

ENVIRONMENTAL MONITORING DIVISION
BUREAU OF SANITATION
CITY OF LOS ANGELES

REFERENCE TOXICANT
TOXICITY TESTING REPORT

SAMPLE DATE: December 17, 2016

TEST DATE: December 17, 2016

TEST NUMBER: 1612RT2B.H

TEST MATERIAL: Zinc Sulfate

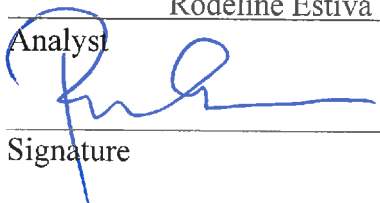
TEST SPECIES: *Haliotis rufescens*

PROTOCOL: EPA/600/R-95/136

TEST TYPE: Chronic

RESULT NOEC: 32 µg/L

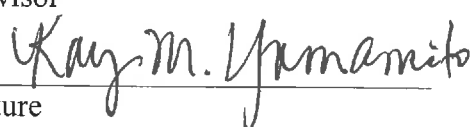
IC25: 41.9 µg/L

Rodeline Estiva
Analyst


Signature

Water Biologist II
Title

JANUARY 3, 2017
Date

Kay Yamamoto
Supervisor


Signature

Water Biologist III
Title

January 5, 2017
Date

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Test Type: Development

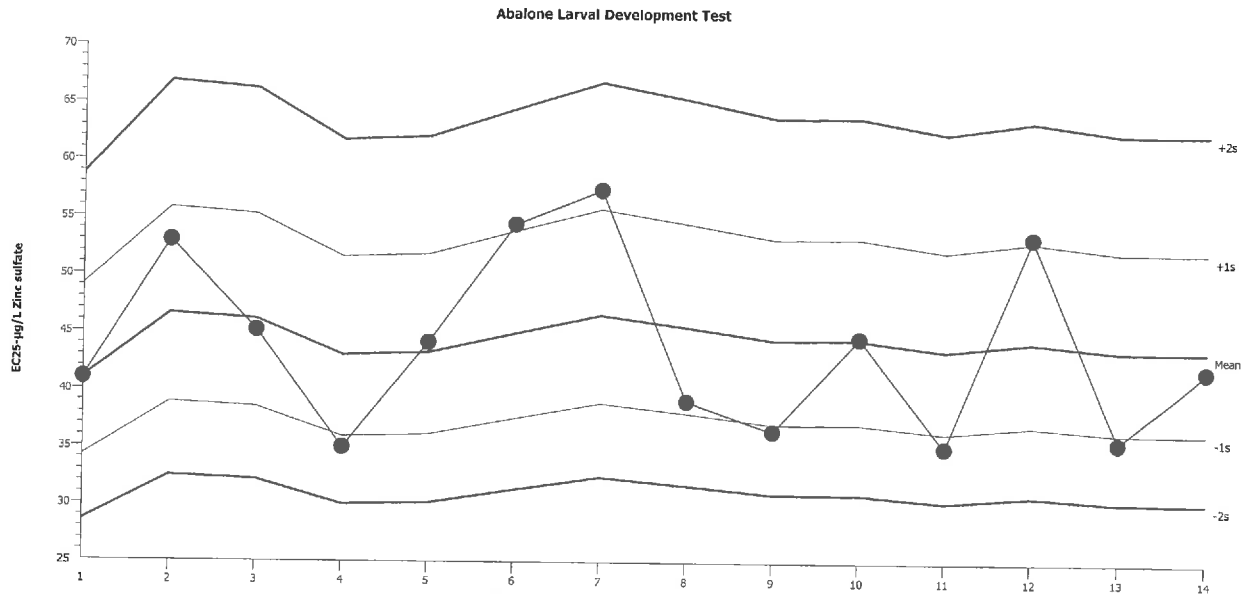
Organism: Haliotis rufescens (Red Abalone)

Material: Zinc sulfate

Protocol: EPA/600/R-95/136 (1995)

Endpoint: Development Rate

Source: Reference Toxicant-REF



Mean: 43.51

Count: 13

-1s Warning Limit: 36.34

-2s Action Limit: 30.34

Sigma: N/A

CV: 19.80%

+1s Warning Limit: 52.13

+2s Action Limit: 62.45

Quality Control Data

Point	Year	Month	Day	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2015	Dec	15	41.01	-2.504	-0.3284			15-3714-2091	14-6669-8620
2	2016	Feb	9	53	9.486	1.093	(+)		06-7880-7546	02-0581-1379
3		Mar	23	45.17	1.663	0.2078			11-2760-5170	19-5054-9005
4		Apr	5	34.99	-8.524	-1.208	(-)		11-1215-1162	19-2219-9156
5		May	10	44.15	0.6437	0.08136			12-0215-4193	05-1895-1744
6		Jun	7	54.44	10.93	1.242	(+)		14-4930-2277	18-7876-8418
7		Jul	12	57.45	13.94	1.54	(+)		12-3983-3660	00-3100-6703
8		Aug	9	39.08	-4.426	-0.5944			07-0065-4337	08-5146-6340
9		Sep	6	36.49	-7.017	-0.9743			05-8092-4057	09-1753-9978
10		Oct	4	44.63	1.12	0.1408			15-2271-0521	06-3374-6293
11		Nov	8	35.1	-8.415	-1.191	(-)		09-7023-1451	03-4792-9290
12			22	53.38	9.869	1.133	(+)		08-9314-9192	01-4922-1660
13		Dec	6	35.56	-7.953	-1.118	(-)		10-6522-7040	06-3190-7076
14			17	41.86	-1.65	-0.2142			10-6343-8866	05-4689-7562

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Test Type: Development

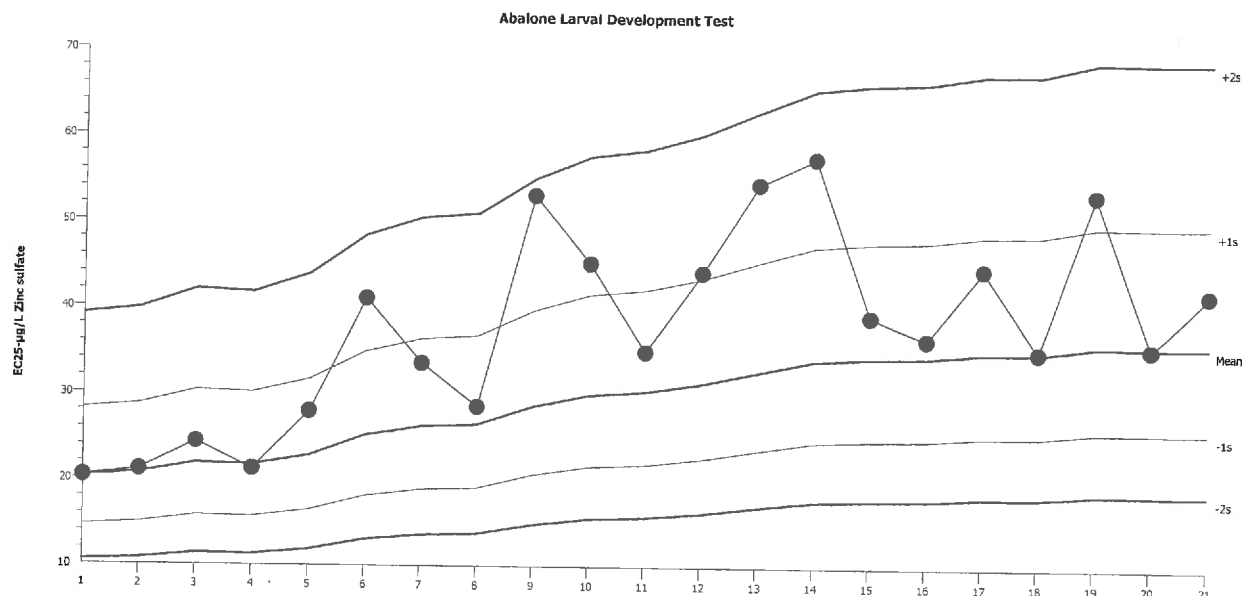
Organism: Haliotis rufescens (Red Abalone)

Material: Zinc sulfate

Protocol: EPA/600/R-95/136 (1995)

Endpoint: Development Rate

Source: Reference Toxicant-REF



Mean: 35.8

Count: 20

-1s Warning Limit: 25.81

-2s Action Limit: 18.61

Sigma: N/A

CV: 38.70%

+1s Warning Limit: 49.62

+2s Action Limit: 68.8

Quality Control Data

Point	Year	Month	Day	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2015	Oct	19	20.35	-15.45	-1.729	(-)		04-9180-2968	03-7749-4684
2			27	21.09	-14.71	-1.619	(-)		06-2414-8015	15-4754-9198
3		Nov	2	24.34	-11.46	-1.18	(-)		09-8080-7122	10-4747-2102
4			17	21.19	-14.61	-1.605	(-)		18-9052-4373	19-6909-4504
5		Dec	15	27.89	-7.908	-0.7638			11-1568-0872	17-8948-7802
6			15	41.01	5.204	0.4153			15-3714-2091	14-6669-8620
7	2016	Jan	12	33.52	-2.284	-0.2017			16-7039-0949	04-6589-8411
8		Feb	9	28.51	-7.295	-0.6973			20-6911-7173	20-5659-8179
9			9	53	17.19	1.2	(+)		06-7880-7546	02-0581-1379
10		Mar	23	45.17	9.372	0.7115			11-2760-5170	19-5054-9005
11		Apr	5	34.99	-0.8151	-0.07047			11-1215-1162	19-2219-9156
12		May	10	44.15	8.352	0.6416			12-0215-4193	05-1895-1744
13		Jun	7	54.44	18.64	1.283	(+)		14-4930-2277	18-7876-8418
14		Jul	12	57.45	21.65	1.447	(+)		12-3983-3660	00-3100-6703
15		Aug	9	39.08	3.282	0.2684			07-0065-4337	08-5146-6340
16		Sep	6	36.49	0.6917	0.05856			05-8092-4057	09-1753-9978
17		Oct	4	44.63	8.828	0.6744			15-2271-0521	06-3374-6293
18		Nov	8	35.1	-0.7063	-0.06097			09-7023-1451	03-4792-9290
19			22	53.38	17.58	1.222	(+)		08-9314-9192	01-4922-1660
20		Dec	6	35.56	-0.2448	-0.02099			10-6522-7040	06-3190-7076
21			17	41.86	6.059	0.4784			10-6343-8866	05-4689-7562

