-3781-1834	07 Dec-06 10:02 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	8144900	200	Yes	Two-Point Interpolation

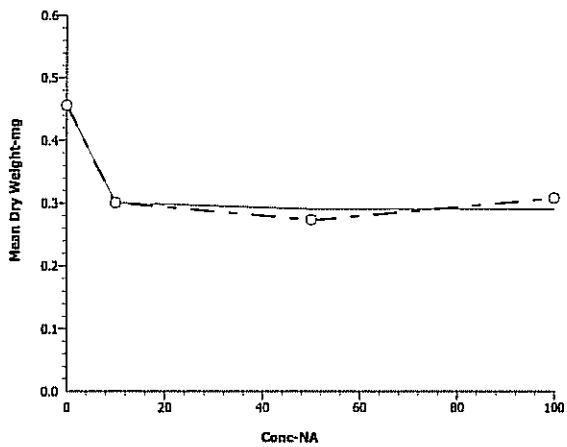
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate				
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.01656	0.08112
10		8	0.30080	0.23111	0.38167	0.01089	0.05334
50		8	0.27338	0.12400	0.42500	0.01869	0.09156
100		8	0.30823	0.20750	0.58000	0.02363	0.11577

Graphics



CETIS Test Summary

Report Date: 01 Jan-07 9:51 PM
Link: 01-5796-9669

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	15-9826-1552	**Test Type:**	Survival-Growth	**Duration:**	28d 0h
Start Date:	08 Nov-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	06 Dec-06 12:00 PM	**Dil Water:**	50/50 Mix of Surface Water and MHR	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	08 Nov-06 12:00 PM	**Brine:**	Not Applicable		

Sample No:	16-1815-3147	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	06 Oct-06 01:00 PM	**Code:**	15061-007	**Project:**	Ecological Risk Assessment
Receive Date:	07 Oct-06 11:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	32d 23h	**Station:**	CLECV3-DS-1; 15061-007		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
11-5257-8241	Mean Dry Weight-mg	< 10	10	N/A	22.51%	Bonferroni Adj t
11-5240-3010	Proportion Survived	10	50	22.361	25.72%	Bonferroni Adj t

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
03-2085-8453	Mean Dry Weight-mg	50	> 100.00000	N/A	N/A	Linear Interpolation
07-7755-4167	Proportion Survived	50	74.26479	56.08159	98.34348	Trimmed Spearman-Karber

Mean Dry Weight-mg Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.45595	0.34111	0.56454	0.02868	0.08112	17.79%
10		5	0.30112	0.24143	0.37571	0.02449	0.05477	18.19%
50		8	0.35932	0.22000	0.46167	0.03001	0.08488	23.62%
100		8	0.41433	0.31400	0.59999	0.04228	0.10357	25.00%

Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.83750	0.70000	1.00000	0.03750	0.10607	12.66%
10		5	0.76000	0.70000	0.90000	0.04000	0.08944	11.77%
50		8	0.51250	0.20000	0.70000	0.06665	0.18851	36.78%
100		8	0.35000	0.00000	0.80000	0.10522	0.29761	85.03%

Mean Dry Weight-mg Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000
10		0.24143	0.29000	0.33625	0.37571	0.26222			
50		0.41857	0.34334	0.36000	0.22000	0.38667	0.43000	0.25429	0.46167
100		0.36333	0.37000	0.37200	0.46666	0.31400	0.59999	N/A	N/A

Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000
10		0.70000	0.70000	0.80000	0.70000	0.90000			
50		0.70000	0.60000	0.60000	0.40000	0.30000	0.20000	0.70000	0.60000
100		0.60000	0.80000	0.50000	0.30000	0.50000	0.10000	0.00000	0.00000

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	01-5796-9669	01-5796-9669	07 Dec-06 8:41 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Bonferroni Adj t	C > T	Untransformed		<10	10		N/A	22.51%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	1.52941	11.34487	0.67550	Equal Variances
Distribution	Shapiro-Wilk W	0.98123	0.89369	0.88557	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0853622	0.0284541	3	4.04	0.01918	Significant Effect
Error	0.1621188	0.0070486	23			
Total	0.24748094	0.0355027	26			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	MSD	Decision(0.05)
Control Sed		10	3.23478	2.26373	0.0018	0.10835	Significant Effect
		50	2.30195	2.26373	0.0154	0.09503	Significant Effect
		100	0.91784	2.26373	0.1841	0.10264	Non-Significant Effect

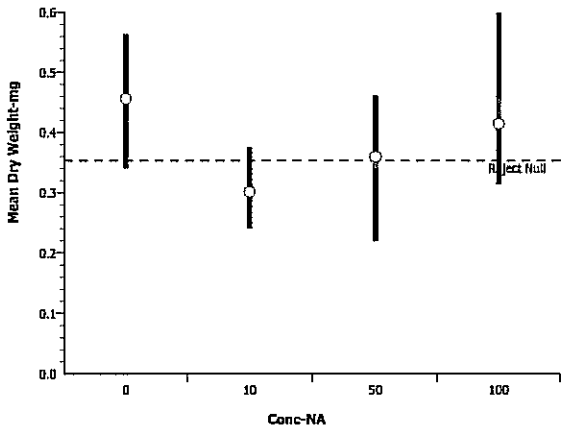
Data Summary

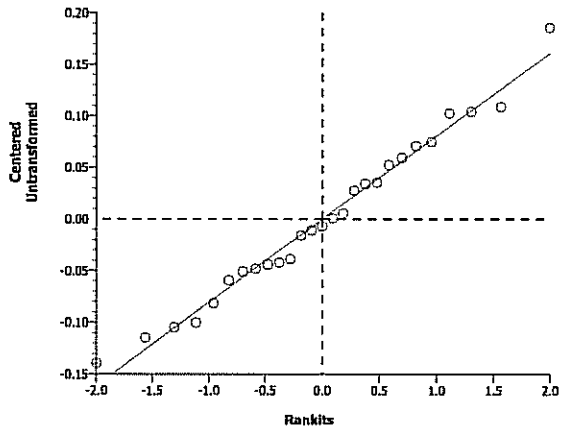
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.08112				
10		5	0.30112	0.24143	0.37571	0.05477				
50		8	0.35932	0.22000	0.46167	0.08488				
100		6	0.41433	0.31400	0.59999	0.10357				

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
10		0.24143	0.29000	0.33625	0.37571	0.26222					
50		0.41857	0.34334	0.36000	0.22000	0.38667	0.43000	0.25429	0.46167		
100		0.36333	0.37000	0.37200	0.46666	0.31400	0.59999				

Graphics





CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Linear Interpolation	01-5796-9669	01-5796-9669	07 Dec-06 10:03 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7090378	200	Yes	Two-Point Interpolation

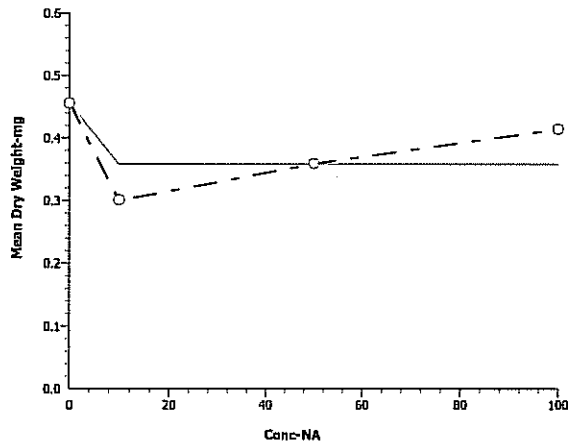
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate				
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.01656	0.08112
10		5	0.30112	0.24143	0.37571	0.01118	0.05477
50		8	0.35932	0.22000	0.46167	0.01733	0.08488
100		6	0.41433	0.31400	0.59999	0.02114	0.10357

Graphics



CETIS Test Summary

Report Date: 01 Jan-07 9:56 PM
Link: 05-3209-5676

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	15-9826-1552	**Test Type:**	Survival-Growth	**Duration:**	28d 0h
Start Date:	08 Nov-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	06 Dec-06 12:00 PM	**Dil Water:**	50/50 Mix of Surface Water and MHR	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	08 Nov-06 12:00 PM	**Brine:**	Not Applicable		

Sample No:	15-8347-4253	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	03 Oct-06 01:00 PM	**Code:**	15061-008	**Project:**	Ecological Risk Assessment
Receive Date:	09 Oct-06 09:45 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	35d 23h	**Station:**	DLHTV2-DS-1; 15061-008		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
10-5170-3707	Mean Dry Weight-mg	< 10	10	N/A	16.86%	Dunnett's Multiple Comparison
08-2166-4811	Proportion Survived	50	100	70.711	18.20%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
10-4238-4858	Mean Dry Weight-mg	50	> 100.00000	N/A	N/A	Linear Interpolation
12-9115-0187	Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

Mean Dry Weight-mg Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.45595	0.34111	0.56454	0.02868	0.08112	17.79%
10		8	0.25178	0.13833	0.32222	0.01981	0.05602	22.25%
50		8	0.25432	0.10143	0.37222	0.03005	0.08500	33.42%
100		8	0.32235	0.25000	0.40000	0.02064	0.05837	18.11%

Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.83750	0.70000	1.00000	0.03750	0.10607	12.66%
10		8	0.83750	0.60000	1.00000	0.05324	0.15059	17.98%
50		8	0.78750	0.60000	1.00000	0.04795	0.13562	17.22%
100		8	0.66250	0.40000	0.90000	0.06250	0.17678	26.68%

Mean Dry Weight-mg Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000
10		0.32222	0.25111	0.24300	0.30400	0.27714	0.13833	0.25286	0.22556
50		0.30143	0.27167	0.22556	0.30800	0.28000	0.17429	0.37222	0.10143
100		0.27125	0.30143	0.38000	0.38250	0.40000	0.25000	0.27143	0.32222

Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000
10		0.90000	0.90000	1.00000	1.00000	0.70000	0.60000	0.70000	0.90000
50		0.70000	0.60000	0.90000	1.00000	0.80000	0.70000	0.90000	0.70000
100		0.80000	0.70000	0.50000	0.40000	0.50000	0.80000	0.70000	0.90000

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	05-3209-5676	05-3209-5676	07 Dec-06 8:48 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Untransformed		<10	10		N/A	16.86%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	1.82402	11.34487	0.60972	Equal Variances
Distribution	Shapiro-Wilk W	0.97801	0.90435	0.77930	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.2195993	0.0731998	3	14.39	0.00001	Significant Effect
Error	0.1424477	0.0050874	28			
Total	0.36204696	0.0782872	31			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	MSD	Decision(0.05)
Control Sed		10	5.72494	2.15571	<= 0.0500	0.07688	Significant Effect
		50	5.65357	2.15571	<= 0.0500	0.07688	Significant Effect
		100	3.74601	2.15571	<= 0.0500	0.07688	Significant Effect

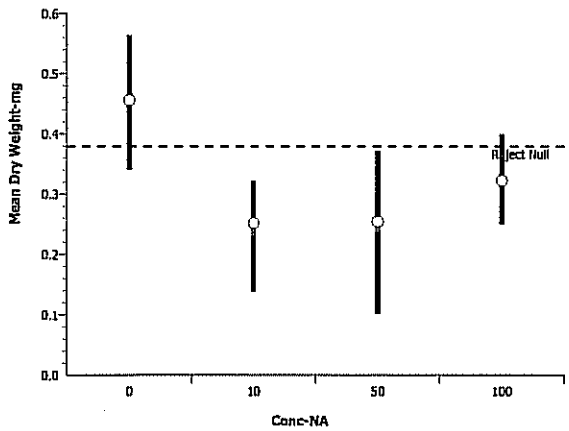
Data Summary

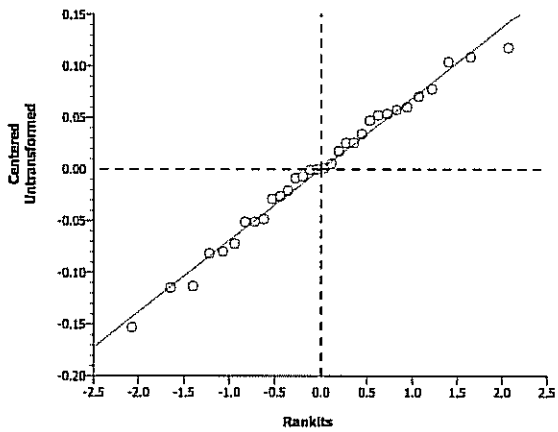
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.08112				
10		8	0.25178	0.13833	0.32222	0.05602				
50		8	0.25432	0.10143	0.37222	0.08500				
100		8	0.32235	0.25000	0.40000	0.05837				

