



TOXICITY TESTING • OCEANOGRAPHIC RESEARCH

September 25th, 2009

Mr. Jim Rumbley
P.O. Box 1990
620 Laguna St.
Santa Barbara, CA 93102

Dear Mr. Rumbley:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms*, EPA/R-95/136. Results were as follows:

CLIENT:	City of Santa Barbara Creeks Division
SAMPLE I.D.:	MC Sediment
DATE RECEIVED:	August 27 th , 2009
ABC LAB. NO.:	STB0809.296

CHRONIC MYTILUS DEVELOPMENT BIOASSAY

NOEC = <100.00 %
TUc = >1.00

IC25 = >100.00 %
IC50 = >100.00 %

"% normal, scaled to control"
in parameter
scale
in assay db

Yours very truly,

Thomas (Tim) Mikel
Laboratory Director

90.0% ~~Survival~~ ^{normal}
(as a % of control) = nontoxic
for SQO

CETIS Summary Report

Report Date: 25 Sep-09 11:52 (p 1 of 1)
Test Code: 21-0082-1529/STB0809296

Mussel Shell Development Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	19-4258-6047	Test Type:	Development-Survival	Analyst:	
Start Date:	08 Sep-09 13:12	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Water
Ending Date:	10 Sep-09 13:00	Species:	Mytilus galloprovincialis	Brine:	
Duration:	48h	Source:	Carlsbad Aquafarms CA	Age:	
Sample ID:	17-9141-6583	Code:	STB0809296	Client:	City of Santa Barbara Creeks Division
Sample Date:	26 Aug-09 09:50	Material:	Sediment	Project:	Annual Sediment Sampling
Receive Date:	27 Aug-09 10:27	Source:	Bioassay Report		
Sample Age:	13d 3h (4 °C)	Station:	MC Sediment		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
03-9903-1186	Combined Proportion Norm	<100	100	N/A	3.46%	>1	Equal Variance t Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
12-2362-1743	Combined Proportion Norm	EC5	47.94	29.83	92.47	2.086	Linear Interpolation (ICPIN)
		EC10	95.87	59.66	N/A	1.043	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
03-9903-1186	Combined Proportion Norm	PMSD	0.03455	NL - 0.25	No	Result Within Limits

Combined Proportion Normal Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	5	0.9549	0.9469	0.963	0.9368	0.9921	0.003939	0.02158	2.26%	0.0%
100		5	0.8553	0.8391	0.8716	0.8103	0.9209	0.007931	0.04344	5.08%	10.43%

Combined Proportion Normal Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	0.9368	0.9526	0.9486	0.9447	0.9921
100		0.8103	0.8221	0.9209	0.8656	0.8577

90.0% Normal Survival as
a % of control

Scaled to control.
Sig. diff.

CETIS Measurement Report

Report Date: 25 Sep-09 11:52 (p 1 of 2)
Test Code: 21-0082-1529/STB0809296

Mussel Shell Development Test

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Batch ID:	19-4258-6047	Test Type:	Development-Survival	Analyst:	
Start Date:	08 Sep-09 13:12	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Water
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Sample ID:	17-9141-6583	Code:	STB0809296	Client:	City of Santa Barbara Creeks Division
Sample Date:	26 Aug-09 09:50	Material:	Sediment	Project:	Annual Sediment Sampling
Receive Date:	27 Aug-09 10:27	Source:	Bioassay Report		
Sample Age:	13d 3h (4 °C)	Station:	MC Sediment		

Dissolved Oxygen-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	2	7.95	7.4	8.5	6.8	9.1	0.2711	1.626	20.46%	0
100		2	8.8	8.561	9.039	8.3	9.3	0.1179	0.7071	8.04%	0
Overall		4	8.375			6.8	9.3				0 (0%)

Total Ammonia (N)-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	2	0	0	0	0	0	0	0		0
100		2	0	0	0	0	0	0	0		0
Overall		4	0			0	0				0 (0%)

pH-Units

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	2	7.9	7.899	7.901	7.9	7.9	0	0	0.0%	0
100		2	8.15	8.078	8.222	8	8.3	0.03535	0.2121	2.6%	0
Overall		4	8.025			7.9	8.3				0 (0%)