CETIS Summary Report

Report Date: 03 Jan-17 09:21 (p 1 of 1)
Test Code: 1612RT2B.H | 10-6343-8866

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Batch ID:	15-8712-0698	Test Type:	Development	Analyst:	Rodeline Estiva
Start Date:	17 Dec-16 14:50	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	19 Dec-16 13:00	Species:	Haliotis rufescens	Brine:	Frozen Seawater
Duration:	46h	Source:	Cultured Abalone	Age:	
Sample ID:	00-8617-8184	Code:	522F988	Client:	Watershed Protection Division
Sample Date:	17 Dec-16 09:00	Material:	Zinc sulfate	Project:	MS4
Receive Date:	17 Dec-16 09:00	Source:	Reference Toxicant		
Sample Age:	6h	Station:			

Sample Note: Ideal concentration-response relationship. The sample was set-up at 11:10am on 12/17/2016. The sample age is 2 hours. RE 1/3/2017

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
13-3046-0464	Development Rate	32	56	42.33	12.1%		Steel Many-One Rank Test
10-7423-6491		32	56	42.33	8.15%		Bonferroni Adj t Test

Point Estimate Summary

Analysis ID	Endpoint	Level	µg/L	95% LCL	95% UCL	TU	Method
05-4689-7562	Development Rate	EC5	32.82	6.754	34.15		Linear Interpolation (ICPIN)
		EC10	34.88	32.79	36.3		
		EC15	37.07	34.82	38.81		
		EC20	39.4	36.8	41.94		
		EC25	41.86	38.77	45.36		
		EC40	50.19	45.31	58.26		
		EC50	56.6	49.83	63.86		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
05-4689-7562	Development Rate	Control Resp	0.854	0.8 - NL	Yes	Passes Acceptability Criteria
10-7423-6491	Development Rate	Control Resp	0.854	0.8 - NL	Yes	Passes Acceptability Criteria
13-3046-0464	Development Rate	Control Resp	0.854	0.8 - NL	Yes	Passes Acceptability Criteria
10-7423-6491	Development Rate	NOEL	32	NL - 56	No	Passes Acceptability Criteria
13-3046-0464	Development Rate	NOEL	32	NL - 56	No	Passes Acceptability Criteria
10-7423-6491	Development Rate	PMSD	0.08146	0.038 - 0.16	No	Passes Acceptability Criteria
13-3046-0464	Development Rate	PMSD	0.121	0.038 - 0.16	No	Passes Acceptability Criteria

Development Rate Summary

Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.854	0.8448	0.8632	0.8252	0.8932	0.01098	0.02454	2.87%	0.0%
10		5	0.8457	0.8287	0.8626	0.8	0.9204	0.02031	0.04541	5.37%	0.97%
18		5	0.8244	0.813	0.8359	0.7727	0.8505	0.01371	0.03066	3.72%	3.46%
32		5	0.8343	0.8213	0.8472	0.7982	0.8824	0.01548	0.03461	4.15%	2.31%
56		5	0.3757	0.3171	0.4344	0.1262	0.5243	0.07023	0.157	41.8%	56.0%
100		5	0	0	0	0	0	0	0		100.0%

Development Rate Detail

Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.8491	0.8496	0.8932	0.8252	0.8529
10		0.8431	0.8431	0.8	0.8218	0.9204
18		0.8224	0.8505	0.7727	0.8416	0.835
32		0.8073	0.8824	0.8286	0.8548	0.7982
56		0.3451	0.4902	0.3929	0.1262	0.5243
100		0	0	0	0	0

CETIS Analytical Report

Report Date: 03 Jan-17 09:21 (p 1 of 2)
Test Code: 1612RT2B.H | 10-6343-8866

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Analysis ID: 05-4689-7562	Endpoint: Development Rate	CETIS Version: CETISv1.8.1
Analyzed: 20 Dec-16 15:18	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 15-8712-0698	Test Type: Development	Analyst: Rodeline Estiva
Start Date: 17 Dec-16 14:50	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 19 Dec-16 13:00	Species: Haliotis rufescens	Brine: Frozen Seawater
Duration: 46h	Source: Cultured Abalone	Age:
Sample ID: 00-8617-8184	Code: 522F988	Client: Watershed Protection Division
Sample Date: 17 Dec-16 09:00	Material: Zinc sulfate	Project: MS4
Receive Date: 17 Dec-16 09:00	Source: Reference Toxicant	
Sample Age: 6h	Station:	

Sample Note: Ideal concentration-response relationship. The sample was set-up at 11:10am on 12/17/2016. The sample age is 2 hours. RE 1/3/2017

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	435166302	200	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.854	0.8 - NL	Yes	Passes Acceptability Criteria

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.458	2.893	0.2783	No Outliers Detected

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC5	32.82	6.754	34.15
EC10	34.88	32.79	36.3
EC15	37.07	34.82	38.81
EC20	39.4	36.8	41.94
EC25	41.86	38.77	45.36
EC40	50.19	45.31	58.26
EC50	56.6	49.83	63.86

Development Rate Summary

Calculated Variate(A/B)

Conc-µg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	5	0.854	0.8252	0.8932	0.01098	0.02454	2.87%	0.0%	450	527
10		5	0.8457	0.8	0.9204	0.02031	0.04541	5.37%	0.97%	439	518
18		5	0.8244	0.7727	0.8505	0.01371	0.03066	3.72%	3.46%	435	528
32		5	0.8343	0.7982	0.8824	0.01548	0.03461	4.15%	2.31%	462	554
56		4	0.4381	0.3451	0.5243	0.04166	0.08333	19.02%	48.7%	187	430
100		5	0	0	0	0	0	100.0%	0	0	511

Development Rate Detail

Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.8491	0.8496	0.8932	0.8252	0.8529
10		0.8431	0.8431	0.8	0.8218	0.9204
18		0.8224	0.8505	0.7727	0.8416	0.835
32		0.8073	0.8824	0.8286	0.8548	0.7982
56		0.3451	0.4902	0.3929	0.5243	
100		0	0	0	0	0

CETIS Analytical Report

Report Date: 03 Jan-17 09:21 (p 2 of 2)
Test Code: 1612RT2B.H | 10-6343-8866

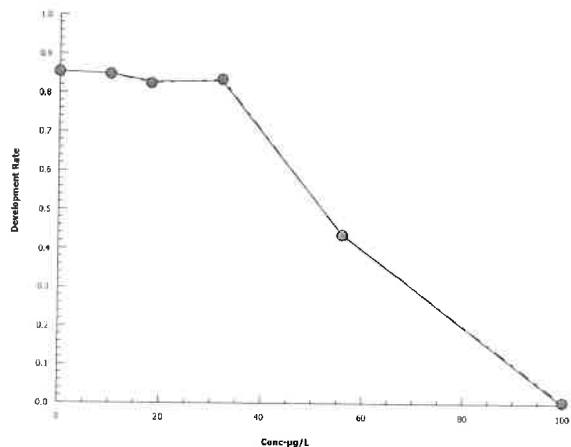
Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Analysis ID: 05-4689-7562 Endpoint: Development Rate
Analyzed: 20 Dec-16 15:18 Analysis: Linear Interpolation (ICPIN)

CETIS Version: CETISv1.8.1
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 03 Jan-17 09:21 (p 1 of 4)
Test Code: 1612RT2B.H | 10-6343-8866

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Analysis ID: 13-3046-0464	Endpoint: Development Rate	CETIS Version: CETISv1.8.1
Analyzed: 20 Dec-16 15:17	Analysis: Nonparametric-Control vs Treatments	Official Results: Yes
Batch ID: 15-8712-0698	Test Type: Development	Analyst: Rodeline Estiva
Start Date: 17 Dec-16 14:50	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 19 Dec-16 13:00	Species: Haliotis rufescens	Brine: Frozen Seawater
Duration: 46h	Source: Cultured Abalone	Age:
Sample ID: 00-8617-8184	Code: 522F988	Client: Watershed Protection Division
Sample Date: 17 Dec-16 09:00	Material: Zinc sulfate	Project: MS4
Receive Date: 17 Dec-16 09:00	Source: Reference Toxicant	
Sample Age: 6h	Station:	

Sample Note: Ideal concentration-response relationship. The sample was set-up at 11:10am on 12/17/2016. The sample age is 2 hours. RE 1/3/2017

Data Transform	Zeta	Alt Hyp	MC Trials	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	32	56	42.33		12.1%

Steel Many-One Rank Test

Control	vs	Conc-µg/L	Test Stat	Critical	DF	Ties	P-Value	Decision(α:5%)
Dilution Water		10	22	17	8	0	0.3104	Non-Significant Effect
		18	20	17	8	0	0.1653	Non-Significant Effect
		32	24	17	8	0	0.4952	Non-Significant Effect
		56*	15	17	8	0	0.0158	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.854	0.8 - NL	Yes	Passes Acceptability Criteria
NOEL	32	NL - 56	No	Passes Acceptability Criteria
PMSD	0.121	0.038 - 0.16	No	Passes Acceptability Criteria

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	0	3.484	2.822	0.0010	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.04541	0.2613526	4	31.97	<0.0001	Significant Effect
Error	0.163476	0.008173802	20			
Total	1.208886	0.2695264	24			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	14.71	13.28	0.0053	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.8501	0.8877	0.0018	Non-normal Distribution

CETIS Analytical Report

Report Date: 03 Jan-17 09:21 (p 2 of 4)
Test Code: 1612RT2B.H | 10-6343-8866

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Analysis ID: 13-3046-0464
Analyzed: 20 Dec-16 15:17
Endpoint: Development Rate
Analysis: Nonparametric-Control vs Treatments

CETIS Version: CETISv1.8.1
Official Results: Yes

Development Rate Summary

Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.854	0.8447	0.8633	0.8252	0.8932	0.01098	0.02454	2.87%	0.0%
10		5	0.8457	0.8284	0.863	0.8	0.9204	0.02031	0.04541	5.37%	0.97%
18		5	0.8244	0.8128	0.8361	0.7727	0.8505	0.01371	0.03066	3.72%	3.46%
32		5	0.8343	0.8211	0.8474	0.7982	0.8824	0.01548	0.03461	4.15%	2.31%
56		5	0.3757	0.316	0.4355	0.1262	0.5243	0.07023	0.157	41.8%	56.0%
100		5	0	0	0	0	0	0	0		100.0%