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
10		0.32222	0.25111	0.24300	0.30400	0.27714	0.13833	0.25286	0.22556		
50		0.30143	0.27167	0.22556	0.30800	0.28000	0.17429	0.37222	0.10143		
100		0.27125	0.30143	0.38000	0.38250	0.40000	0.25000	0.27143	0.32222		

Graphics





CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Linear Interpolation	05-3209-5676	05-3209-5676	07 Dec-06 10:02 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7607235	200	Yes	Two-Point Interpolation

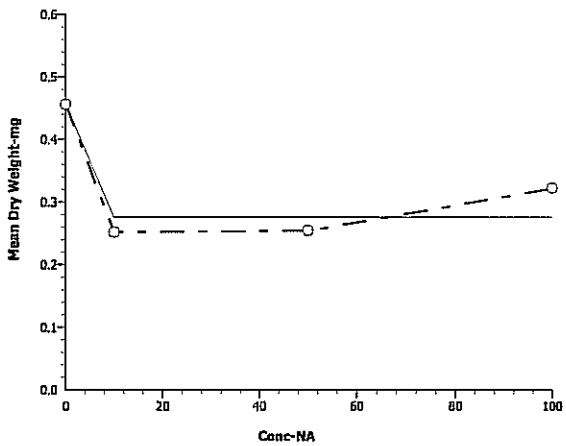
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate				
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.01656	0.08112
10		8	0.25178	0.13833	0.32222	0.01144	0.05602
50		8	0.25432	0.10143	0.37222	0.01735	0.08500
100		8	0.32235	0.25000	0.40000	0.01191	0.05837

Graphics



CETIS Test Summary

Report Date: 01 Jan-07 9:51 PM
Link: 10-5991-5647

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	15-9826-1552	**Test Type:**	Survival-Growth	**Duration:**	28d 0h
Start Date:	08 Nov-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	06 Dec-06 12:00 PM	**Dil Water:**	50/50 Mix of Surface Water and MHR	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	08 Nov-06 12:00 PM	**Brine:**	Not Applicable		

Sample No:	06-7315-6010	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	09 Oct-06 04:00 PM	**Code:**	15061-010	**Project:**	Ecological Risk Assessment
Receive Date:	11 Oct-06 10:00 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	29d 20h	**Station:**	CLECV4-DS-1; 15061-010		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
12-6076-5392	Mean Dry Biomass-mg	< 10	10	N/A	22.86%	Dunnett's Multiple Comparison
06-1774-2383	Proportion Survived	100	> 100	N/A	14.94%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
09-2407-0252	Mean Dry Weight-mg	50	> 100.00000	N/A	N/A	Linear Interpolation
01-4618-7188	Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

Mean Dry Biomass-mg Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.38494	0.26200	0.56454	0.03622	0.10245	26.61%
10		8	0.18612	0.11250	0.26200	0.01654	0.04678	25.13%
50		8	0.26950	0.15700	0.42200	0.03544	0.10025	37.20%
100		8	0.22138	0.09200	0.29100	0.02217	0.06272	28.33%

Mean Dry Weight-mg Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.45595	0.34111	0.56454	0.02868	0.08112	17.79%
10		8	0.20681	0.11842	0.27579	0.01810	0.05119	24.75%
50		8	0.33646	0.17444	0.46889	0.03443	0.09737	28.94%
100		8	0.27369	0.11500	0.41571	0.03307	0.09353	34.17%

Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.83750	0.70000	1.00000	0.03750	0.10607	12.66%
10		8	0.90625	0.70000	1.00000	0.03464	0.09797	10.81%
50		8	0.80000	0.50000	0.90000	0.05000	0.14142	17.68%
100		8	0.82500	0.70000	1.00000	0.03660	0.10351	12.55%

CETIS Test Summary

Report Date: 01 Jan-07 9:51 PM
Link: 10-5991-5647

Mean Dry Biomass-mg Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	0.56454	0.34300	0.36900	0.40400	0.32600	0.26200	0.30700	0.50400
10		0.22050	0.16000	0.16600	0.16550	0.26200	0.22350	0.11250	0.17900
50		0.15700	0.24400	0.16400	0.28300	0.42200	0.24200	0.41200	0.23200
100		0.16900	0.24900	0.24000	0.26100	0.09200	0.29100	0.22500	0.24400

Mean Dry Weight-mg Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000
10		0.25941	0.22857	0.16600	0.18389	0.27579	0.22350	0.11842	0.19889
50		0.17444	0.34857	0.32800	0.35375	0.46889	0.30250	0.45778	0.25778
100		0.18778	0.27667	0.34286	0.32625	0.11500	0.41571	0.28125	0.24400

Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000
10		0.85000	0.70000	1.00000	0.90000	0.95000	1.00000	0.95000	0.90000
50		0.90000	0.70000	0.50000	0.80000	0.90000	0.80000	0.90000	0.90000
100		0.90000	0.90000	0.70000	0.80000	0.80000	0.70000	0.80000	1.00000

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	10-5991-5647	10-5991-5647	07 Dec-06 8:34 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		100	>100	1.00	N/A	14.94%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	0.17811	11.34487	0.98104	Equal Variances
Distribution	Shapiro-Wilk W	0.96730	0.90435	0.48368	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.1188039	0.0396013	3	1.68	0.19475	Non-Significant Effect
Error	0.6615674	0.0236274	28			
Total	0.78037134	0.0632287	31			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	MSD	Decision(0.05)
Control Sed		10	-1.4755	2.15571	> 0.0500	0.16568	Non-Significant Effect
		50	0.61182	2.15571	> 0.0500	0.16568	Non-Significant Effect
		100	0.2429	2.15571	> 0.0500	0.16568	Non-Significant Effect

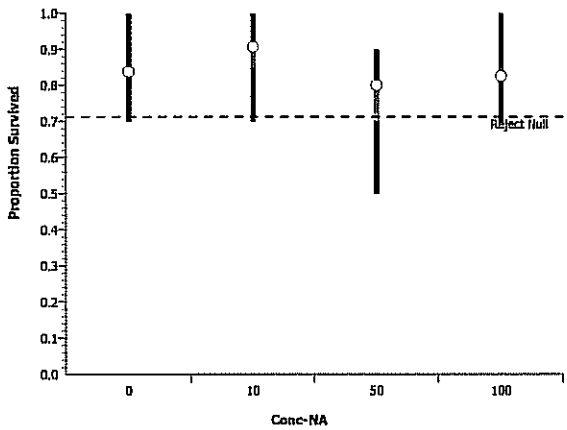
Data Summary

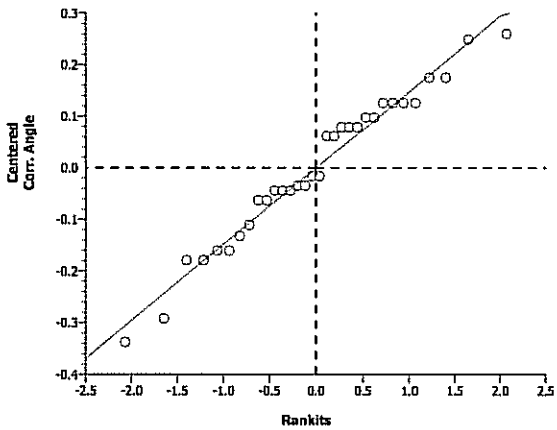
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Control Sed	8	0.83750	0.70000	1.00000	0.10607	1.17040	0.99116	1.41946	0.14777
10		8	0.90625	0.70000	1.00000	0.09797	1.28380	0.99116	1.45876	0.15542
50		8	0.80000	0.50000	0.90000	0.14142	1.12338	0.78540	1.24905	0.16708
100		8	0.82500	0.70000	1.00000	0.10351	1.15173	0.99116	1.41202	0.14354

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control Sed	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000		
10		0.85000	0.70000	1.00000	0.90000	0.95000	1.00000	0.95000	0.90000		
50		0.90000	0.70000	0.50000	0.80000	0.90000	0.80000	0.90000	0.90000		
100		0.90000	0.90000	0.70000	0.80000	0.80000	0.70000	0.80000	1.00000		

Graphics





CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	10-5991-5647	10-5991-5647	01 Jan-07 9:38 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Untransformed		<10	10		N/A	22.86%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	5.13551	11.34487	0.16214	Equal Variances
Distribution	Shapiro-Wilk W	0.95971	0.90435	0.31833	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.1802403	0.0600801	3	9.01	0.00024	Significant Effect
Error	0.18667	0.0066668	28			
Total	0.36691026	0.0667469	31			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	MSD	Decision(0.05)
Control Sed		10	4.86999	2.15571	<= 0.0500	0.08801	Significant Effect
		50	2.82774	2.15571	<= 0.0500	0.08801	Significant Effect
		100	4.00654	2.15571	<= 0.0500	0.08801	Significant Effect

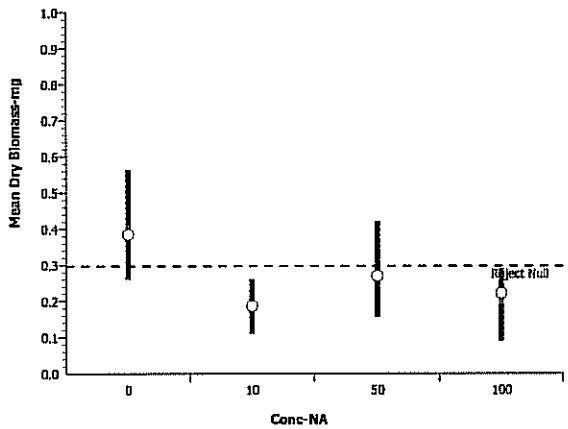
Data Summary

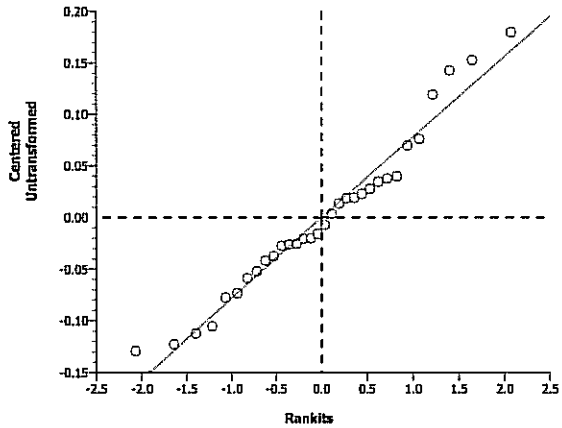
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Control Sed	8	0.38494	0.26200	0.56454	0.10245				
10		8	0.18612	0.11250	0.26200	0.04678				
50		8	0.26950	0.15700	0.42200	0.10025				
100		8	0.22138	0.09200	0.29100	0.06272				

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control Sed	0.56454	0.34300	0.36900	0.40400	0.32600	0.26200	0.30700	0.50400		
10		0.22050	0.16000	0.16600	0.16550	0.26200	0.22350	0.11250	0.17900		
50		0.15700	0.24400	0.16400	0.28300	0.42200	0.24200	0.41200	0.23200		
100		0.16900	0.24900	0.24000	0.26100	0.09200	0.29100	0.22500	0.24400		

Graphics





CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Linear Interpolation	10-5991-5647	10-5991-5647	07 Dec-06 8:34 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	5334240	200	Yes	Two-Point Interpolation