Salinity-ppt

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	2	34	34	34	34	34	0	0	0.0%	0
100		2	34	34	34	34	34	0	0	0.0%	0
Overall		4	34			34	34				0 (0%)

Temperature-°C

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	2	15.35	15.28	15.42	15.2	15.5	0.03536	0.2121	1.38%	0
100		2	15.3	15.25	15.35	15.2	15.4	0.02357	0.1414	0.92%	0
Overall		4	15.33			15.2	15.5				0 (0%)

CETIS Measurement Report

Report Date: 25 Sep-09 11:52 (p 2 of 2)
Test Code: 21-0082-1529/STB0809296

Mussel Shell Development Test

Aquatic Bioassay & Consulting Labs, Inc.

Dissolved Oxygen-mg/L

Conc-%	Control Type	1	2
0	Negative Contr	6.8	9.1
100		8.3	9.3

Total Ammonia (N)-mg/L

Conc-%	Control Type	1	2
0	Negative Contr	0	0
100		0	0

pH-Units

Conc-%	Control Type	1	2
0	Negative Contr	7.9	7.9
100		8.3	8

Salinity-ppt

Conc-%	Control Type	1	2
0	Negative Contr	34	34
100		34	34

Temperature-°C

Conc-%	Control Type	1	2
0	Negative Contr	15.5	15.2
100		15.4	15.2

CETIS Analytical Report

Report Date:

03 May-11 12:51 (p 1 of 2)

Test Code:

21-0082-1529/STB0809296

Mussel Shell Development Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 03-9903-1186	Endpoint: Combined Proportion Normal	CETIS Version: CETISv1.7.0
Analyzed: 25 Sep-09 11:51	Analysis: Parametric-Two Sample	Official Results: Yes
Batch ID: 19-4258-6047	Test Type: Development-Survival	Analyst:
Start Date: 08 Sep-09 13:12	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Water
Ending Date: 10 Sep-09 13:00	Species: Mytilus galloprovincialis	Brine:
Duration: 48h	Source: Carlsbad Aquafarms CA	Age:
Sample ID: 17-9141-6583	Code: STB0809296	Client: City of Santa Barbara Creeks Division
Sample Date: 26 Aug-09 09:50	Material: Sediment	Project: Annual Sediment Sampling
Receive Date: 27 Aug-09 10:27	Source: Bioassay Report	
Sample Age: 13d 3h (4 °C)	Station: MC Sediment	

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	<100	100	N/A	>1	3.46%

Equal Variance t Two-Sample Test

Control	vs Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Negative Control	100*	4.347	1.86	0.07737	0.0012	Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
PMSD	0.03455	NL - 0.25	No	Result Within Limits

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision
Extreme Value	Grubbs Single Outlier	1.882	2.29	0.3729	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.08176907	0.08176907	1	18.89	0.0025	Significant Effect
Error	0.03462526	0.004328158	8			
Total	0.1163943	0.08609723	9			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.045	23.15	0.9670	Equal Variances
Variances	Mod Levene Equality of Variance	0.08439	13.75	0.7812	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8369		0.0405	Normal Distribution
Distribution	Kolmogorov-Smirnov	0.2278	0.3025	0.1564	Normal Distribution
Distribution	D'Agostino Skewness	1.78	2.576	0.0750	Normal Distribution

Combined Proportion Normal Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Control	5	0.9549	0.9467	0.9631	0.9368	0.9921	0.004007	0.02158	2.26%	0.0%
100		5	0.8553	0.8388	0.8719	0.8103	0.9209	0.008067	0.04344	5.08%	10.43%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Negative Contr	5	1.365	1.34	1.39	1.317	1.482	0.01235	0.06651	4.87%	0.0%
100		5	1.184	1.159	1.209	1.12	1.286	0.01208	0.06506	5.49%	13.25%

CETIS Analytical Report

Report Date: 03 May-11 12:51 (p 2 of 2)
Test Code: 21-0082-1529/STB0809296

Mussel Shell Development Test

Aquatic Bioassay & Consulting Labs, Inc.