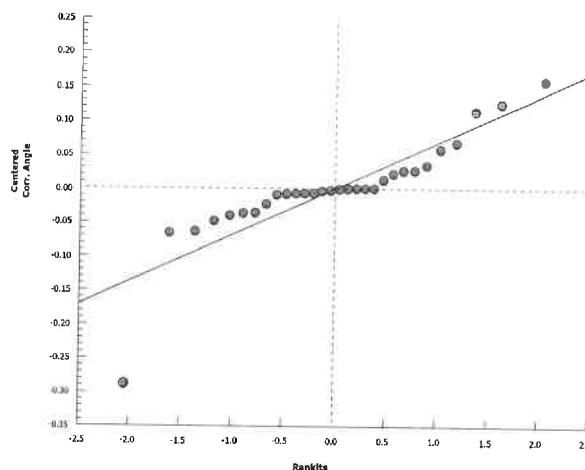
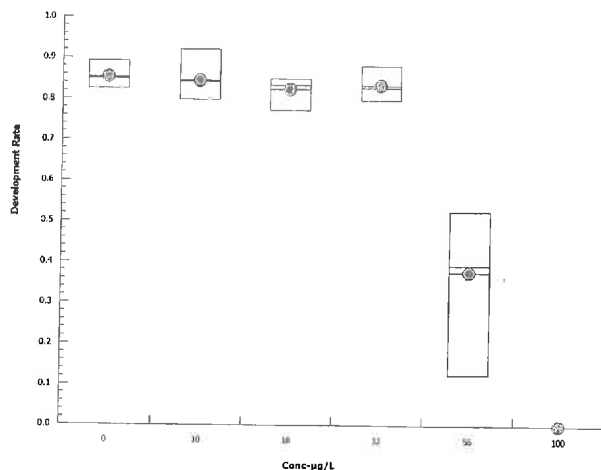
Angular (Corrected) Transformed Summary

Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	1.18	1.166	1.193	1.14	1.238	0.016	0.03578	3.03%	0.0%
10		5	1.171	1.145	1.197	1.107	1.285	0.03034	0.06784	5.8%	0.76%
18		5	1.139	1.125	1.154	1.074	1.174	0.01753	0.03919	3.44%	3.42%
32		5	1.153	1.135	1.171	1.105	1.221	0.02126	0.04753	4.12%	2.26%
56		5	0.6508	0.5836	0.7179	0.3632	0.8097	0.07898	0.1766	27.14%	44.84%
100		5	0.04949	0.04927	0.0497	0.04858	0.05002	0.000255	0.000571	1.15%	95.81%

Development Rate Detail

Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.8491	0.8496	0.8932	0.8252	0.8529
10		0.8431	0.8431	0.8	0.8218	0.9204
18		0.8224	0.8505	0.7727	0.8416	0.835
32		0.8073	0.8824	0.8286	0.8548	0.7982
56		0.3451	0.4902	0.3929	0.1262	0.5243
100		0	0	0	0	0

Graphics



Ideal concentration-response
relationship. RE
11/3/2017

CETIS Analytical Report

Report Date: 03 Jan-17 09:21 (p 3 of 4)
Test Code: 1612RT2B.H | 10-6343-8866

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Analysis ID: 10-7423-6491	Endpoint: Development Rate	CETIS Version: CETISv1.8.1
Analyzed: 20 Dec-16 15:17	Analysis: Parametric-Multiple Comparison	Official Results: Yes
Batch ID: 15-8712-0698	Test Type: Development	Analyst: Rodeline Estiva
Start Date: 17 Dec-16 14:50	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 19 Dec-16 13:00	Species: Haliotis rufescens	Brine: Frozen Seawater
Duration: 46h	Source: Cultured Abalone	Age:
Sample ID: 00-8617-8184	Code: 522F988	Client: Watershed Protection Division
Sample Date: 17 Dec-16 09:00	Material: Zinc sulfate	Project: MS4
Receive Date: 17 Dec-16 09:00	Source: Reference Toxicant	
Sample Age: 6h	Station:	

Sample Note: Ideal concentration-response relationship. The sample was set-up at 11:10am on 12/17/2016. The sample age is 2 hours. RE 1/3/2017

Data Transform	Zeta	Alt Hyp	MC Trials	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	32	56	42.33		8.15%

Bonferroni Adj t Test

Control	vs	Conc-µg/L	Test Stat	Critical	DF	MSD	P-Value	Decision(α:5%)
Dilution Water		10	0.2525	2.433	8	0.08656	1.0000	Non-Significant Effect
		18	1.133	2.433	8	0.08656	0.5424	Non-Significant Effect
		32	0.7479	2.433	8	0.08656	0.9274	Non-Significant Effect
		56*	12.12	2.433	7	0.09181	<0.0001	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.854	0.8 - NL	Yes	Passes Acceptability Criteria
NOEL	32	NL - 56	No	Passes Acceptability Criteria
PMSD	0.08146	0.038 - 0.16	No	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.6447651	0.1611913	4	50.95	<0.0001	Significant Effect
Error	0.06010687	0.003163519	19			
Total	0.704872	0.1643548	23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	3.539	13.28	0.4720	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9755	0.884	0.8014	Normal Distribution

CETIS Analytical Report

Report Date: 03 Jan-17 09:21 (p 4 of 4)
Test Code: 1612RT2B.H | 10-6343-8866

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Analysis ID: 10-7423-6491
Analyzed: 20 Dec-16 15:17
Endpoint: Development Rate
Analysis: Parametric-Multiple Comparison

CETIS Version: CETISv1.8.1
Official Results: Yes

Development Rate Summary

Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.854	0.8447	0.8633	0.8252	0.8932	0.01098	0.02454	2.87%	0.0%
10		5	0.8457	0.8284	0.863	0.8	0.9204	0.02031	0.04541	5.37%	0.97%
18		5	0.8244	0.8128	0.8361	0.7727	0.8505	0.01371	0.03066	3.72%	3.46%
32		5	0.8343	0.8211	0.8474	0.7982	0.8824	0.01548	0.03461	4.15%	2.31%
56		4	0.4381	0.4064	0.4698	0.3451	0.5243	0.04166	0.08333	19.02%	48.7%
100		5	0	0	0	0	0	0	0		100.0%

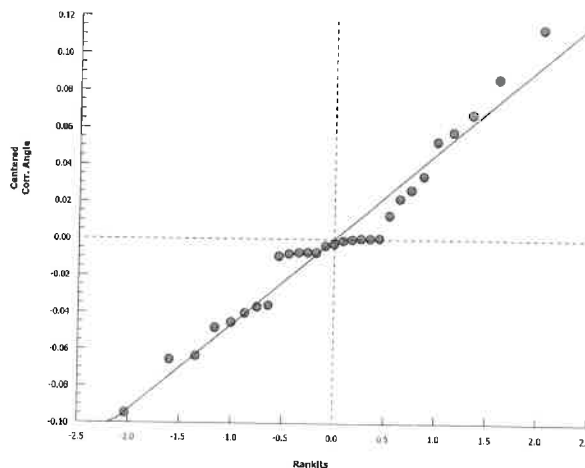
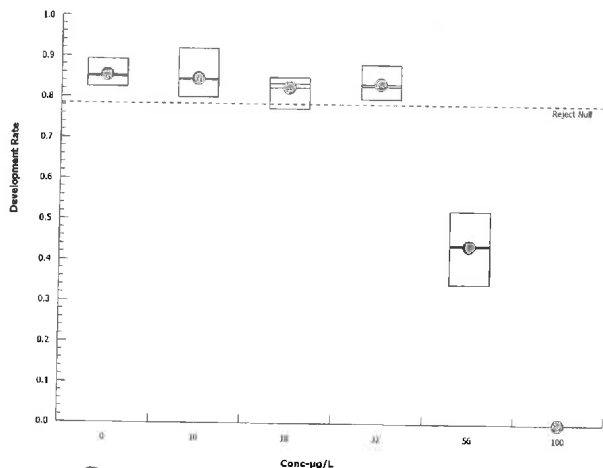
Angular (Corrected) Transformed Summary

Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	1.18	1.166	1.193	1.14	1.238	0.016	0.03578	3.03%	0.0%
10		5	1.171	1.145	1.197	1.107	1.285	0.03034	0.06784	5.8%	0.76%
18		5	1.139	1.125	1.154	1.074	1.174	0.01753	0.03919	3.44%	3.42%
32		5	1.153	1.135	1.171	1.105	1.221	0.02126	0.04753	4.12%	2.26%
56		4	0.7227	0.6905	0.7548	0.6279	0.8097	0.04222	0.08444	11.69%	38.75%
100		5	0.04949	0.04927	0.0497	0.04858	0.05002	0.000255	0.000571	1.15%	95.81%

Development Rate Detail

Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.8491	0.8496	0.8932	0.8252	0.8529
10		0.8431	0.8431	0.8	0.8218	0.9204
18		0.8224	0.8505	0.7727	0.8416	0.835
32		0.8073	0.8824	0.8286	0.8548	0.7982
56		0.3451	0.4902	0.3929	Outlier	0.5243
100		0	0	0	0	0

Graphics



Ideal concentration-response relationship. PE
11/3/2017

CETIS Test Data Worksheet



Report Date: 14 Dec-16 14:22 (p 1 of 1)
Test Code: 10-6343-8866/1612RT2B.H

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Start Date: 17 Dec-16 ¹⁴⁵⁰ Species: Haliotis rufescens
End Date: 19 Dec-16 ¹³⁰⁰ Protocol: EPA/600/R-95/136 (1995)
Sample Date: 17 Dec-16 ⁹⁰⁰ Material: Zinc sulfate

Sample Code: 522F988
Sample Source: Reference Toxicant
Sample Station:

Conc-µg/L	Code	Rep	Pos	# Counted	# Normal	Notes
0	D	1	8	106	90	
0	D	2	6	113	96	
0	D	3	28	103	92	
0	D	4	19	103	85	
0	D	5	30	102	87	
10		1	11	102	86	
10		2	16	102	86	
10		3	20	100	80	
10		4	27	101	83	
10		5	10	113	104	
18		1	5	107	88	
18		2	7	107	91	
18		3	13	110	85	
18		4	21	101	85	
18		5	18	103	86	
32		1	15	109	88	
32		2	3	102	90	
32		3	4	105	87	
32		4	2	124	106	
32		5	1	114	91	
56		1	12	113	39	
56		2	17	102	50	
56		3	26	112	44	
56		4	22	103	13	
56		5	25	103	54	
100		1	24	101	0	
100		2	29	100	0	
100		3	14	106	0	
100		4	9	103	0	
100		5	23	101	0	

Set-up @ 11:10. RE 12/17/16

CETIS Measurement Worksheet



Report Date: 14 Dec-16 14:22 (p 1 of 1)
Test Code: 1612RT2B.H | 10-6343-8866

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Start Date: 17 Dec-16 Species: Haliotis rufescens
End Date: 19 Dec-16 Protocol: EPA/600/R-95/136 (1995)
Sample Date: 17 Dec-16 Material: Zinc sulfate

Sample Code: 522F988
Sample Source: Reference Toxicant
Sample Station:

Dissolved Oxygen-mg/L			
Conc-µg/L	Code	Reading 1	Reading 2
0	D	8.28	8.39
10		8.24	8.30
18		8.23	8.27
32		8.23	8.27
56		8.23	8.25
100		8.23	8.21
Measure Time:		1145	1043
Instrument ID:		#3	#3
Analyst:		KE	KE

pH			
Conc-µg/L	Code	Reading 1	Reading 2
0	D	8.21	7.96
10		8.20	7.95
18		8.20	7.97
32		8.19	7.98
56		8.19	7.99
100		8.18	8.00
Measure Time:		1145	1043
Instrument ID:		#2	#2
Analyst:		KE	KE