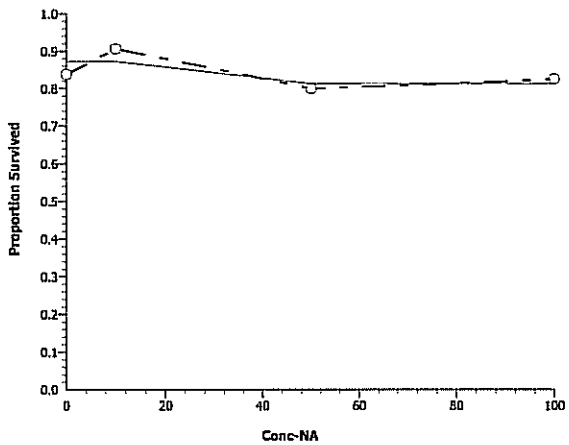
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate(A/B)						
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Control Sed	8	0.83750	0.70000	1.00000	0.02165	0.10607	68	81
10		8	0.90625	0.70000	1.00000	0.02000	0.09797	145	160
50		8	0.80000	0.50000	0.90000	0.02887	0.14142	64	80
100		8	0.82500	0.70000	1.00000	0.02113	0.10351	66	80

Graphics



CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Linear Interpolation	10-5991-5647	10-5991-5647	07 Dec-06 10:03 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	453527	200	Yes	Two-Point Interpolation

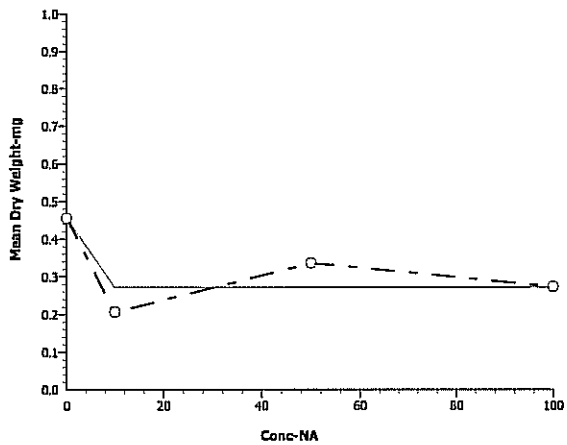
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate				
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.01656	0.08112
10		8	0.20681	0.11842	0.27579	0.01045	0.05119
50		8	0.33646	0.17444	0.46889	0.01988	0.09737
100		8	0.27369	0.11500	0.41571	0.01909	0.09353

Graphics



CETIS Test Summary

Report Date: 01 Jan-07 9:50 PM
Link: 02-6340-1021

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	15-9826-1552	**Test Type:**	Survival-Growth	**Duration:**	28d 0h
Start Date:	08 Nov-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	06 Dec-06 12:00 PM	**Dil Water:**	50/50 Mix of Surface Water and MHR	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	08 Nov-06 12:00 PM	**Brine:**	Not Applicable		

Sample No:	16-2334-8319	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	10 Oct-06 09:00 AM	**Code:**	15061-011	**Project:**	Ecological Risk Assessment
Receive Date:	11 Oct-06 10:00 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	29d 3h	**Station:**	CLELV1-DS-1; 15061-011		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
04-5480-3968	Mean Dry Weight-mg	100	> 100	N/A	47.91%	Bonferroni Adj Wilcoxon Rank Sum
12-7928-8770	Proportion Survived	10	50	22.361	27.23%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
05-7933-2723	Mean Dry Weight-mg	50	> 100.00000	N/A	N/A	Linear Interpolation
06-6499-4559	Proportion Survived	50	72.11619	62.82351	82.78342	Trimmed Spearman-Karber

Mean Dry Weight-mg Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.45595	0.34111	0.56454	0.02868	0.08112	17.79%
10		8	0.42968	0.33100	0.54714	0.02288	0.06472	15.06%
50		8	0.51702	0.37778	0.79333	0.05406	0.14303	27.67%
100		8	0.60788	0.27000	1.09999	0.13084	0.34617	56.95%

Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.83750	0.70000	1.00000	0.03750	0.10607	12.66%
10		8	0.85000	0.70000	1.00000	0.04226	0.11952	14.06%
50		8	0.58750	0.00000	0.90000	0.11090	0.31368	53.39%
100		8	0.27500	0.00000	0.70000	0.08183	0.23146	84.17%

Mean Dry Weight-mg Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000
10		0.40300	0.38778	0.39889	0.33100	0.54714	0.45714	0.46625	0.44625
50		0.49250	N/A	0.40111	0.79333	0.43571	0.59667	0.52200	0.37778
100		1.05000	0.70000	1.09999	0.39714	0.27000	N/A	0.36000	0.37800

Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000
10		1.00000	0.90000	0.90000	1.00000	0.70000	0.70000	0.80000	0.80000
50		0.80000	0.00000	0.90000	0.30000	0.70000	0.60000	0.50000	0.90000
100		0.20000	0.30000	0.10000	0.70000	0.30000	0.00000	0.10000	0.50000

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	02-6340-1021	02-6340-1021	07 Dec-06 8:30 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Bonferroni Adj Wilcoxon Rank Sum	C > T	Untransformed		100	>100	1.00	N/A	47.91%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	21.23089	11.34487	0.00009	Unequal Variances
Distribution	Shapiro-Wilk W	0.92023	0.89981	0.03384	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.1385144	0.0461715	3	1.31	0.29267	Non-Significant Effect
Error	0.9171196	0.0352738	26			
Total	1.05563399	0.0814453	29			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	Ties	Decision(0.05)
Control Sed		10	60		0.2209	0	Non-Significant Effect
		50	63		0.7683	0	Non-Significant Effect
		100	57		0.5225	0	Non-Significant Effect

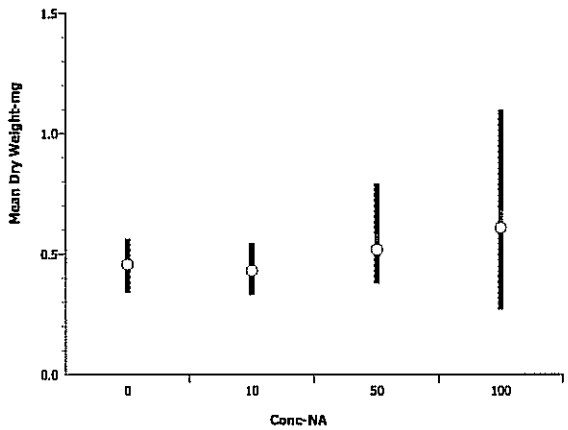
Data Summary

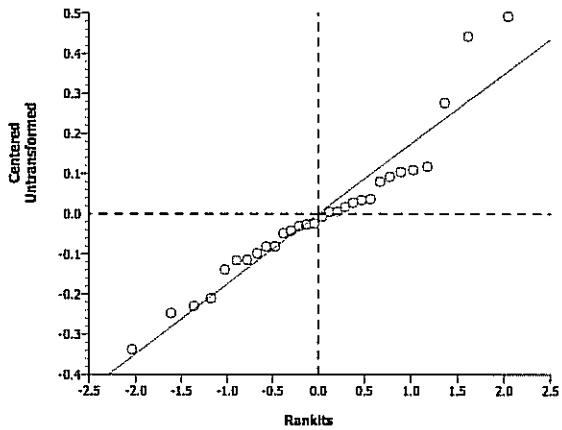
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.08112				
10		8	0.42968	0.33100	0.54714	0.06472				
50		7	0.51702	0.37778	0.79333	0.14303				
100		7	0.60788	0.27000	1.09999	0.34617				

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
10		0.40300	0.38778	0.39889	0.33100	0.54714	0.45714	0.46625	0.44625		
50		0.49250	0.40111	0.79333	0.43571	0.59667	0.52200	0.37778			
100		1.05000	0.70000	1.09999	0.39714	0.27000	0.36000	0.37800			

Graphics





CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Linear Interpolation	02-6340-1021	02-6340-1021	07 Dec-06 10:03 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	4140326	200	Yes	Two-Point Interpolation

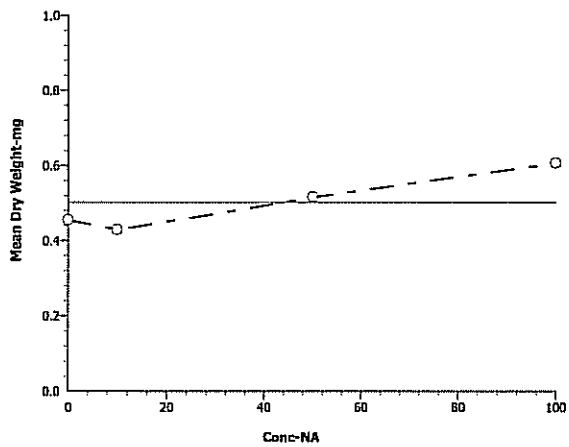
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate				
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.01656	0.08112
10		8	0.42968	0.33100	0.54714	0.01321	0.06472
50		7	0.51702	0.37778	0.79333	0.02920	0.14303
100		7	0.60788	0.27000	1.09999	0.07066	0.34617

Graphics



CETIS Test Summary

Report Date: 01 Jan-07 9:48 PM
Link: 17-1363-7558

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Test No:	15-9826-1552	**Test Type:**	Survival-Growth	**Duration:**	28d 0h
Start Date:	08 Nov-06 12:00 PM	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	06 Dec-06 12:00 PM	**Dil Water:**	50/50 Mix of Surface Water and MHR	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	08 Nov-06 12:00 PM	**Brine:**	Not Applicable		

Sample No:	00-8986-6754	**Material:**	Solid Sample - Sweeping	**Client:**	CH2M Hill
Sample Date:	27 Oct-06 10:00 AM	**Code:**	15061-048	**Project:**	Ecological Risk Assessment
Receive Date:	28 Oct-06 10:30 AM	**Source:**	Great Lakes Sweepings Characterizati		
Sample Age:	12d 2h	**Station:**	CLECV2-DS-1; 15161-048		

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
11-2125-0134	Mean Dry Weight-mg	100	> 100	N/A	55.48%	Dunnett's Multiple Comparison
11-6036-7017	Proportion Survived	< 10	10	N/A	19.58%	Dunnett's Multiple Comparison

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-NA	95% LCL	95% UCL	Method
04-7435-3585	Mean Dry Weight-mg	50	> 100.00000	N/A	N/A	Linear Interpolation
14-4456-2370	Mean Dry Weight-mg	50	> 100.00000	N/A	N/A	Linear Interpolation
14-0998-0831	Proportion Survived	50	> 100.00000	N/A	N/A	Linear Interpolation

Mean Dry Weight-mg Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.45595	0.34111	0.56454	0.02868	0.08112	17.79%
10		8	0.55350	0.36571	0.81000	0.06478	0.18322	33.10%
50		8	0.71223	0.34000	1.22800	0.11799	0.33373	46.86%
100		8	0.56275	0.23571	0.90667	0.09273	0.26228	46.61%

Proportion Survived Summary

Conc-NA	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Control Sed	8	0.83750	0.70000	1.00000	0.03750	0.10607	12.66%
10		8	0.60000	0.50000	0.80000	0.04226	0.11952	19.92%
50		8	0.50000	0.20000	0.80000	0.07792	0.22039	44.08%
100		8	0.60000	0.30000	0.90000	0.07792	0.22039	36.73%

Mean Dry Weight-mg Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000
10		0.67571	0.47125	0.80200	0.81000	0.36571	0.43333	0.49800	0.37200
50		0.44750	0.46000	0.50572	1.09000	0.34000	1.22800	0.94667	0.68000
100		0.82000	0.44000	0.90667	0.86400	0.51333	0.37857	0.34375	0.23571

Proportion Survived Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Control Sed	1.00000	0.70000	0.80000	0.90000	0.80000	0.70000	0.90000	0.90000
10		0.70000	0.80000	0.50000	0.50000	0.70000	0.60000	0.50000	0.50000
50		0.80000	0.70000	0.70000	0.30000	0.20000	0.50000	0.30000	0.50000
100		0.30000	0.90000	0.30000	0.50000	0.60000	0.70000	0.80000	0.70000

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	17-1363-7558	17-1363-7558	07 Dec-06 8:22 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Dunnett's Multiple Comparison	C > T	Untransformed		100	>100	1.00	N/A	55.48%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Bartlett	11.18828	11.34487	0.01075	Equal Variances
Distribution	Shapiro-Wilk W	0.95780	0.90435	0.28475	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.2684675	0.0894892	3	1.62	0.20600	Non-Significant Effect
Error	1.542221	0.0550793	28			
Total	1.81068853	0.1445685	31			