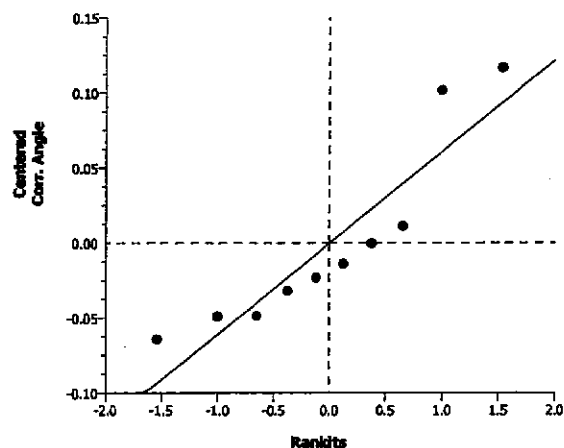
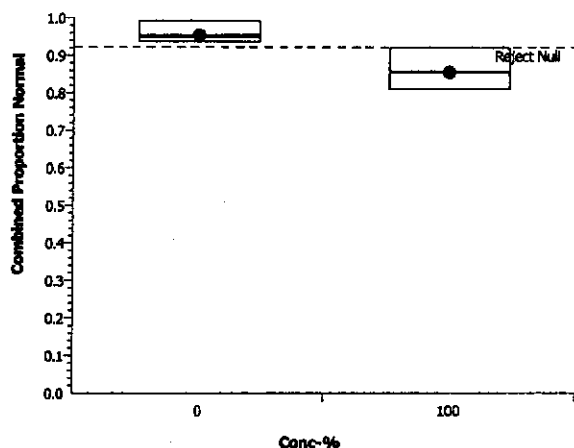
Analysis ID: 03-9903-1186 Endpoint: Combined Proportion Normal
Analyzed: 25 Sep-09 11:51 Analysis: Parametric-Two Sample

CETIS Version: CETISv1.7.0
Official Results: Yes

Combined Proportion Normal Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	0.9368	0.9526	0.9486	0.9447	0.9921
100		0.8103	0.8221	0.9209	0.8656	0.8577

Graphics



CETIS Analytical Report

Report Date: 03 May-11 12:51 (p 1 of 1)
Test Code: 21-0082-1529/STB0809296

Mussel Shell Development Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-2362-1743	Endpoint: Combined Proportion Normal	CETIS Version: CETISv1.7.0
Analyzed: 25 Sep-09 11:51	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 19-4258-6047	Test Type: Development-Survival	Analyst:
Start Date: 08 Sep-09 13:12	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Water
Ending Date: 10 Sep-09 13:00	Species: Mytilus galloprovincialis	Brine:
Duration: 48h	Source: Carlsbad Aquafarms CA	Age:
Sample ID: 17-9141-6583	Code: STB0809296	Client: City of Santa Barbara Creeks Division
Sample Date: 26 Aug-09 09:50	Material: Sediment	Project: Annual Sediment Sampling
Receive Date: 27 Aug-09 10:27	Source: Bioassay Report	
Sample Age: 13d 3h (4 °C)	Station: MC Sediment	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2895625	280	Yes	Two-Point Interpolation

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(5%)
Extreme Value	Grubbs Extreme Value	1.862	2.29	0.3729	No Outliers Detected

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	47.94	29.83	92.47	2.086	1.081	3.352
EC10	95.87	59.66	N/A	1.043	N/A	1.676
EC15	>100	N/A	N/A	<1	N/A	N/A
EC20	>100	N/A	N/A	<1	N/A	N/A
EC25	>100	N/A	N/A	<1	N/A	N/A
EC40	>100	N/A	N/A	<1	N/A	N/A
EC50	>100	N/A	N/A	<1	N/A	N/A

Combined Proportion Normal Summary

Calculated Variate(A/B)

Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Negative Control	5	0.9549	0.9368	0.9921	0.003939	0.02158	2.26%	0.0%	1208	1265
100		5	0.8553	0.8103	0.9209	0.007931	0.04344	5.08%	10.43%	1082	1265

Combined Proportion Normal Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	0.9368	0.9526	0.9486	0.9447	0.9921
100		0.8103	0.8221	0.9209	0.8656	0.8577

Graphics