Salinity-ppt			
Conc-µg/L	Code	Reading 1	Reading 2
0	D	33	33
10		33	33
18		33	33
32		33	33
56		33	33
100		33	32
Measure Time:		1145	1043
Instrument ID:		#4 cond	#4 cond
Analyst:		KE	KE

Temperature-°C				
Conc-µg/L	Code	Reading 1	Reading 2	Reading 3
0	D	14.8	15.1	14.6
10		14.9	14.8	14.6
18		14.9	14.8	14.6
32		15.0	14.8	14.8
56		15.0	14.8	14.8
100		15.0	14.7	14.7
Measure Time:		1145	0828	102 1043 1219/16
Instrument ID:		#2	1	#2
Analyst:		KE	Q	KE

ABALONE SPAWNING WORKSHEET

TYPE OF EFFLUENT: SMB Stormwater

TEST START DATE: Dec 17, 2016

Batch #: 161215

TEST ID: 1612RT2B.H, 1612072A.H, 1612072B.H

TIME SPAWNING START: 940

Number of abalone

Gonad index

Temperature

Males

3 3 2 2

2.5

15° C

Females

3 3 3 2

2.75

15° C

Time

Male

Female

Beginning of spawning treatment:

Male 1105 Female 9:58

Temperature

Temperature

Taken out of H2O2:

1334 1228

15° C

15° C

First male abalone spawn:

1350

15° C

15° C

First female abalone spawn:

1302

15° C

15° C

Fertilization start:

1353

15° C

15° C

Fertilization completed:

1408

15° C

15° C

Fertilized eggs density count:

Mean 215 eggs / 0.5 ml

7150 eggs / 0.5 ml, eggs too concentrated
PE.

Add 1000 embryos/test container divided by the number of embryos/ml
ml/test per beaker

860 eggs / 2 ml / beaker

Temperature of embryos:

14.8° C

Temperature of test containers:

14.2° C

Time embryos added to test chambers (TEST START):

1450

① 124 eggs / 0.3 ml

② 139 eggs / 0.3 ml

③ 116 eggs / 0.3 ml

④ 135 eggs / 0.3 ml

⑤ 132 eggs / 0.3 ml

Ave = 129 eggs / 0.3 ml = X / 0.5 ml
215 eggs / 0.5 ml

TEST CLOSING

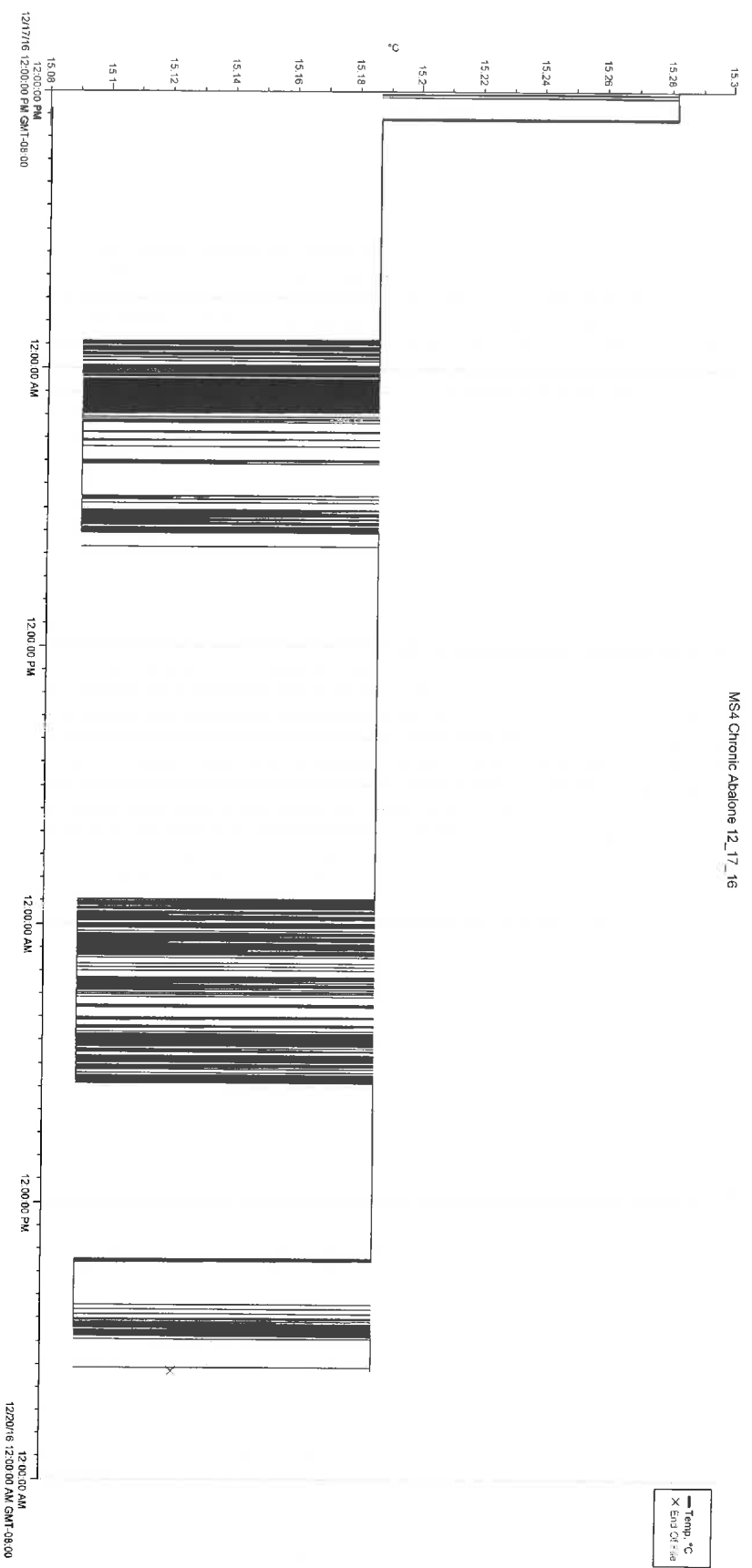
DATE:

12/19/2016

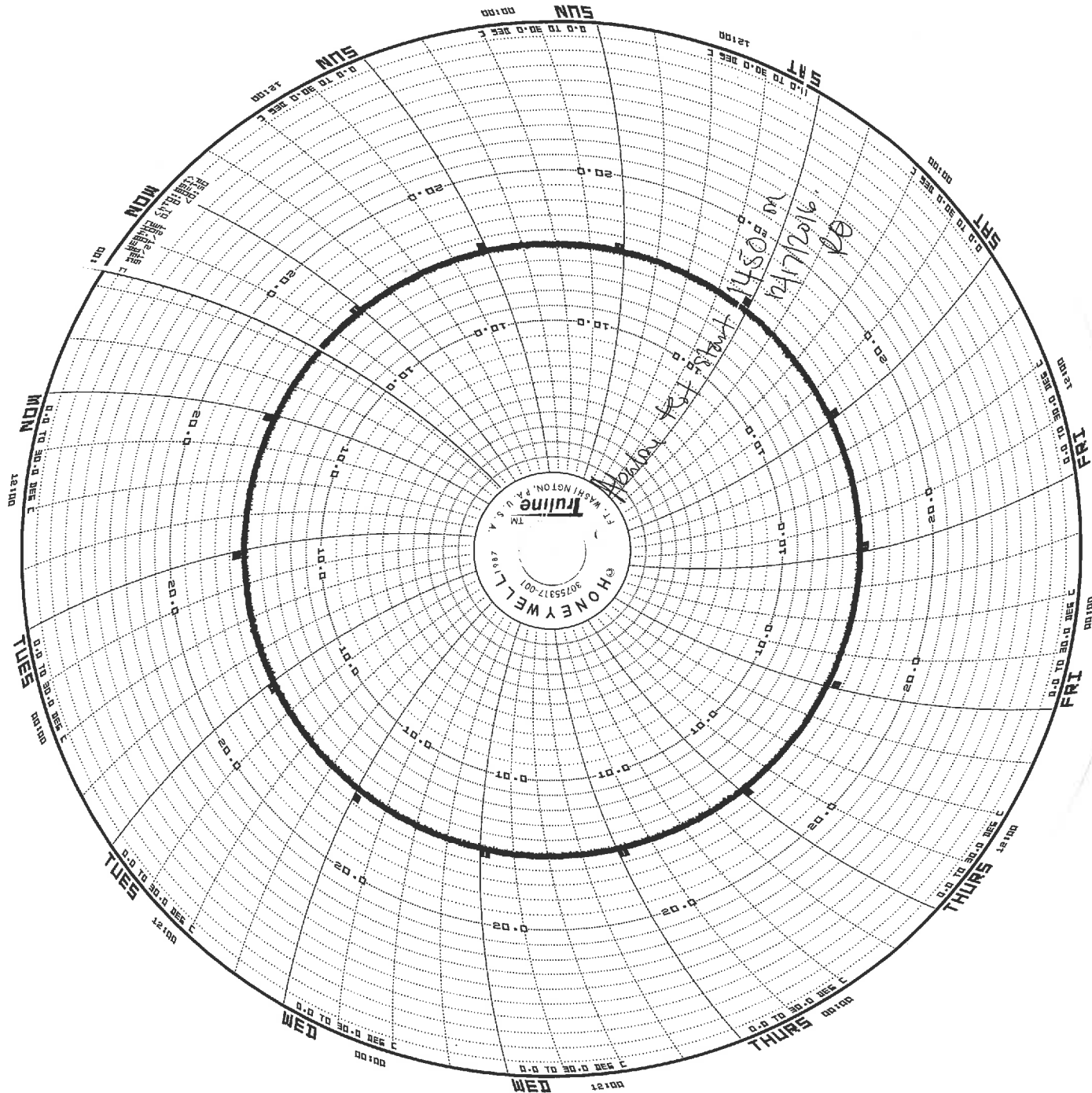
TIME:

13:00

MS4 Chronic Abalone 12_17_16



Abalone Chronic Toxicity Test
Start: Saturday, Dec 17, 2016
End: Monday, Dec 19, 2016



Chronic Abalone Toxicity Test.