Group Comparisons

Control	vs	Conc-NA	Statistic	Critical	P Level	MSD	Decision(0.05)
Control Sed		10	-0.8313	2.15571	> 0.0500	0.25296	Non-Significant Effect
		50	-2.1840	2.15571	> 0.0500	0.25296	Non-Significant Effect
		100	-0.9102	2.15571	> 0.0500	0.25296	Non-Significant Effect

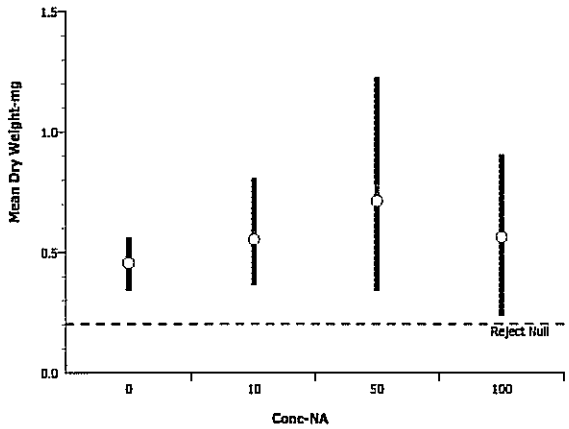
Data Summary

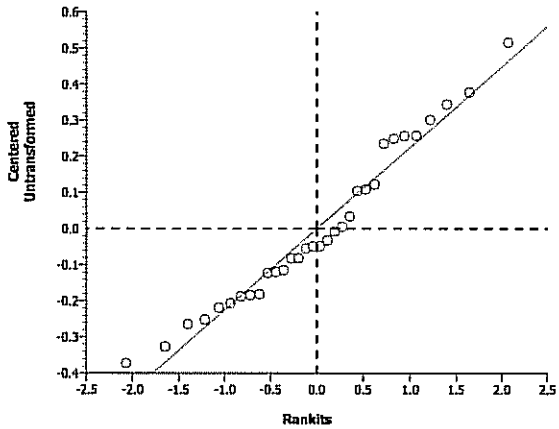
			Original Data				Transformed Data			
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.08112				
10		8	0.55350	0.36571	0.81000	0.18322				
50		8	0.71223	0.34000	1.22800	0.33373				
100		8	0.56275	0.23571	0.90667	0.26228				

Data Detail

Conc-NA	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control Sed	0.56454	0.49000	0.46125	0.44889	0.40750	0.37429	0.34111	0.56000		
10		0.67571	0.47125	0.80200	0.81000	0.36571	0.43333	0.49800	0.37200		
50		0.44750	0.46000	0.50572	1.09000	0.34000	1.22800	0.94667	0.68000		
100		0.82000	0.44000	0.90667	0.86400	0.51333	0.37857	0.34375	0.23571		

Graphics





CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Linear Interpolation	17-1363-7558	17-1363-7558	07 Dec-06 10:04 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	8626193	200	Yes	Two-Point Interpolation

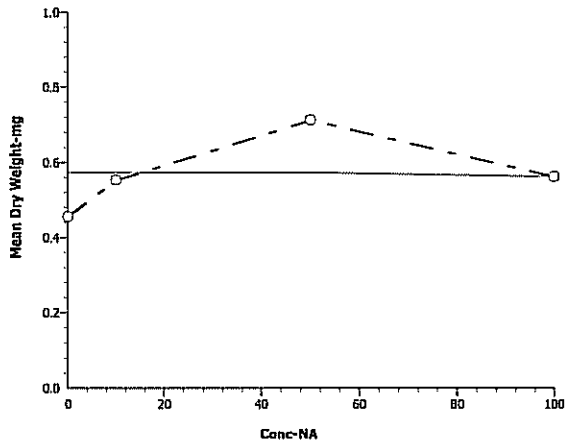
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate				
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.01656	0.08112
10		8	0.55350	0.36571	0.81000	0.03740	0.18322
50		8	0.71223	0.34000	1.22800	0.06812	0.33373
100		8	0.56275	0.23571	0.90667	0.05354	0.26228

Graphics



-048

CETIS Analysis Detail

Hyalella 28-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Linear Interpolation	17-1363-7558	17-1363-7558	07 Dec-06 8:22 PM	CETISv1.026

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Expanded CL	Method
Linear	Linear	7055475	200	Yes	Two-Point Interpolation

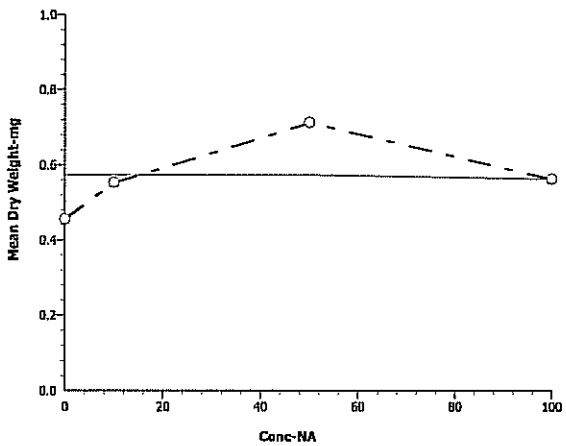
Point Estimates

% Effect	Conc-NA	95% LCL	95% UCL
50	> 100.00000	N/A	N/A

Data Summary

			Calculated Variate				
Conc-NA	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Control Sed	8	0.45595	0.34111	0.56454	0.01656	0.08112
10		8	0.55350	0.36571	0.81000	0.03740	0.18322
50		8	0.71223	0.34000	1.22800	0.06812	0.33373
100		8	0.56275	0.23571	0.90667	0.05354	0.26228

Graphics



STUDY: 15061
CLIENT: CH2M Hill
PROJECT: Great Lakes Sweepings
ASSAY: 28-day Hayalella azteca
TASK: Water Quality
PARAMETER: Alkalinity as CaCO3
METHOD: EPA 310.2

ID	LAB ID	RESULT	QUAL	QLIMIT	UNITS	SAMPLED	ANALYZED
MHR/POND Ha Day 00	15061-077	ND		10	mg/L	11/08/06	11/14/06
-000 Ha Day 00	15061-078	ND		10	mg/L	11/08/06	11/14/06
-001 10% Ha Day 00	15061-079	40		10	mg/L	11/08/06	11/22/06
-001 50% Ha Day 00	15061-080	33		10	mg/L	11/08/06	11/14/06
-001 100% Ha Day 00	15061-081	48		10	mg/L	11/08/06	11/14/06
-004 10% Ha Day 00	15061-082	ND		10	mg/L	11/08/06	11/22/06
-004 50% Ha Day 00	15061-083	16		10	mg/L	11/08/06	11/14/06
-004 100% Ha Day 00	15061-084	12		10	mg/L	11/08/06	11/14/06
-005 10% Ha Day 00	15061-085	ND		10	mg/L	11/08/06	11/14/06
-005 50% Ha Day 00	15061-086	30		10	mg/L	11/08/06	11/14/06
-005 100% Ha Day 00	15061-087	12		10	mg/L	11/08/06	11/14/06
-007 10% Ha Day 00	15061-088	ND		10	mg/L	11/08/06	11/14/06
-007 50% Ha Day 00	15061-089	15		10	mg/L	11/08/06	11/14/06
-007 100% Ha Day 00	15061-090	ND		10	mg/L	11/08/06	11/14/06
-008 10% Ha Day 00	15061-091	ND		10	mg/L	11/08/06	11/14/06
-008 50% Ha Day 00	15061-092	10		10	mg/L	11/08/06	11/14/06
-008 100% Ha Day 00	15061-093	ND		10	mg/L	11/08/06	11/14/06
-010 10% Ha Day 00	15061-094	ND		10	mg/L	11/08/06	11/22/06
-010 50% Ha Day 00	15061-095	15		10	mg/L	11/08/06	11/14/06
-010 100% Ha Day 00	15061-096	39		10	mg/L	11/08/06	11/14/06
-011 10% Ha Day 00	15061-097	31		10	mg/L	11/08/06	11/14/06
-011 50% Ha Day 00	15061-098	33		10	mg/L	11/08/06	11/14/06
-011 100% Ha Day 00	15061-099	31		10	mg/L	11/08/06	11/22/06
-048 10% Ha Day 00	15061-100	30		10	mg/L	11/08/06	11/14/06
-048 50% Ha Day 00	15061-101	36		10	mg/L	11/08/06	11/14/06
-048 100% Ha Day 00	15061-102	42		10	mg/L	11/08/06	11/22/06
MHR/POND Ha Day 07	15061-182	18		10	mg/L	11/15/06	11/28/06
-000 Ha Day 07	15061-183	13		10	mg/L	11/15/06	11/29/06
-001 10% Ha Day 07	15061-184	39		10	mg/L	11/15/06	11/28/06
-001 50% Ha Day 07	15061-185	47		10	mg/L	11/15/06	11/28/06
-001 100% Ha Day 07	15061-186	40		10	mg/L	11/15/06	11/28/06
-004 10% Ha Day 07	15061-187	22		10	mg/L	11/15/06	11/28/06
-004 50% Ha Day 07	15061-188	29		10	mg/L	11/15/06	11/28/06
-004 100% Ha Day 07	15061-189	30		10	mg/L	11/15/06	11/28/06
-005 10% Ha Day 07	15061-190	17		10	mg/L	11/15/06	11/28/06
-005 50% Ha Day 07	15061-191	25		10	mg/L	11/15/06	11/28/06
-005 100% Ha Day 07	15061-192	27		10	mg/L	11/15/06	11/28/06
-007 10% Ha Day 07	15061-193	14		10	mg/L	11/15/06	11/28/06
-007 50% Ha Day 07	15061-194	15		10	mg/L	11/15/06	11/28/06
-007 100% Ha Day 07	15061-195	13		10	mg/L	11/15/06	11/28/06
-008 10% Ha Day 07	15061-196	25		10	mg/L	11/15/06	11/28/06
-008 50% Ha Day 07	15061-197	41		10	mg/L	11/15/06	11/28/06
-008 100% Ha Day 07	15061-198	35		10	mg/L	11/15/06	11/28/06
-010 10% Ha Day 07	15061-199	21		10	mg/L	11/15/06	11/28/06
-010 50% Ha Day 07	15061-200	29		10	mg/L	11/15/06	11/28/06
-010 100% Ha Day 07	15061-201	35		10	mg/L	11/15/06	11/28/06
-011 10% Ha Day 07	15061-202	53		10	mg/L	11/15/06	11/28/06
-011 50% Ha Day 07	15061-203	39		10	mg/L	11/15/06	11/28/06
-011 100% Ha Day 07	15061-204	34		10	mg/L	11/15/06	11/28/06
-048 10% Ha Day 07	15061-205	57		10	mg/L	11/15/06	11/28/06
-048 50% Ha Day 07	15061-206	52		10	mg/L	11/15/06	11/28/06