Start: Saturday, Dec 17, 2016

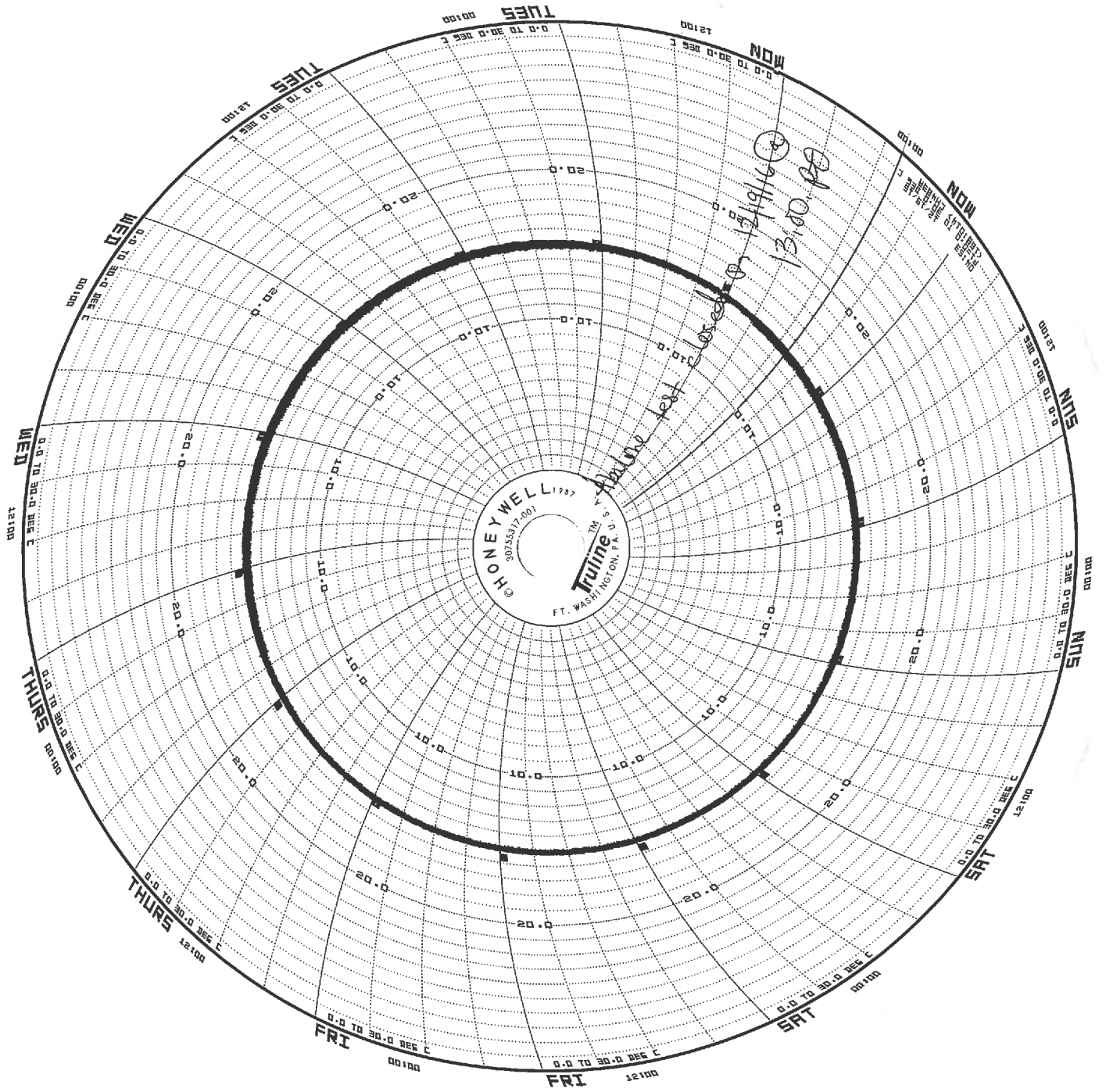
End: Monday, Dec 19, 2016

RT: 1612RT2B.H

SMB-1: 1612072A.H

SMB-3: 1612072B.H

page 1 of 2



ENVIRONMENTAL MONITORING DIVISION
BUREAU OF SANITATION
CITY OF LOS ANGELES

STORMWATER MONITORING PROGRAM

TOXICITY TESTING REPORT

SAMPLE DATE: December 17, 2016

TEST DATE: December 17, 2016

TEST NUMBER: 1612072A.H

TEST MATERIAL: Station RW-SMB-1

TEST SPECIES: *Haliotis rufescens*

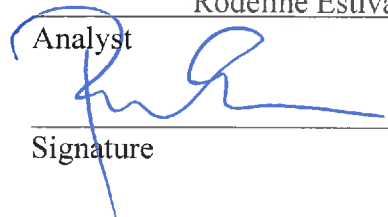
PROTOCOL: EPA/600/R-95/136

TEST TYPE: Chronic

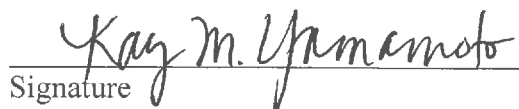
REFERENCE TOXICANT TEST: 1612RT2B.H

RESULT: PASS

% Effect = 1.36 %

Analyst Rodeline Estiva

Signature

Title Water Biologist II
JANUARY 3, 2017
Date

Supervisor Kay Yamamoto

Signature

Title Water Biologist III
January 5, 2017
Date

CETIS Summary Report

Report Date: 03 Jan-17 09:21 (p 1 of 1)

Test Code: 1612072A.H | 08-3793-6436

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Batch ID: 15-8712-0698	Test Type: Development	Analyst: Rodeline Estiva
Start Date: 17 Dec-16 14:50	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 19 Dec-16 13:00	Species: Haliotis rufescens	Brine: Frozen Seawater
Duration: 46h	Source: Cultured Abalone	Age:

Sample ID: 17-6291-6538	Code: 555717	Client:
Sample Date: 17 Dec-16 07:57	Material: Stormwater Monitoring Sample	Project: MS4
Receive Date: 17 Dec-16 10:00	Source: WPD (WATERSHED)	
Sample Age: 7h (15.3 °C)	Station: RW-SMB-1	

Sample Note: The sample was set-up at 10:15am on 12/17/2016. The sample age is 2 hours. RE 1/3/2017

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
11-7770-0957	Development Rate	100	>100	N/A	N/A	1	TST-Welch's t Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
11-7770-0957	Development Rate	Control Resp	0.8776	0.8 - NL	Yes	Passes Acceptability Criteria

Development Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.8776	0.871	0.8843	0.8529	0.902	0.007995	0.01788	2.04%	0.0%
100		5	0.8657	0.8517	0.8797	0.8131	0.901	0.01679	0.03755	4.34%	1.36%

Development Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.902	0.8761	0.8846	0.8529	0.8725
100		0.8131	0.8879	0.887	0.901	0.8396

CETIS Analytical Report

Report Date: 03 Jan-17 09:21 (p 1 of 2)

Test Code: 1612072A.H | 08-3793-6436

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Analysis ID:	11-7770-0957	Endpoint:	Development Rate	CETIS Version:	CETISv1.8.1
Analyzed:	21 Dec-16 12:35	Analysis:	Parametric Bioequivalence-Two Sample	Official Results:	Yes
Batch ID:	15-8712-0698	Test Type:	Development	Analyst:	Rodeline Estiva
Start Date:	17 Dec-16 14:50	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	19 Dec-16 13:00	Species:	Haliotis rufescens	Brine:	Frozen Seawater
Duration:	46h	Source:	Cultured Abalone	Age:	
Sample ID:	17-6291-6538	Code:	555717	Client:	
Sample Date:	17 Dec-16 07:57	Material:	Stormwater Monitoring Sample	Project:	MS4
Receive Date:	17 Dec-16 10:00	Source:	WPD (WATERSHED)		
Sample Age:	7h (15.3 °C)	Station:	RW-SMB-1		

Sample Note: The sample was set-up at 10:15am on 12/17/2016. The sample age is 2 hours. RE 1/3/2017

Data Transform	Zeta	Alt Hyp	MC Trials	TST b	Test Result
Angular (Corrected)	0	C*b > T	Not Run	0.75	Sample passes development rate endpoint

TST-Welch's t Test

Control	vs	Conc-%	Test Stat	Critical	DF	MSD	P-Value	Decision(α:5%)
Dilution Water		100*	11.11	2.015	5		<0.0001	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.8776	0.8 - NL	Yes	Passes Acceptability Criteria

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	0	1.839	2.29	0.4347	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0006417342	0.0006417342	1	0.3488	0.5711	Non-Significant Effect
Error	0.0147192	0.001839901	8			
Total	0.01536094	0.002481635	9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.903	23.15	0.2156	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9492	0.7411	0.6591	Normal Distribution

Development Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.8776	0.8708	0.8844	0.8529	0.902	0.007995	0.01788	2.04%	0.0%
100		5	0.8657	0.8514	0.88	0.8131	0.901	0.01679	0.03755	4.34%	1.36%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	1.214	1.204	1.225	1.177	1.252	0.01225	0.02739	2.26%	0.0%
100		5	1.198	1.178	1.219	1.124	1.251	0.0242	0.05412	4.52%	1.32%

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

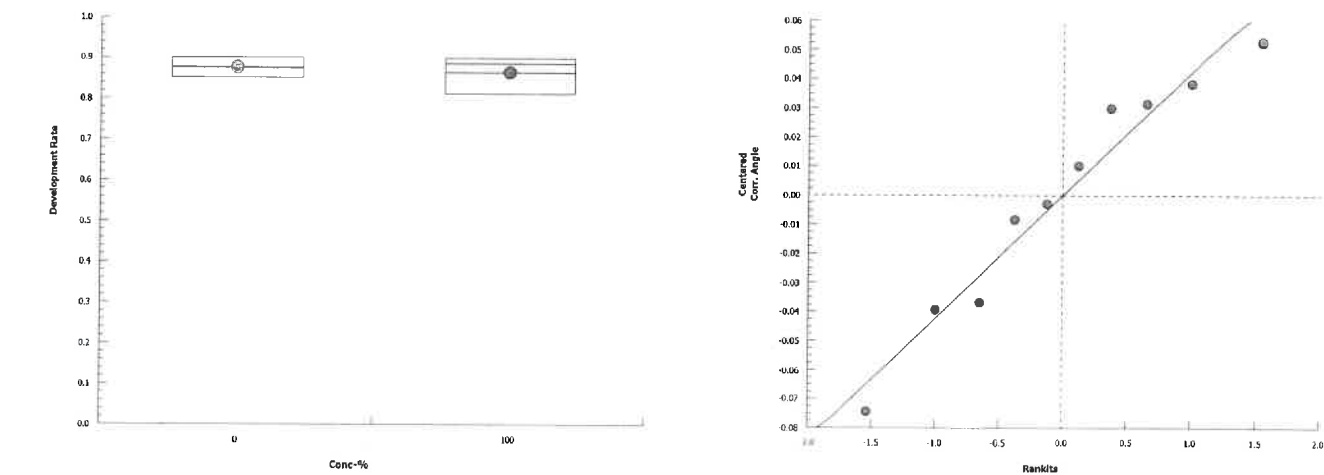
Analysis ID: 11-7770-0957 Endpoint: Development Rate CETIS Version: CETISv1.8.1