-048 100% Ha Day 07	15061-207		40	10 mg/L	11/15/06	11/28/06
MHR/POND Ha Day 14	15061-269		11	10 mg/L	11/22/06	12/06/06
-000 Ha Day 14	15061-270		15	10 mg/L	11/22/06	12/06/06
-001 10% Ha Day 14	15061-271		11	10 mg/L	11/22/06	12/06/06
-001 50% Ha Day 14	15061-272		38	10 mg/L	11/22/06	11/29/06
-001 100% Ha Day 14	15061-273		45	10 mg/L	11/22/06	12/06/06
-004 10% Ha Day 14	15061-274		13	10 mg/L	11/22/06	11/29/06
-004 50% Ha Day 14	15061-275		21	10 mg/L	11/22/06	11/29/06
-004 100% Ha Day 14	15061-276		26	10 mg/L	11/22/06	11/29/06
-005 10% Ha Day 14	15061-277	ND		10 mg/L	11/22/06	11/29/06
-005 50% Ha Day 14	15061-278		18	10 mg/L	11/22/06	11/29/06
-005 100% Ha Day 14	15061-279		55	10 mg/L	11/22/06	12/06/06
-007 10% Ha Day 14	15061-280		12	10 mg/L	11/22/06	12/06/06
-007 50% Ha Day 14	15061-281	ND		10 mg/L	11/22/06	11/29/06
-007 100% Ha Day 14	15061-282	ND		10 mg/L	11/22/06	11/29/06
-008 10% Ha Day 14	15061-283		12	10 mg/L	11/22/06	11/29/06
-008 50% Ha Day 14	15061-284		26	10 mg/L	11/22/06	11/29/06
-008 100% Ha Day 14	15061-285		31	10 mg/L	11/22/06	11/29/06
-010 10% Ha Day 14	15061-286		14	10 mg/L	11/22/06	11/29/06
-010 50% Ha Day 14	15061-287		22	10 mg/L	11/22/06	12/06/06
-010 100% Ha Day 14	15061-288		24	10 mg/L	11/22/06	12/06/06
-011 10% Ha Day 14	15061-289		39	10 mg/L	11/22/06	11/29/06
-011 50% Ha Day 14	15061-290		40	10 mg/L	11/22/06	11/28/06
-011 100% Ha Day 14	15061-291		42	10 mg/L	11/22/06	11/29/06
-048 10% Ha Day 14	15061-292		53	10 mg/L	11/22/06	12/06/06
-048 50% Ha Day 14	15061-293		53	10 mg/L	11/22/06	12/06/06
-048 100% Ha Day 14	15061-294		41	10 mg/L	11/22/06	12/06/06
MHR/POND Ha Day 21	15061-347		24	10 mg/L	11/29/06	11/29/06
MHR/POND Ha Day 21	15061-347		22	10 mg/L	11/29/06	12/13/06
-000 Ha Day 21	15061-348		34	10 mg/L	11/29/06	11/29/06
-000 Ha Day 21	15061-348		14	10 mg/L	11/29/06	12/13/06
-001 10% Ha Day 21	15061-349		29	10 mg/L	11/29/06	12/13/06
-001 10% Ha Day 21	15061-349		78	10 mg/L	11/29/06	11/29/06
-001 50% Ha Day 21	15061-350		39	10 mg/L	11/29/06	12/06/06
-001 100% Ha Day 21	15061-351		39	10 mg/L	11/29/06	12/13/06
-004 10% Ha Day 21	15061-352		12	10 mg/L	11/29/06	12/13/06
-004 50% Ha Day 21	15061-353		20	10 mg/L	11/29/06	12/13/06
-004 100% Ha Day 21	15061-354		21	10 mg/L	11/29/06	12/13/06
-005 10% Ha Day 21	15061-355		12	10 mg/L	11/29/06	12/06/06
-005 50% Ha Day 21	15061-356		17	10 mg/L	11/29/06	12/06/06
-005 100% Ha Day 21	15061-357		20	10 mg/L	11/29/06	12/13/06
-007 10% Ha Day 21	15061-358		11	10 mg/L	11/29/06	12/06/06
-007 50% Ha Day 21	15061-359		11	10 mg/L	11/29/06	12/13/06
-007 100% Ha Day 21	15061-360	ND		10 mg/L	11/29/06	12/06/06
-008 10% Ha Day 21	15061-361		13	10 mg/L	11/29/06	12/13/06
-008 50% Ha Day 21	15061-362		35	10 mg/L	11/29/06	12/13/06
-008 100% Ha Day 21	15061-363		41	10 mg/L	11/29/06	12/13/06
-010 10% Ha Day 21	15061-364	ND		10 mg/L	11/29/06	12/13/06
-010 50% Ha Day 21	15061-365		21	10 mg/L	11/29/06	12/13/06
-010 100% Ha Day 21	15061-366		30	10 mg/L	11/29/06	12/13/06
-011 10% Ha Day 21	15061-367		65	10 mg/L	11/29/06	12/13/06
-011 50% Ha Day 21	15061-368		62	10 mg/L	11/29/06	12/13/06
-011 100% Ha Day 21	15061-369		44	10 mg/L	11/29/06	12/13/06
-048 10% Ha Day 21	15061-370		76	10 mg/L	11/29/06	12/13/06
-048 50% Ha Day 21	15061-371		74	10 mg/L	11/29/06	12/13/06
-048 100% Ha Day 21	15061-372		45	10 mg/L	11/29/06	12/13/06
MHR/POND Ha Day 28	15061-434	ND		10 mg/L	12/06/06	12/18/06
-000 Ha Day 28	15061-435		28	10 mg/L	12/06/06	12/18/06
-001 10% Ha Day 28	15061-436		59	10 mg/L	12/06/06	12/18/06
-001 50% Ha Day 28	15061-437		65	10 mg/L	12/06/06	12/18/06

-001 100% Ha Day 28	15061-438	67	10 mg/L	12/06/06	12/18/06
-004 10% Ha Day 28	15061-439	28	10 mg/L	12/06/06	12/18/06
-004 50% Ha Day 28	15061-440	32	10 mg/L	12/06/06	12/18/06
-004 100% Ha Day 28	15061-441	35	10 mg/L	12/06/06	12/13/06
-005 10% Ha Day 28	15061-442	29	10 mg/L	12/06/06	12/18/06
-005 50% Ha Day 28	15061-443	30	10 mg/L	12/06/06	12/18/06
-005 100% Ha Day 28	15061-444	33	10 mg/L	12/06/06	12/18/06
-007 10% Ha Day 28	15061-445	25	10 mg/L	12/06/06	12/18/06
-007 50% Ha Day 28	15061-446	17	10 mg/L	12/06/06	12/18/06
-007 100% Ha Day 28	15061-447	12	10 mg/L	12/06/06	12/18/06
-008 10% Ha Day 28	15061-448	61	10 mg/L	12/06/06	12/18/06
-008 50% Ha Day 28	15061-449	45	10 mg/L	12/06/06	12/18/06
-008 100% Ha Day 28	15061-450	46	10 mg/L	12/06/06	12/18/06
-010 10% Ha Day 28	15061-451	31	10 mg/L	12/06/06	12/18/06
-010 50% Ha Day 28	15061-452	33	10 mg/L	12/06/06	12/18/06
-010 100% Ha Day 28	15061-453	40	10 mg/L	12/06/06	12/18/06
-011 10% Ha Day 28	15061-454	79	10 mg/L	12/06/06	12/18/06
-011 50% Ha Day 28	15061-455	61	10 mg/L	12/06/06	12/18/06
-011 100% Ha Day 28	15061-456	51	10 mg/L	12/06/06	12/18/06
-048 10% Ha Day 28	15061-457	79	10 mg/L	12/06/06	12/18/06
-048 50% Ha Day 28	15061-458	76	10 mg/L	12/06/06	12/18/06
-048 100% Ha Day 28	15061-459	49	10 mg/L	12/06/06	12/18/06

STUDY: 15061
CLIENT: CH2M Hill
PROJECT: Great Lakes Sweepings
ASSAY: 28-day Hayalella azteca
TASK: Water Quality
PARAMETER: Ammonia-N
METHOD: SM 4500-NH3 G

ID	LAB ID	RESULT	QUAL	QLIMIT	UNITS	SAMPLED	ANALYZED
MHR/POND Ha Day 00	15061-129	0.16		0.1	mg/L as N	11/08/06	11/20/06
-000 Ha Day 00	15061-130	0.27		0.1	mg/L as N	11/08/06	11/20/06
-001 10% Ha Day 00	15061-131	1.4		0.1	mg/L as N	11/08/06	11/30/06
-001 50% Ha Day 00	15061-132	0.56		0.1	mg/L as N	11/08/06	11/21/06
-001 100% Ha Day 00	15061-133	0.13		0.1	mg/L as N	11/08/06	11/20/06
-004 10% Ha Day 00	15061-134	0.91		0.1	mg/L as N	11/08/06	11/20/06
-004 50% Ha Day 00	15061-135	0.29		0.1	mg/L as N	11/08/06	11/21/06
-004 100% Ha Day 00	15061-136	0.26		0.1	mg/L as N	11/08/06	11/21/06
-005 10% Ha Day 00	15061-137	0.65		0.1	mg/L as N	11/08/06	11/21/06
-005 50% Ha Day 00	15061-138	0.48		0.1	mg/L as N	11/08/06	11/30/06
-005 100% Ha Day 00	15061-139	ND		0.1	mg/L as N	11/08/06	11/21/06
-007 10% Ha Day 00	15061-140	0.8		0.1	mg/L as N	11/08/06	11/20/06
-007 50% Ha Day 00	15061-141	0.32		0.1	mg/L as N	11/08/06	11/21/06
-007 100% Ha Day 00	15061-142	0.14		0.1	mg/L as N	11/08/06	11/21/06
-008 10% Ha Day 00	15061-143	0.31		0.1	mg/L as N	11/08/06	11/30/06
-008 50% Ha Day 00	15061-144	0.51		0.1	mg/L as N	11/08/06	11/20/06
-008 100% Ha Day 00	15061-145	0.23		0.1	mg/L as N	11/08/06	12/02/06
-010 10% Ha Day 00	15061-146	0.71		0.1	mg/L as N	11/08/06	11/21/06
-010 50% Ha Day 00	15061-147	0.46		0.1	mg/L as N	11/08/06	11/21/06
-010 100% Ha Day 00	15061-148	0.33		0.1	mg/L as N	11/08/06	11/20/06
-011 10% Ha Day 00	15061-149	1.1		0.1	mg/L as N	11/08/06	11/20/06
-011 50% Ha Day 00	15061-150	0.64		0.1	mg/L as N	11/08/06	11/20/06
-011 100% Ha Day 00	15061-151	ND		0.1	mg/L as N	11/08/06	11/20/06
-048 10% Ha Day 00	15061-152	ND		0.1	mg/L as N	11/08/06	11/20/06
-048 50% Ha Day 00	15061-153	0.28		0.1	mg/L as N	11/08/06	11/30/06
-048 100% Ha Day 00	15061-154	0.27		0.1	mg/L as N	11/08/06	11/20/06
MHR/POND Ha Day 07	15061-234	0.12		0.1	mg/L as N	11/15/06	12/03/06
-000 Ha Day 07	15061-235	0.88		0.1	mg/L as N	11/15/06	12/03/06
-001 10% Ha Day 07	15061-236	1.2		0.1	mg/L as N	11/15/06	12/11/06
-001 50% Ha Day 07	15061-237	1.1		0.1	mg/L as N	11/15/06	12/11/06
-001 100% Ha Day 07	15061-238	0.53		0.1	mg/L as N	11/15/06	12/11/06
-004 10% Ha Day 07	15061-239	1.2		0.1	mg/L as N	11/15/06	12/03/06
-004 50% Ha Day 07	15061-240	0.82		0.1	mg/L as N	11/15/06	12/11/06
-004 100% Ha Day 07	15061-241	0.54		0.1	mg/L as N	11/15/06	12/11/06
-005 10% Ha Day 07	15061-242	1		0.1	mg/L as N	11/15/06	12/03/06
-005 50% Ha Day 07	15061-243	0.84		0.1	mg/L as N	11/15/06	12/03/06
-005 100% Ha Day 07	15061-244	0.65		0.1	mg/L as N	11/15/06	12/03/06
-007 10% Ha Day 07	15061-245	1.2		0.1	mg/L as N	11/15/06	12/03/06
-007 50% Ha Day 07	15061-246	0.69		0.1	mg/L as N	11/15/06	12/03/06
-007 100% Ha Day 07	15061-247	0.61		0.1	mg/L as N	11/15/06	12/03/06
-008 10% Ha Day 07	15061-248	1.1		0.1	mg/L as N	11/15/06	12/03/06
-008 50% Ha Day 07	15061-249	1		0.1	mg/L as N	11/15/06	12/11/06
-008 100% Ha Day 07	15061-250	0.76		0.1	mg/L as N	11/15/06	12/03/06
-010 10% Ha Day 07	15061-251	1.3		0.1	mg/L as N	11/15/06	12/11/06
-010 50% Ha Day 07	15061-252	0.95		0.1	mg/L as N	11/15/06	12/11/06
-010 100% Ha Day 07	15061-253	0.65		0.1	mg/L as N	11/15/06	12/11/06
-011 10% Ha Day 07	15061-254	1.1		0.1	mg/L as N	11/15/06	12/03/06
-011 50% Ha Day 07	15061-255	0.89		0.1	mg/L as N	11/15/06	12/03/06
-011 100% Ha Day 07	15061-256	0.59		0.1	mg/L as N	11/15/06	12/03/06
-048 10% Ha Day 07	15061-257	0.96		0.1	mg/L as N	11/15/06	12/11/06
-048 50% Ha Day 07	15061-258	0.87		0.1	mg/L as N	11/15/06	12/03/06