Analyzed: 21 Dec-16 12:35 Analysis: Parametric Bioequivalence-Two Sample Official Results: Yes

Development Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.902	0.8761	0.8846	0.8529	0.8725
100		0.8131	0.8879	0.887	0.901	0.8396

Graphics



SMB 1

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Start Date: 17 Dec-16 ¹⁴⁵⁰
 End Date: 19 Dec-16 ¹³⁰⁰
 Sample Date: 16 Dec-16 ¹² ⁷⁵⁷
 Species: Haliotis rufescens
 Protocol: EPA/600/R-95/136 (1995)
 Material: Stormwater Monitoring Sample

Sample Code: 6913F8BA
 Sample Source: WPD
 Sample Station: RW-SMB-1

Conc-%	Code	Rep	Pos	# Counted	# Normal	Notes
0	D	1	5	102	92	
0	D	2	10	113	99	
0	D	3	11	104	92	
0	D	4	1	102	87	
0	D	5	6	102	89	
100		1	7	107	87	
100		2	4	116	103	
100		3	3	115	102	
100		4	14	101	91	
100		5	12	106	89	

Sample received on 12/17/2016 @ 10:00 AM. (15.3°C) RE
 # 555717

RE
 1/3/2017

Set-up @ 10:15 on 12/17/16. RE

SMB 1

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Start Date: 17 Dec-16 Species: *Haliotis rufescens* Sample Code: 6913F8BA
End Date: 19 Dec-16 Protocol: EPA/600/R-95/136 (1995) Sample Source: WPD
Sample Date: 16 Dec-16 Material: Stormwater Monitoring Sample Sample Station: RW-SMB-1

Dissolved Oxygen-mg/L				
Conc-%	Code	Reading 1	Reading 2	
0	D	8.23	8.20	
100		8.15	8.17	
Measure Time:		1030	1045	
Instrument ID:		#3	#3	
Analyst:		RE	RE	

pH				
Conc-%	Code	Reading 1	Reading 2	
0	D	8.20	7.99	
100		8.23	7.99	
Measure Time:		1030	1045	
Instrument ID:		#2	#2	
Analyst:		RE	RE	

Salinity-ppt				
Conc-%	Code	Reading 1	Reading 2	
0	D	33	33	
100		33	33	
Measure Time:		1030	1045	
Instrument ID:		#4cond	#4cond	
Analyst:		RE	RE	

Temperature-°C					
Conc-%	Code	Reading 1	Reading 2	Reading 3	
0	D	14.9	14.7	14.7	
100		14.4	14.8	14.8	
Measure Time:		1030	0832	1045	
Instrument ID:		#2	PL	#2	
Analyst:		RE	PL	RE	

ABALONE SPAWNING WORKSHEET

TYPE OF EFFLUENT: SMB Stormwater

TEST START DATE: Dec 17, 2016

Batch #: 161215

TEST ID: 1612RT2B.H, 1612072A.H, 1612072B.H

TIME SPAWNING START: 940

Number of abalone

Gonad index

Temperature

Males 3 3 2 2
Females 3 3 3 2

25
275

15° C
15° C

Time

Male

Female

Temperature

Temperature

Beginning of spawning treatment: 1105 | 9:58

Taken out of H2O2:

1334 | 1228

First male abalone spawn:

1350

First female abalone spawn:

1302

Fertilization start:

1353

Fertilization completed:

1408

15° C
15° C
15° C
15° C

15° C
15° C
15° C
15° C

Fertilized eggs density count:

Mean 215 eggs / 0.5 ml

> 150 eggs / 0.5 ml, eggs too concentrate
PE.

Add 1000 embryos/test container divided by the number of embryos/ml

860 eggs / 2 ml / beaker ml/test per beaker

Temperature of embryos:

14.8° C

Temperature of test containers:

14.2° C

Time embryos added to test chambers (TEST START):

1450

① 124 eggs / 0.3 ml

② 139 eggs / 0.3 ml

③ 116 eggs / 0.3 ml

④ 135 eggs / 0.3 ml

⑤ 132 eggs / 0.3 ml

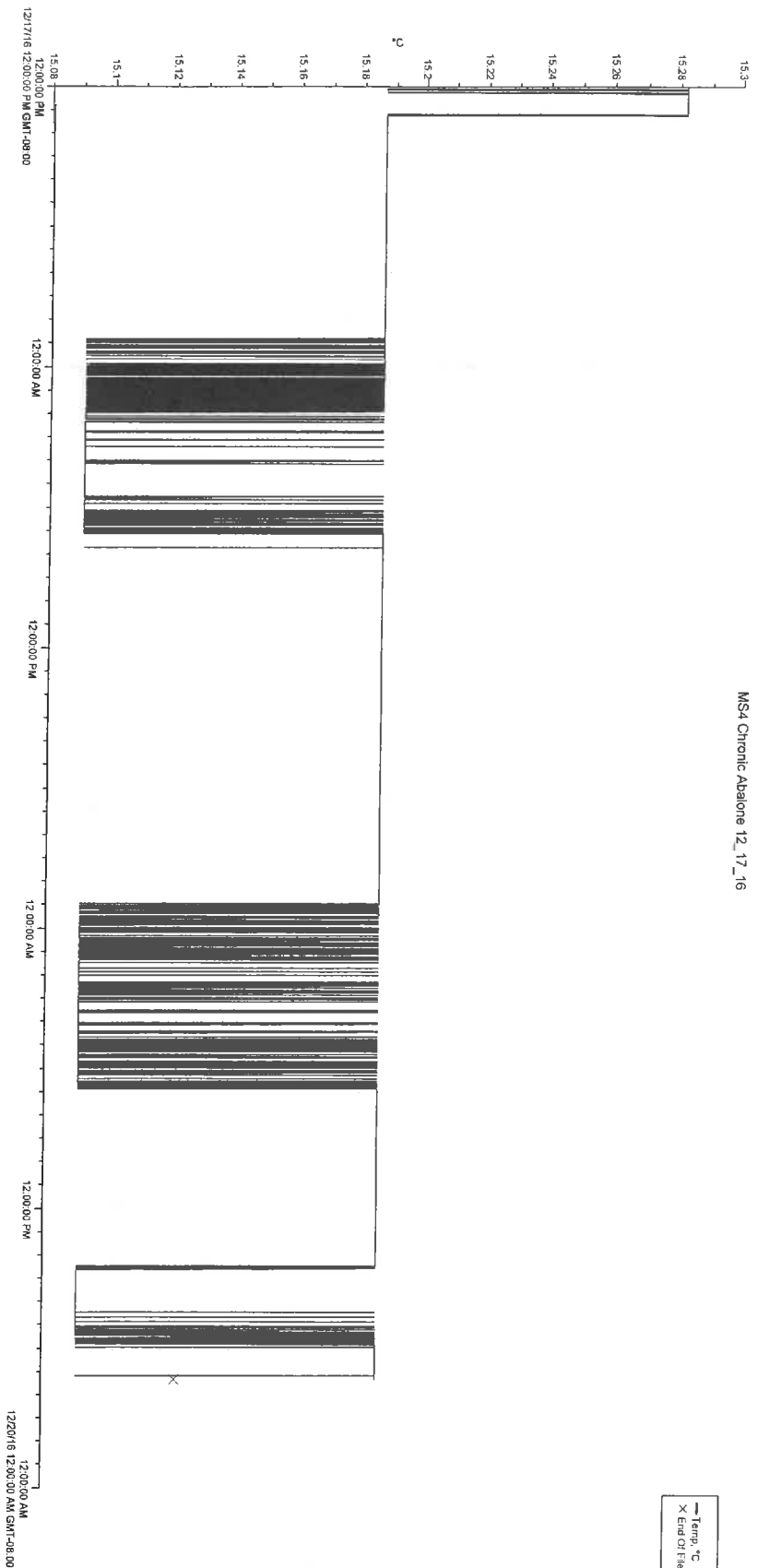
Ave = 129 eggs / 0.3 ml = X / 0.5 ml
215 eggs / 0.5 ml

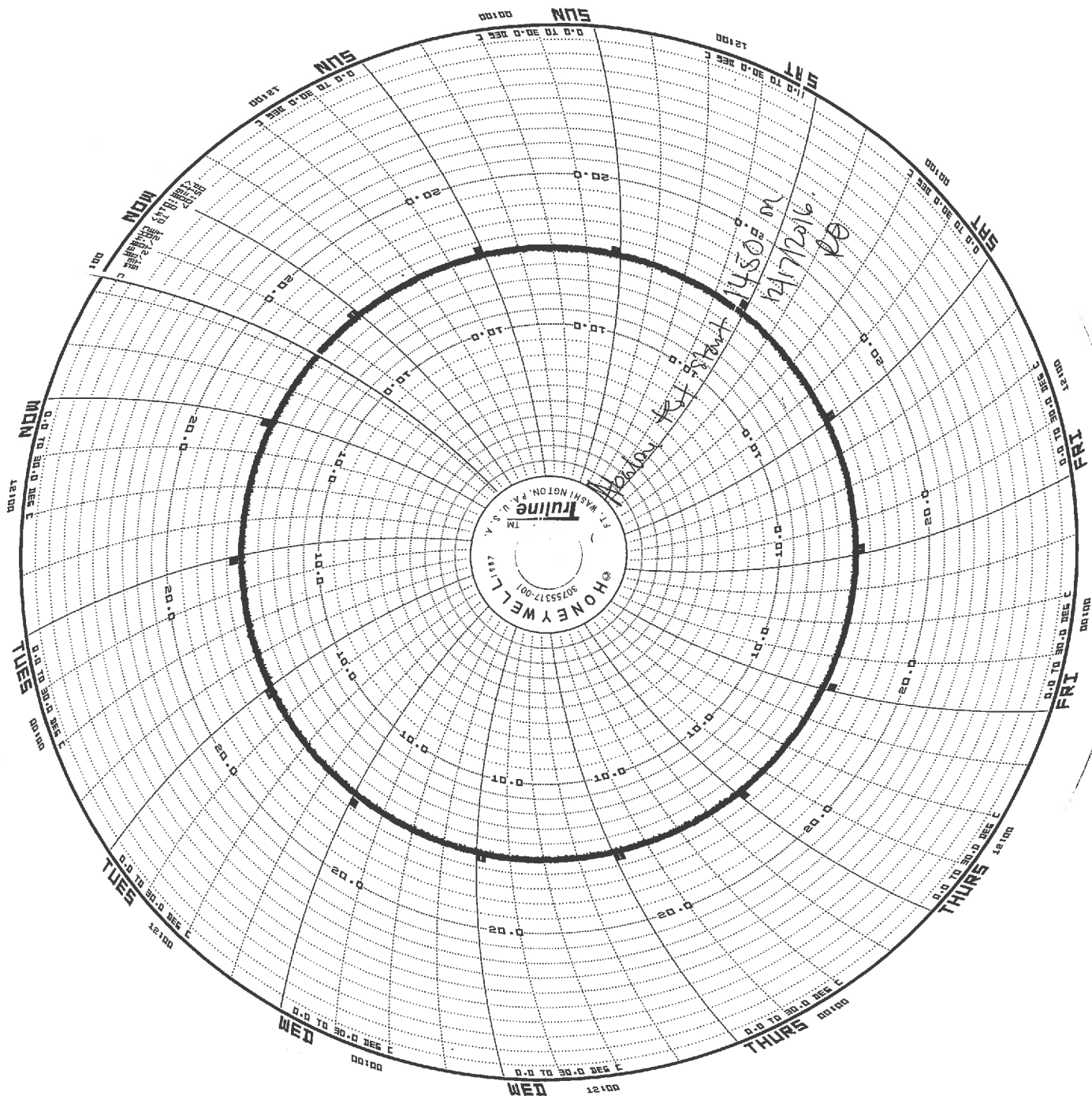
TEST CLOSING

DATE: 12/19/2016

TIME: 13:00

Ahalene Chronic Toxicity Test
Start: Saturday, Dec 17, 2016
End: Monday, Dec 19, 2016





Chronic Abalone Toxicity Test.