-048 100% Ha Day 07	15061-259		0.59	0.1	mg/L as N	11/15/06	12/02/06
-010 50% Ha Day 07	15061-339		0.8	0.1	mg/L as N	11/22/06	12/12/06
MHR/POND Ha Day 14	15061-321	ND		0.1	mg/L as N	11/22/06	12/20/06
-000 Ha Day 14	15061-322		0.72	0.1	mg/L as N	11/22/06	12/15/06
-001 10% Ha Day 14	15061-323		1.1	0.1	mg/L as N	11/22/06	12/15/06
-001 50% Ha Day 14	15061-324		1.1	0.1	mg/L as N	11/22/06	12/15/06
-001 100% Ha Day 14	15061-325		0.79	0.1	mg/L as N	11/22/06	12/15/06
-004 10% Ha Day 14	15061-326		1.1	0.1	mg/L as N	11/22/06	12/20/06
-004 50% Ha Day 14	15061-327		1	0.1	mg/L as N	11/22/06	12/15/06
-004 100% Ha Day 14	15061-328	ND		0.1	mg/L as N	11/22/06	12/19/06
-005 10% Ha Day 14	15061-329		0.92	0.1	mg/L as N	11/22/06	12/12/06
-005 50% Ha Day 14	15061-330		0.6	0.1	mg/L as N	11/22/06	12/12/06
-005 100% Ha Day 14	15061-331		0.48	0.1	mg/L as N	11/22/06	12/12/06
-007 10% Ha Day 14	15061-332		1	0.1	mg/L as N	11/22/06	12/20/06
-007 50% Ha Day 14	15061-333		0.92	0.1	mg/L as N	11/22/06	12/15/06
-007 100% Ha Day 14	15061-334		0.82	0.1	mg/L as N	11/22/06	12/19/06
-008 10% Ha Day 14	15061-335		0.38	0.1	mg/L as N	11/22/06	12/12/06
-008 50% Ha Day 14	15061-336		0.31	0.1	mg/L as N	11/22/06	12/12/06
-008 100% Ha Day 14	15061-337	ND		0.1	mg/L as N	11/22/06	12/15/06
-010 10% Ha Day 14	15061-338		2	0.1	mg/L as N	11/22/06	12/19/06
-010 100% Ha Day 14	15061-340		0.57	0.1	mg/L as N	11/22/06	12/20/06
-011 10% Ha Day 14	15061-341		0.73	0.1	mg/L as N	11/22/06	12/12/06
-011 50% Ha Day 14	15061-342		0.62	0.1	mg/L as N	11/22/06	12/15/06
-011 100% Ha Day 14	15061-343		0.36	0.1	mg/L as N	11/22/06	12/12/06
-048 10% Ha Day 14	15061-344	ND		0.1	mg/L as N	11/22/06	12/15/06
-048 50% Ha Day 14	15061-345		0.91	0.1	mg/L as N	11/22/06	12/15/06
-048 100% Ha Day 14	15061-346		0.13	0.1	mg/L as N	11/22/06	12/15/06
-005 10% Ha Day 21	15061-355		1.2	0.1	mg/L as N	11/29/06	12/20/06
MHR/POND Ha Day 21	15061-399		0.14	0.1	mg/L as N	11/29/06	12/21/06
-000 Ha Day 21	15061-400	ND		0.1	mg/L as N	11/29/06	12/21/06
-001 10% Ha Day 21	15061-401		0.18	0.1	mg/L as N	11/29/06	12/21/06
-001 50% Ha Day 21	15061-402	ND		0.1	mg/L as N	11/29/06	12/21/06
-001 100% Ha Day 21	15061-403		0.29	0.1	mg/L as N	11/29/06	12/21/06
-004 10% Ha Day 21	15061-404	ND		0.1	mg/L as N	11/29/06	12/21/06
-004 50% Ha Day 21	15061-405		0.16	0.1	mg/L as N	11/29/06	12/21/06
-004 100% Ha Day 21	15061-406		0.14	0.1	mg/L as N	11/29/06	12/21/06
-005 10% Ha Day 21	15061-407	ND		0.1	mg/L as N	11/29/06	12/21/06
-005 50% Ha Day 21	15061-408	ND		0.1	mg/L as N	11/29/06	12/21/06
-005 100% Ha Day 21	15061-409	ND		0.1	mg/L as N	11/29/06	12/21/06
-007 10% Ha Day 21	15061-410		0.4	0.1	mg/L as N	11/29/06	12/21/06
-007 50% Ha Day 21	15061-411		0.73	0.1	mg/L as N	11/29/06	12/21/06
-007 100% Ha Day 21	15061-412		1	0.1	mg/L as N	11/29/06	12/21/06
-008 10% Ha Day 21	15061-413	ND		0.1	mg/L as N	11/29/06	12/21/06
-008 50% Ha Day 21	15061-414	ND		0.1	mg/L as N	11/29/06	12/21/06
-008 100% Ha Day 21	15061-415	ND		0.1	mg/L as N	11/29/06	12/21/06
-010 10% Ha Day 21	15061-416		0.46	0.1	mg/L as N	11/29/06	12/20/06
-010 50% Ha Day 21	15061-417		0.1	0.1	mg/L as N	11/29/06	12/21/06
-010 100% Ha Day 21	15061-418	ND		0.1	mg/L as N	11/29/06	12/21/06
-011 10% Ha Day 21	15061-419	ND		0.1	mg/L as N	11/29/06	12/21/06
-011 50% Ha Day 21	15061-420	ND		0.1	mg/L as N	11/29/06	12/20/06
-011 100% Ha Day 21	15061-421	ND		0.1	mg/L as N	11/29/06	12/20/06
-048 10% Ha Day 21	15061-422		0.19	0.1	mg/L as N	11/29/06	12/21/06
-048 50% Ha Day 21	15061-423	ND		0.1	mg/L as N	11/29/06	12/21/06
-048 100% Ha Day 21	15061-424	ND		0.1	mg/L as N	11/29/06	12/21/06
MHR/POND Ha Day 28	15061-486	ND		0.1	mg/L as N	12/06/06	12/28/06
-000 Ha Day 28	15061-487	ND		0.1	mg/L as N	12/06/06	12/27/06
-001 10% Ha Day 28	15061-488	ND		0.1	mg/L as N	12/06/06	12/28/06
-001 50% Ha Day 28	15061-489	ND		0.1	mg/L as N	12/06/06	12/28/06
-001 100% Ha Day 28	15061-490	ND		0.1	mg/L as N	12/06/06	12/28/06
-004 10% Ha Day 28	15061-491	ND		0.1	mg/L as N	12/06/06	12/27/06

-004 50% Ha Day 28	15061-492	ND	0.1	mg/L as N	12/06/06	12/28/06
-004 100% Ha Day 28	15061-493	ND	0.1	mg/L as N	12/06/06	12/28/06
-005 10% Ha Day 28	15061-494	ND	0.1	mg/L as N	12/06/06	12/28/06
-005 50% Ha Day 28	15061-495	ND	0.1	mg/L as N	12/06/06	12/28/06
-005 100% Ha Day 28	15061-496	ND	0.1	mg/L as N	12/06/06	12/28/06
-007 10% Ha Day 28	15061-497	ND	0.1	mg/L as N	12/06/06	12/28/06
-007 50% Ha Day 28	15061-498	ND	0.1	mg/L as N	12/06/06	12/28/06
-007 100% Ha Day 28	15061-499	ND	0.1	mg/L as N	12/06/06	12/28/06
-008 10% Ha Day 28	15061-500	ND	0.1	mg/L as N	12/06/06	12/28/06
-008 50% Ha Day 28	15061-501	ND	0.1	mg/L as N	12/06/06	12/28/06
-008 100% Ha Day 28	15061-502	ND	0.1	mg/L as N	12/06/06	12/27/06
-010 10% Ha Day 28	15061-503	ND	0.1	mg/L as N	12/06/06	12/28/06
-010 50% Ha Day 28	15061-504	ND	0.1	mg/L as N	12/06/06	12/28/06
-010 100% Ha Day 28	15061-505	ND	0.1	mg/L as N	12/06/06	12/28/06
-011 10% Ha Day 28	15061-506	ND	0.1	mg/L as N	12/06/06	12/27/06
-011 50% Ha Day 28	15061-507	ND	0.1	mg/L as N	12/06/06	12/28/06
-011 100% Ha Day 28	15061-508	ND	0.1	mg/L as N	12/06/06	12/28/06
-048 10% Ha Day 28	15061-509	ND	0.1	mg/L as N	12/06/06	12/28/06
-048 50% Ha Day 28	15061-510	ND	0.1	mg/L as N	12/06/06	12/28/06
-048 100% Ha Day 28	15061-511	ND	0.1	mg/L as N	12/06/06	12/28/06

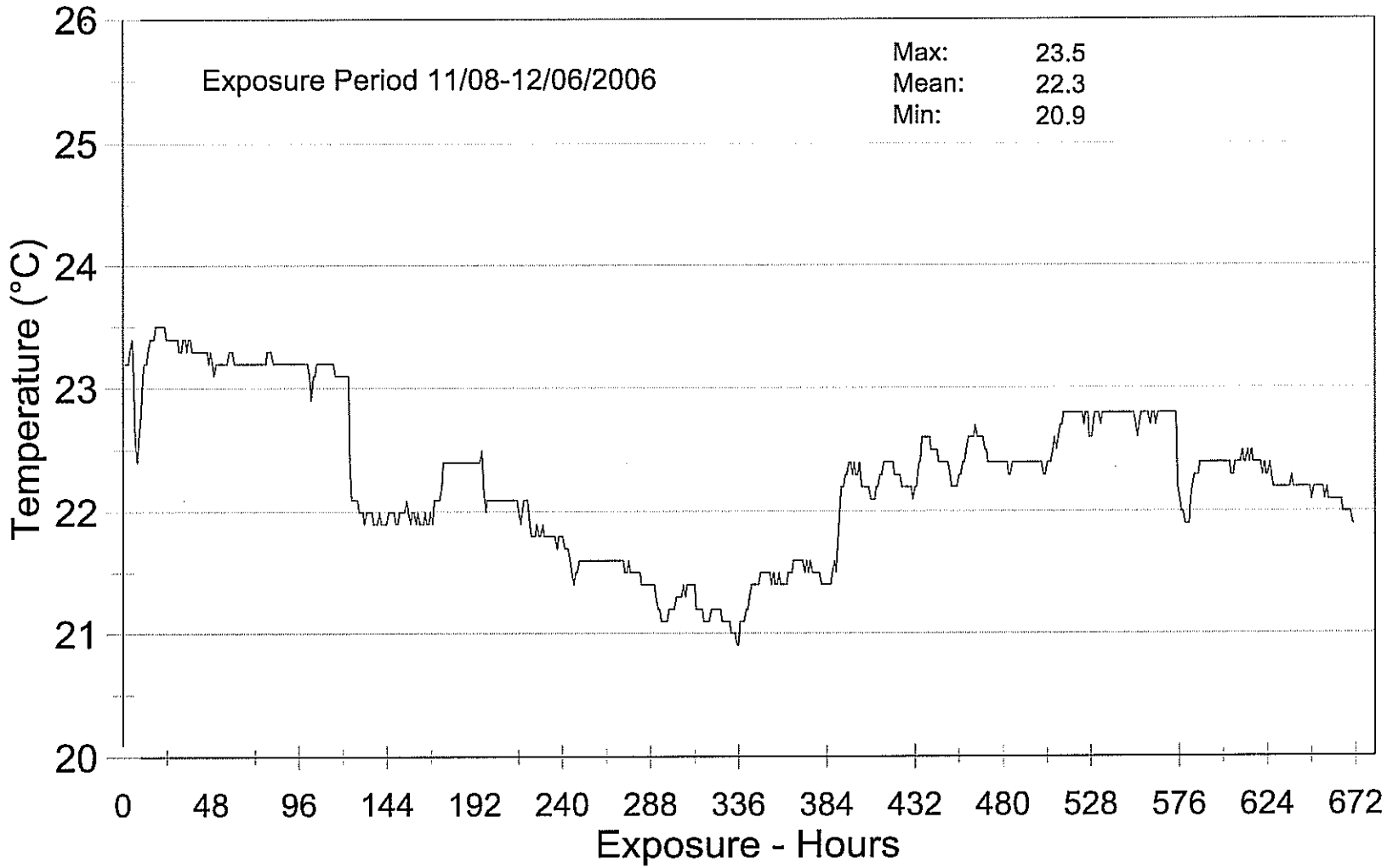
STUDY: 15061
CLIENT: CH2M Hill
PROJECT: Great Lakes Sweepings
ASSAY: 28-day Hayalella azteca
TASK: Water Quality
PARAMETER: Hardness as CaCO3
METHOD: 200.7 EPA 600/R-94/111