Start: Saturday, Dec 17, 2016

End: Monday, Dec 19, 2016

RT: 1612RT2B.H

SMB-1: 1612072A.H

SMB-3: 1612072B.H

page 1 of 2

ENVIRONMENTAL MONITORING DIVISION
BUREAU OF SANITATION
CITY OF LOS ANGELES

STORMWATER MONITORING PROGRAM

TOXICITY TESTING REPORT

SAMPLE DATE: December 17, 2016

TEST DATE: December 17, 2016

TEST NUMBER: 1612072B.H

TEST MATERIAL: Station RW-SMB-3

TEST SPECIES: *Haliotis rufescens*

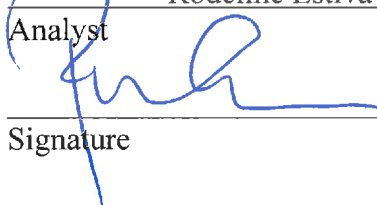
PROTOCOL: EPA/600/R-95/136

TEST TYPE: Chronic

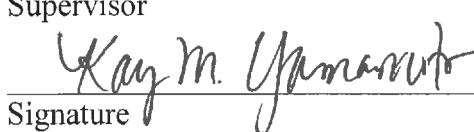
REFERENCE TOXICANT TEST: 1612RT2B.H

RESULT: PASS

% Effect = 3.23 %

Analyst Rodeline Estiva

Signature

Title Water Biologist II
JANUARY 3, 2017
Date

Supervisor Kay Yamamoto

Signature

Title Water Biologist III
January 5, 2017
Date

CETIS Summary Report

Report Date: 03 Jan-17 09:21 (p 1 of 1)
 Test Code: 1612072B.H | 18-5530-0836

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Batch ID:	15-8712-0698	Test Type:	Development	Analyst:	Rodeline Estiva
Start Date:	17 Dec-16 14:50	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	19 Dec-16 13:00	Species:	Haliotis rufescens	Brine:	Frozen Seawater
Duration:	46h	Source:	Cultured Abalone	Age:	
Sample ID:	18-9496-5572	Code:	555718	Client:	Watershed Protection Division
Sample Date:	17 Dec-16 08:25	Material:	Stormwater Monitoring Sample	Project:	MS4
Receive Date:	17 Dec-16 10:00	Source:	WPD (WATERSHED)		
Sample Age:	6h (14.9 °C)	Station:	RW-SMB-3		

Sample Note: The sample was set-up at 10:15am on 12/17/2016. The sample age is 2 hours. RE 1/3/2017

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
02-6928-6322	Development Rate	100	>100	N/A	N/A	1	TST-Welch's t Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
02-6928-6322	Development Rate	Control Resp	0.8776	0.8 - NL	Yes	Passes Acceptability Criteria

Development Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.8776	0.871	0.8843	0.8529	0.902	0.007995	0.01788	2.04%	0.0%
100		5	0.8493	0.8398	0.8588	0.8091	0.8738	0.01141	0.02551	3.0%	3.23%

Development Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.902	0.8761	0.8846	0.8529	0.8725
100		0.8738	0.8091	0.8644	0.8407	0.8585

CETIS Analytical Report

Report Date: 03 Jan-17 09:21 (p 1 of 2)

Test Code: 1612072B.H | 18-5530-0836

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Analysis ID: 02-6928-6322	Endpoint: Development Rate	CETIS Version: CETISv1.8.1
Analyzed: 21 Dec-16 12:39	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes
Batch ID: 15-8712-0698	Test Type: Development	Analyst: Rodeline Estiva
Start Date: 17 Dec-16 14:50	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 19 Dec-16 13:00	Species: Haliotis rufescens	Brine: Frozen Seawater
Duration: 46h	Source: Cultured Abalone	Age:
Sample ID: 18-9496-5572	Code: 555718	Client: Watershed Protection Division
Sample Date: 17 Dec-16 08:25	Material: Stormwater Monitoring Sample	Project: MS4
Receive Date: 17 Dec-16 10:00	Source: WPD (WATERSHED)	
Sample Age: 6h (14.9 °C)	Station: RW-SMB-3	

Sample Note: The sample was set-up at 10:15am on 12/17/2016. The sample age is 2 hours. RE 1/3/2017

Data Transform	Zeta	Alt Hyp	MC Trials	TST b	Test Result
Angular (Corrected)	0	C*b > T	Not Run	0.75	Sample passes development rate endpoint

TST-Welch's t Test

Control	vs	Conc-%	Test Stat	Critical	DF	MSD	P-Value	Decision(α:5%)
Dilution Water		100*	14.47	1.943	6		<0.0001	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.8776	0.8 - NL	Yes	Passes Acceptability Criteria

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	0	1.838	2.29	0.4366	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.004216592	0.004216592	1	4.273	0.0726	Non-Significant Effect
Error	0.007894866	0.0009868583	8			
Total	0.01211146	0.005203451	9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.63	23.15	0.6476	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9556	0.7411	0.7353	Normal Distribution

Development Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.8776	0.8708	0.8844	0.8529	0.902	0.007995	0.01788	2.04%	0.0%
100		5	0.8493	0.8396	0.859	0.8091	0.8738	0.01141	0.02551	3.0%	3.23%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	1.214	1.204	1.225	1.177	1.252	0.01225	0.02739	2.26%	0.0%
100		5	1.173	1.16	1.186	1.119	1.208	0.01564	0.03498	2.98%	3.38%

CETIS Analytical Report

Report Date: 03 Jan-17 09:21 (p 2 of 2)
Test Code: 1612072B.H | 18-5530-0836

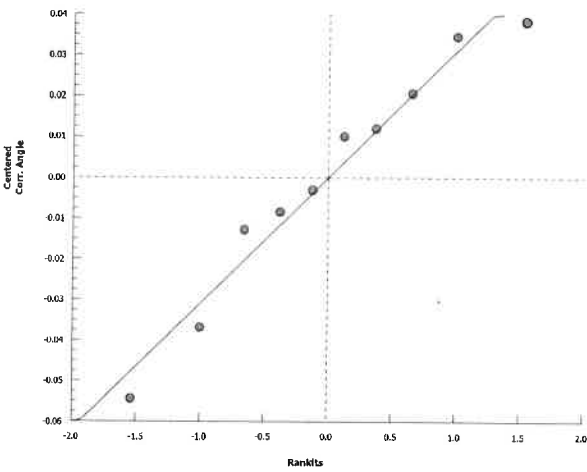
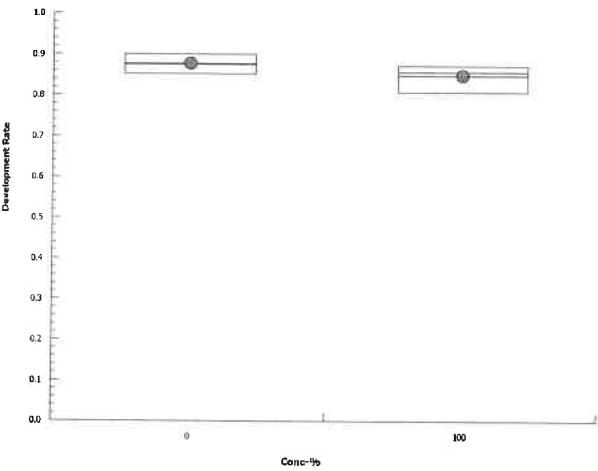
Abalone Larval Development Test Hyperion Treatment Plant Laboratory

Analysis ID: 02-6928-6322	Endpoint: Development Rate	CETIS Version: CETISv1.8.1
Analyzed: 21 Dec-16 12:39	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes

Development Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.902	0.8761	0.8846	0.8529	0.8725
100		0.8738	0.8091	0.8644	0.8407	0.8585

Graphics



CETIS Test Data Worksheet

SMB 3

Report Date: 14 Dec-16 14:22 (p 1 of 1)

Test Code: 18-5530-0836/1612072B.H

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Start Date: 17 Dec-16 ¹⁴⁵⁰
 End Date: 19 Dec-16 ¹³⁰⁰
 Sample Date: 16 Dec-16 ⁸²⁵

Species: Haliotis rufescens

Sample Code: 70F2E144

Protocol: EPA/600/R-95/136 (1995)

Sample Source: WPD

Material: Stormwater Monitoring Sample

Sample Station: RW-SMB-3

Conc-%	Code	Rep	Pos	# Counted	# Normal	Notes
0	D	1	5	102	92	
0	D	2	10	113	99	
0	D	3	11	104	92	
0	D	4	1	102	87	
0	D	5	6	102	89	
100		1	9	103	90	
100		2	13	110	89	
100		3	2	118	102	
100		4	15	113	95	
100		5	8	106	91	

sample received on 12/17/2016 @ 10 AM. (14.9°C) R

#555718

R
11/3/2017

Set-ups @ 10:15 on 12/17/16. R

CETIS Measurement Worksheet

SMB 3

Report Date: 14 Dec-16 14:22 (p 1 of 1)
Test Code: 1612072B.H | 18-5530-0836

Abalone Larval Development Test

Hyperion Treatment Plant Laboratory

Start Date: 17 Dec-16 Species: *Haliotis rufescens*
 End Date: 19 Dec-16 Protocol: EPA/600/R-95/136 (1995)
 Sample Date: 16 Dec-16 Material: Stormwater Monitoring Sample