ID	LAB ID	RESULT	QUAL	QLIMIT	UNITS	SAMPLED	ANALYZED
MHR/POND Ha Day 00	15061-103	94		0.3	mg/L	11/08/06	11/13/06
-000 Ha Day 00	15061-104	77		0.3	mg/L	11/08/06	11/13/06
-001 10% Ha Day 00	15061-105	150		0.3	mg/L	11/08/06	11/13/06
-001 50% Ha Day 00	15061-106	180		0.3	mg/L	11/08/06	11/13/06
-001 100% Ha Day 00	15061-107	160		0.3	mg/L	11/08/06	11/13/06
-004 10% Ha Day 00	15061-108	89		0.3	mg/L	11/08/06	11/13/06
-004 50% Ha Day 00	15061-109	91		0.3	mg/L	11/08/06	11/13/06
-004 100% Ha Day 00	15061-110	87		0.3	mg/L	11/08/06	11/13/06
-005 10% Ha Day 00	15061-111	92		0.3	mg/L	11/08/06	11/13/06
-005 50% Ha Day 00	15061-112	78		0.3	mg/L	11/08/06	11/13/06
-005 100% Ha Day 00	15061-113	100		0.3	mg/L	11/08/06	11/13/06
-007 10% Ha Day 00	15061-114	86		0.3	mg/L	11/08/06	11/13/06
-007 50% Ha Day 00	15061-115	370		0.3	mg/L	11/08/06	11/13/06
-007 100% Ha Day 00	15061-116	520		0.3	mg/L	11/08/06	11/13/06
-008 10% Ha Day 00	15061-117	130		0.3	mg/L	11/08/06	11/13/06
-008 50% Ha Day 00	15061-118	120		0.3	mg/L	11/08/06	11/13/06
-008 100% Ha Day 00	15061-119	120		0.3	mg/L	11/08/06	11/13/06
-010 10% Ha Day 00	15061-120	77		0.3	mg/L	11/08/06	11/13/06
-010 50% Ha Day 00	15061-121	120		0.3	mg/L	11/08/06	11/13/06
-010 100% Ha Day 00	15061-122	630		0.3	mg/L	11/08/06	11/13/06
-011 10% Ha Day 00	15061-123	150		1	mg/L	11/08/06	11/29/06
-011 50% Ha Day 00	15061-124	200		1	mg/L	11/08/06	11/29/06
-011 100% Ha Day 00	15061-125	400		1	mg/L	11/08/06	11/29/06
-048 10% Ha Day 00	15061-126	270		1	mg/L	11/08/06	11/29/06
-048 50% Ha Day 00	15061-127	310		1	mg/L	11/08/06	11/29/06
-048 100% Ha Day 00	15061-128	470		1	mg/L	11/08/06	11/29/06
MHR/POND Ha Day 07	15061-208	74		0.3	mg/L	11/15/06	12/20/06
-000 Ha Day 07	15061-209	75		0.3	mg/L	11/15/06	12/11/06
-001 10% Ha Day 07	15061-210	99		0.3	mg/L	11/15/06	12/20/06
-001 50% Ha Day 07	15061-211	120		0.3	mg/L	11/15/06	12/11/06
-001 100% Ha Day 07	15061-212	100		0.3	mg/L	11/15/06	12/19/06
-004 10% Ha Day 07	15061-213	77		0.3	mg/L	11/15/06	12/19/06
-004 50% Ha Day 07	15061-214	76		0.3	mg/L	11/15/06	12/19/06
-004 100% Ha Day 07	15061-215	76		0.3	mg/L	11/15/06	12/20/06
-005 10% Ha Day 07	15061-216	72		0.3	mg/L	11/15/06	12/19/06
-005 50% Ha Day 07	15061-217	64		0.3	mg/L	11/15/06	12/20/06
-005 100% Ha Day 07	15061-218	67		0.3	mg/L	11/15/06	12/20/06
-007 10% Ha Day 07	15061-219	87		0.3	mg/L	11/15/06	12/11/06
-007 50% Ha Day 07	15061-220	100		0.3	mg/L	11/15/06	12/20/06
-007 100% Ha Day 07	15061-221	130		0.3	mg/L	11/15/06	12/19/06
-008 50% Ha Day 07	15061-223	97		0.3	mg/L	11/15/06	12/20/06
-008 100% Ha Day 07	15061-224	98		0.3	mg/L	11/15/06	12/19/06
-010 10% Ha Day 07	15061-225	83		0.3	mg/L	11/15/06	12/11/06
-010 50% Ha Day 07	15061-226	97		0.3	mg/L	11/15/06	12/11/06
-010 100% Ha Day 07	15061-227	110		0.3	mg/L	11/15/06	12/20/06
-011 10% Ha Day 07	15061-228	120		0.3	mg/L	11/15/06	12/11/06
-011 50% Ha Day 07	15061-229	120		0.3	mg/L	11/15/06	12/11/06
-011 100% Ha Day 07	15061-230	140		0.3	mg/L	11/15/06	12/11/06
-048 10% Ha Day 07	15061-231	110		0.3	mg/L	11/15/06	12/11/06
-048 50% Ha Day 07	15061-232	81		0.3	mg/L	11/15/06	12/20/06
-048 50% Ha Day 07	15061-232	120		0.3	mg/L	11/15/06	12/11/06

-048 100% Ha Day 07	15061-233	100	0.3	mg/L	11/15/06	12/19/06
-010 50% Ha Day 07	15061-313	84	0.3	mg/L	11/22/06	12/11/06
MHR/POND Ha Day 14	15061-295	78	0.3	mg/L	11/22/06	12/19/06
-000 Ha Day 14	15061-296	83	0.3	mg/L	11/22/06	12/11/06
-001 10% Ha Day 14	15061-297	100	0.3	mg/L	11/22/06	12/11/06
-001 50% Ha Day 14	15061-298	160	0.3	mg/L	11/22/06	12/11/06
-001 100% Ha Day 14	15061-299	110	0.3	mg/L	11/22/06	12/11/06
-004 10% Ha Day 14	15061-300	74	0.3	mg/L	11/22/06	12/20/06
-004 50% Ha Day 14	15061-301	72	0.3	mg/L	11/22/06	12/20/06
-004 100% Ha Day 14	15061-302	75	0.3	mg/L	11/22/06	12/11/06
-005 10% Ha Day 14	15061-303	66	0.3	mg/L	11/22/06	12/19/06
-005 50% Ha Day 14	15061-304	76	0.3	mg/L	11/22/06	12/11/06
-005 100% Ha Day 14	15061-305	59	0.3	mg/L	11/22/06	12/11/06
-007 10% Ha Day 14	15061-306	72	0.3	mg/L	11/22/06	12/20/06
-007 50% Ha Day 14	15061-307	85	0.3	mg/L	11/22/06	12/11/06
-007 100% Ha Day 14	15061-308	82	0.3	mg/L	11/22/06	12/20/06
-008 10% Ha Day 14	15061-309	80	0.3	mg/L	11/22/06	12/19/06
-008 50% Ha Day 14	15061-310	98	0.3	mg/L	11/22/06	12/19/06
-008 100% Ha Day 14	15061-311	94	0.3	mg/L	11/22/06	12/19/06
-010 10% Ha Day 14	15061-312	66	0.3	mg/L	11/22/06	12/19/06
-010 100% Ha Day 14	15061-314	83	0.3	mg/L	11/22/06	12/19/06
-011 10% Ha Day 14	15061-315	94	0.3	mg/L	11/22/06	12/20/06
-011 50% Ha Day 14	15061-316	100	0.3	mg/L	11/22/06	12/20/06
-011 100% Ha Day 14	15061-317	110	0.3	mg/L	11/22/06	12/19/06
-048 10% Ha Day 14	15061-318	110	0.3	mg/L	11/22/06	12/19/06
-048 50% Ha Day 14	15061-319	120	0.3	mg/L	11/22/06	12/19/06
-048 100% Ha Day 14	15061-320	110	0.3	mg/L	11/22/06	12/11/06
-001 100% Ha Day 21	15061-351	48	0.3	mg/L	11/29/06	12/19/06
-004 10% Ha Day 21	15061-352	87	0.3	mg/L	11/29/06	12/19/06
-001 10% Ha Day 21	15061-375	89	0.3	mg/L	11/29/06	12/01/06
-008 50% Ha Day 21	15061-388	100	0.3	mg/L	11/29/06	12/01/06
MHR/POND Ha Day 28	15061-460	75	0.3	mg/L	12/06/06	12/20/06
-000 Ha Day 28	15061-461	67	0.3	mg/L	12/06/06	12/20/06
-001 10% Ha Day 28	15061-462	100	0.3	mg/L	12/06/06	12/20/06
-001 50% Ha Day 28	15061-463	110	0.3	mg/L	12/06/06	12/20/06
-001 100% Ha Day 28	15061-464	120	0.3	mg/L	12/06/06	12/19/06
-004 10% Ha Day 28	15061-465	58	0.3	mg/L	12/06/06	12/19/06
-004 50% Ha Day 28	15061-466	62	0.3	mg/L	12/06/06	12/20/06
-004 100% Ha Day 28	15061-467	66	0.3	mg/L	12/06/06	12/20/06
-005 10% Ha Day 28	15061-468	62	0.3	mg/L	12/06/06	12/20/06
-005 50% Ha Day 28	15061-469	58	0.3	mg/L	12/06/06	12/19/06
-005 100% Ha Day 28	15061-470	64	0.3	mg/L	12/06/06	12/19/06
-007 10% Ha Day 28	15061-471	61	0.3	mg/L	12/06/06	12/20/06
-007 50% Ha Day 28	15061-472	60	0.3	mg/L	12/06/06	12/20/06
-007 100% Ha Day 28	15061-473	64	0.3	mg/L	12/06/06	12/20/06
-008 10% Ha Day 28	15061-474	66	0.3	mg/L	12/06/06	12/20/06
-008 50% Ha Day 28	15061-475	81	0.3	mg/L	12/06/06	12/20/06
-008 100% Ha Day 28	15061-476	100	0.3	mg/L	12/06/06	12/19/06
-010 10% Ha Day 28	15061-477	63	0.3	mg/L	12/06/06	12/20/06
-010 50% Ha Day 28	15061-478	70	0.3	mg/L	12/06/06	12/20/06
-010 100% Ha Day 28	15061-479	86	0.3	mg/L	12/06/06	12/20/06
-011 10% Ha Day 28	15061-480	110	0.3	mg/L	12/06/06	12/20/06
-011 50% Ha Day 28	15061-481	100	0.3	mg/L	12/06/06	12/20/06
-011 100% Ha Day 28	15061-482	90	0.3	mg/L	12/06/06	12/20/06
-048 10% Ha Day 28	15061-483	110	0.3	mg/L	12/06/06	12/20/06
-048 50% Ha Day 28	15061-484	90	0.3	mg/L	12/06/06	12/20/06
-048 100% Ha Day 28	15061-485	96	0.3	mg/L	12/06/06	12/20/06