Sample Code: 70F2E144
 Sample Source: WPD
 Sample Station: RW-SMB-3

Dissolved Oxygen-mg/L				
Conc-%	Code	Reading 1	Reading 2	
0	D	8.23	8.20	
100		8.26	8.16	
Measure Time:		1030	1045	
Instrument ID:		#3	#3	
Analyst:		RO	RO	

pH				
Conc-%	Code	Reading 1	Reading 2	
0	D	8.20	7.99	
100		8.24	8.00	
Measure Time:		1030	1045	
Instrument ID:		#2	#2	
Analyst:		RO	RO	

Salinity-ppt				
Conc-%	Code	Reading 1	Reading 2	
0	D	33	33	
100		33	33	
Measure Time:		1030	1045	
Instrument ID:		#4 cond	#4 cond	
Analyst:		RO	RO	

Temperature-°C					
Conc-%	Code	Reading 1	Reading 2	Reading 3	
0	D	14.9	14.7	14.7	
100		14.6	14.7	14.8	
Measure Time:		1030	0832	1045	
Instrument ID:		#2	1	#2	
Analyst:		RO	DL	RO	

ABALONE SPAWNING WORKSHEET

TYPE OF EFFLUENT: SMB Stormwater

TEST START DATE: Dec 17, 2016

Batch #: 161215

TEST ID: 1612RT2B.H, 1612072A.H, 1612072B.H

TIME SPAWNING START: 940

Number of abalone

Gonad index

Temperature

Males 3 3 2 2
Females 3 3 3 2

25
275

15° C
15° C

Time

Male

Female

Male Female

Temperature

Temperature

Beginning of spawning treatment: 1105 | 9:58

Taken out of H2O2:

1334 | 1228

First male abalone spawn:

1350

First female abalone spawn:

1302

Fertilization start:

1353

Fertilization completed:

1408

15° C
15° C
15° C
15° C

15° C
15° C
15° C
15° C

Fertilized eggs density count:

Mean 215 eggs / 0.5 ml

> 150 eggs / 0.5 ml, eggs too concentrate
PE.

Add 1000 embryos/test container divided by the number of embryos/ml
ml/test per beaker

860 eggs / 2 ml / beaker

Temperature of embryos:

14.8° C

Temperature of test containers:

14.2° C

Time embryos added to test chambers (TEST START):

1450

① 124 eggs / 0.3 ml

② 139 eggs / 0.3 ml

③ 116 eggs / 0.3 ml

④ 135 eggs / 0.3 ml

⑤ 132 eggs / 0.3 ml

⑥ 132 eggs / 0.3 ml

⑦ 132 eggs / 0.3 ml

⑧ 132 eggs / 0.3 ml

⑨ 132 eggs / 0.3 ml

⑩ 132 eggs / 0.3 ml

⑪ 132 eggs / 0.3 ml

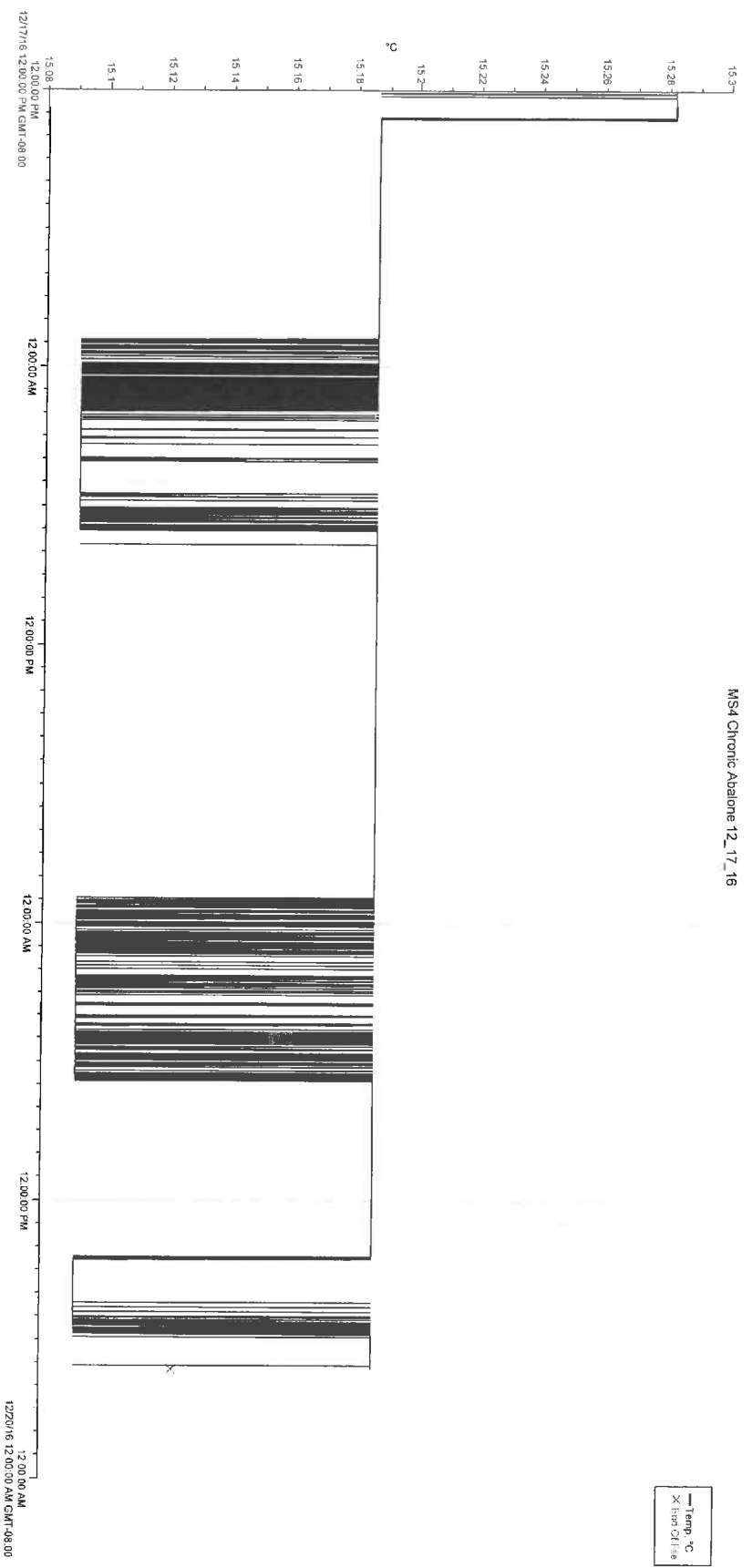
Ave = 129 eggs / 0.3 ml = X / 0.5 ml
215 eggs / 0.5 ml

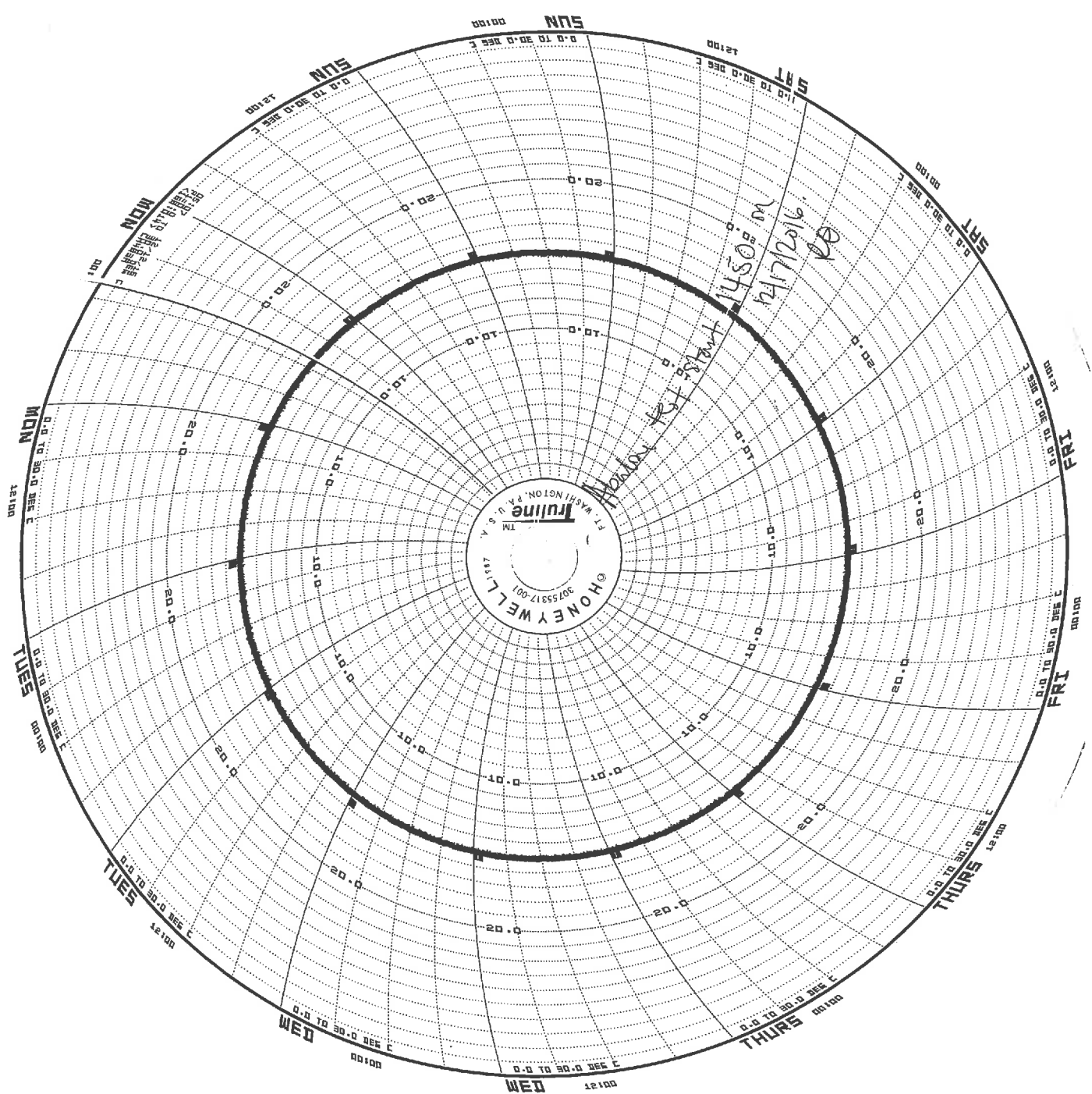
TEST CLOSING

DATE: 12/19/2016

TIME: 13:00

Abalone Chronic Toxicity Test
Start: Saturday, Dec 17, 2016
End: Monday, Dec 19, 2016





Chronic Abalone Toxicity Test.

Start: Saturday, Dec 17, 2016

End: Monday, Dec 19, 2016

RT: 1612RT2B.H

SMB-1: 1612072A.H

SMB-3: 1612072B.H

page 1 of 2