Hyalella azteca 28-day Sediment Assay

Great Lakes Sweepings Characterization



Aquatic Research Organisms

DATA SHEET

I. Organism History

Species: Hyalella azteca

Source: Lab reared ✓ Hatchery reared ____ Field collected ____

Hatch date 11/01/06 Receipt date ____

Lot number 110106HA Strain ARO

Brood Origination USFWS MO

II. Water Quality

Temperature 23 °C Salinity — ppt DO 5qT

pH 7.2 Hardness ≈100 ppm

III. Culture Conditions

System: FW static renewal

Diet: Flake Food ✓ Phytoplankton ____ Trout Chow ✓

Brine Shrimp ____ Rotifers ____ Other ____

Prophylactic Treatments: ____

Comments: ____

IV. Shipping Information

Client: ESI # of Organisms: 2160 +

Carrier: Pick up Date Shipped: 11/8/06

Biologist: Stan Sinitski

1 - 800 - 927 - 1650

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ESI

EnviroSystems, Inc.
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Telephone: 603-926-3345

SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/3/06 TIME: 1200 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/3/06 TIME: 1200 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☑ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☑ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☑ YES	☐ NO
SAMPLE DATE:	☑ YES	☐ NO
SAMPLE TIME RECORDED:	☑ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☑ YES	☐ NO
CUSTODY SEAL IN PLACE:	☑ YES	☐ NO
SHIPPING CONTAINER INTACT:	☑ YES	☐ NO

SAMPLE TEMPERATURE (AT ARRIVAL): 15 °C

DOES CLIENT NEED NOTIFICATION OF TEMPERATURE? ☐ YES ☑ NO

SAMPLE ARRIVED ON ICE: ☐ YES ☑ NO Melted

COMMENTS: 1x 1g Solid DLHTV1-DS-1
1x 2.5g Water

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/5/06 TIME: 1030 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/5/06 TIME: 1145 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☒ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☒ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☒ YES	☐ NO
SAMPLE DATE:	☒ YES	☐ NO
SAMPLE TIME RECORDED:	☒ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☒ YES	☐ NO
CUSTODY SEAL IN PLACE:	☒ YES	☐ NO
SHIPPING CONTAINER INTACT:	☒ YES	☐ NO
SAMPLE TEMPERATURE (AT ARRIVAL): 4 °C		
DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?	☐ YES	☒ NO
SAMPLE ARRIVED ON ICE:	☒ YES	☐ NO

1 missing cooler! No Chain BB

COMMENTS: DLHCV1-LS-1 water
DLHCV1-DS-1 solid

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/7/08 TIME: 1130 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/7/08 TIME: 1130 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☒ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☒ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☒ YES	☐ NO
SAMPLE DATE:	☒ YES	☐ NO
SAMPLE TIME RECORDED:	☒ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☒ YES	☐ NO
CUSTODY SEAL IN PLACE:	☒ YES	☐ NO
SHIPPING CONTAINER INTACT:	☒ YES	☐ NO
SAMPLE TEMPERATURE (AT ARRIVAL): 4 °C		
DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?	☐ YES	☒ NO
SAMPLE ARRIVED ON ICE:	☒ YES	☐ NO

COMMENTS:
DLHCV2-DS-1 solid -005
DLHCV2-LS-1 water -006
CLECV3-DS-1 solid -007

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/9/06 TIME: 0945 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/9/06 TIME: 0945 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☑ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☑ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☑ YES	☐ NO
SAMPLE DATE:	☑ YES	☐ NO
SAMPLE TIME RECORDED:	☑ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☑ YES	☐ NO
CUSTODY SEAL IN PLACE:	☑ YES	☐ NO
SHIPPING CONTAINER INTACT:	☑ YES	☐ NO

SAMPLE TEMPERATURE (AT ARRIVAL): 17 °C

DOES CLIENT NEED NOTIFICATION OF TEMPERATURE? ☐ YES ☑ NO

SAMPLE ARRIVED ON ICE: ☐ YES ☑ NO Melted

COMMENTS:
DLHTV2-DS-1 Solid -008
DLHTV2-LS-1 Water -009

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/11/06 TIME: 1000 BY: BB

DELIVERED VIA: ☒ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/11/06 TIME: 1030 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☑ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☑ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☑ YES	☐ NO
SAMPLE DATE:	☑ YES	☐ NO
SAMPLE TIME RECORDED:	☑ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☑ YES	☐ NO
CUSTODY SEAL IN PLACE:	☑ YES	☐ NO
SHIPPING CONTAINER INTACT:	☑ YES	☐ NO

SAMPLE TEMPERATURE (AT ARRIVAL): 5 °C

DOES CLIENT NEED NOTIFICATION OF TEMPERATURE? ☐ YES ☑ NO

SAMPLE ARRIVED ON ICE: ☑ YES ☐ NO

COMMENTS:
CLECU1-DS-1 solid -011
CLECU1-LS-1 water -012
CLECU4-DS-1 solid -010

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SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 15061 **CLIENT:** CH2M Hill

SAMPLE RECEIPT:
DATE: 10/28/06 TIME: 1030 BY: EG

DELIVERED VIA: ☐ FEDEX ☐ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/30/06 TIME: 0900 BY: BB

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☑ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☑ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☑ YES	☐ NO
SAMPLE DATE:	☑ YES	☐ NO
SAMPLE TIME RECORDED:	☑ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☑ YES	☐ NO
CUSTODY SEAL IN PLACE:	☑ YES	☐ NO
SHIPPING CONTAINER INTACT:	☑ YES	☐ NO
SAMPLE TEMPERATURE (AT ARRIVAL): 4 °C		
DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?	☐ YES	☑ NO
SAMPLE ARRIVED ON ICE:	☑ YES	☐ NO

COMMENTS: CLELV2-DS-1 solid
CLELV2-LS-1 water

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FAX: 603-926-3521

ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2MHill	Contact: R. McMorris	Project Name: Cargo Sweep	Page 1 of 1
Report to:	Address:	Project Number:	
Invoice to: PARSON Brinkerhoff	Address:	Project Manager: E. Mosley	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com-posit (G/C)	Container Size (mL)	Container Type (P/G/T)	Field Preser-vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-001	DLHTV1-DS-1	10/1/06	1640	McMorris	C	4L	P	N/A	S	N	Per Quote ↓
-002	DLHTV1-LS-1	10/1/06	1440	McMorris	C	10L	P	N/A	W	N	

Relinquished By: J. Coffey	Date: 10/01/06 Time: 1840	Received By:	Date: 10/3/06 Time: 1200
Relinquished By:	Date: Time:	Received at Lab By:	Date: Time:

Comments:

Sample Delivery Group No: Page of

No: № 2104

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ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact: R. McMORRIS	Project Name: GREAT LAKES	Page 1 of 1
Report to:	Address:	Project Number:	
Invoice to: PARSON BRINKERHOFF	Address:	Project Manager:	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-004	DLHCV1-DS-1	10-3-06	0900	McMorris	C	4L	P	4°C	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-003	DLHCV1-LS-1	↓	↓	McMorris	C	10L	P	↓	W	N	48 HOUR PIMEPHALES/DAPHNIA
-008	DLHTV2-DS-1	↓	1300	McMorris	C	4L	P	↓	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-009	DLHTV2-LS-1	↓	↓	McMorris	C	10L	P	↓	W	N	48 HOUR PIMEPHALES/DAPHNIA

Relinquished By: Regan McMorris Date: 10-3-06 Time: 1500	Received By: Date: 10/9/06 Time: 0945
Relinquished By: Date: Time:	Received at Lab By: Date: Time:

Comments:

Sample Delivery Group No: Page 1 of 1

No: № 2106

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Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No: 15001

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact: R. McMORRIS	Project Name: GREAT LAKES	Page 1 of 1
Report to:	Address:	Project Number:	
Invoice to: PARSON BRINKERHOFF	Address:	Project Manager:	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com-posit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preser-vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-005	DLHCV2-DS-1	10-4-06	2300	RM	C	4L	P	4°C	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-006	DLHCV2-LS-1	↓	↓	↓	C	10L	P	↓	W	N	48 HOUR PIMEPHALES/DAPHN

Relinquished By: RICHARD McMORRIS	Date: 11-4-06	Time: 2350	Received By: [signature] Date: 10/7/06 Time: 1130
Relinquished By:	Date:	Time:	Received at Lab By: Date: Time:

Comments:

Sample Delivery Group No: Page of

No: № 2105

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Hampton, N.H. 03843

Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact:	Project Name: GREAT LAKES	Page 1 of 1
Report to: JOHN COFFEY/CH2M HILL	Address:	Project Number:	
Invoice to: PARSONS BRINCKERHOFF	Address:	Project Manager:	
Voice: R. MCMORRIS 541-740-4250	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-007	CLECV3-DS-1	10/6/06	1300	RM	C	4L	P	N/A	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS

Relinquished By: RYAN MCMORRIS Date: 10/6/06 Time: 1410 Received By: Date: 10/7/06 Time: 1130

Relinquished By: Date: Time: Received at Lab By: Date: Time:

Comments:

Sample Delivery Group No: Page of

No: № 2102

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Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact: Reagan McMorris	Project Name: GREAT LAKES	Page 1 of 1
Report to: JOHN COFFEY/CH2MHILL	Address: 541-740-4250	Project Number:	
Invoice to: PARSON BRINKERHOFF	Address:	Project Manager: ERIN MOSLEY	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-010	CLECY4-DS-1	10-9-06	16:00	RM	C	4L	P	N/A	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
RM	~~CLECY4-LS-1~~	~~10-9-06~~		~~RM~~	~~C~~	~~10L~~	~~P~~	~~N/A~~	~~W~~	~~N~~	~~48 HOUR PIMEPHALES/DAPHN~~

Relinquished By: [signature]	Date: 10/10/06 Time: 13:35	Received By: [signature]	Date: 10/11/06 Time: 1000
Relinquished By:	Date: Time:	Received at Lab By:	Date: Time:

Comments:

Sample Delivery Group No: Page of

No: № 2103

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EnviroSystems, Inc.
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Hampton, N.H. 03843
Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact: REGAN McMORRIS 541-740-4250	Project Name: GREAT LAKES	Page 1 of 1
Report to: JOHN COFFEY/CH2M HILL	Address:	Project Number:	
Invoice to: PARSON BRINKERHOFF	Address:	Project Manager: ERIN MOSLEY	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com-posit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preser-vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-011	CLELVI-DS-1	10/10/06	0900	RM	C	4L	P	N/A	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-012	CLELVI-LS-1	10/10/06	0700	RM	C	10L	P	N/A	W	N	48 HOUR PIMEPHALES/DAPHN

Relinquished By: [signature]	Date: 10/10/06 Time: 13:25	Received By: [signature]	Date: 10/11/06 Time: 1000
Relinquished By:	Date: Time:	Received at Lab By:	Date: Time:

Comments:

Sample Delivery Group No: Page of

No: № 2103

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Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No: 15061

CHAIN OF CUSTODY DOCUMENTATION

Client: CH2M HILL	Contact: REGAN MCMORRIS 541-740-4250	Project Name: GREAT LAKES	Page 1 of 1
Report to: JOHN COFFEY/CH2M HILL	Address:	Project Number:	
Invoice to: PARSON BRINKERHOFF	Address:	Project Manager: ERIN MOSLEY	
Voice:	Fax:	email:	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or composit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preservation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
-048	CLELV2-DS-1	10/27/06	10:00	RM	C	4L	P	N/A	S	N	28 DAY HYALELLA 20 DAY CHIRONOMUS
-049	CLELV2-LS-1	↓	07:00	RM	C	10L	P	N/A	S	N	48 HOUR PIMEPHALES/DAPHNIA

Relinquished By: Regan McMorris	Date: 10/27/06 Time: 1400	Received By: Fed Ex	Date: Time:
Relinquished By: Fed Ex	Date: Time:	Received at Lab By: [illegible]	Date: 10/28/06 Time: 1030

Comments:

Sample Delivery Group No: Page of

No: № 2103