New England Bioassay

A Division of GZA

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

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CHRONIC AQUATIC TOXICITY TEST REPORT

Commuter Rail Maintenance Facility
Somerville, Massachusetts

Ceriodaphnia dubia Survival and Reproduction Test – EPA 1002.0

Pimephales promelas Larval Survival and Growth Test – EPA 1000.0

EPA 821-R-02-013, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms", Fourth Edition

Test Start Date: 5/2/17

Test Period: May 2017

Report Prepared by:

New England Bioassay
A Division of GZA GeoEnvironmental, Inc.
77 Batson Dr.
Manchester, CT 06042

NEB Project Number: 05.0044887.00

Report Date: June 1, 2017

Report Submitted to:

Alpha Analytical Laboratories
8 Walkup Drive
Westborough, MA 01581

Sample ID: ABCB (L1713794, L1714121, L1714523)

This report shall not be reproduced, except in its entirety, without written approval of New England Bioassay (NEB). NEB is the sole authority for authorizing edits or modifications to the data contained in this report. Test results relate only to samples analyzed. Please contact the Lab Manager, Kimberly Wills, at 860-858-3153 or kimberly.wills@gza.com if you have any questions concerning these results.

NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TOXICITY TEST SUMMARY SHEET

Facility Name: Commuter Rail Maintenance Facility Test Start Date: 5/2/17
NPDES Permit Number: MA0003590 Outfall Number: _____

Test Type	Test Species	Sample Type	Sample Method
_ Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	X Ceriodaphnia Dubia	_ Dechlorinated	X Composite
X Modified (Chronic reporting LC50 values)	_ Daphnia Pulex	_ Unchlorinated	_ Flow-thru
	_ Mysid Shrimp	_ Chlorinated	_ Other
_ 24-Hour Screening	_ Sheepshead		
	_ Menidia		
	_ Sea Urchin	TRC conc. 0.020 mg/L	
	_ Selenastrum		
	_ Other _____		

Dilution Water

X Receiving water collected at a point immediately upstream of or away from the discharge; (Receiving water name and sampling location: Millers River -see COC)

_ Alternate Surface Water of known quality and a hardness to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ Synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ Artificial sea salts mixed with deionized water;

_ Other _____

Effluent Sampling Date (s): 5/1/17 5/3/17 5/5/17

Effluent Concentrations Tested (in%): 0 6.25 12.5 25 50 100

* (Permit Limit Concentration): monitor only

Was effluent salinity adjusted? No If yes, to what value? N/A ppt

Reference Toxicant test date: 5/1/17 Reference Toxicant Test Acceptable: Yes X No _

Age and Age Range of Test Organisms < 24 hours Source of Organisms NEB Lab

TEST RESULTS &PERMIT LIMITS

Test Acceptability Criteria

A. Synthetic Water Control
Mean Control Survival: 100% Mean Control Reproduction: 30.2 young/female

B. Receiving Water Control
Mean Control Survival: 100% Mean Control Reproduction: 31.3 young/female

C. Lab Culture Control Yes_ No X
Mean Control Survival: % Mean Control Reproduction: young/female

D. Thiosulfate Control Yes_ No X
Mean Control Survival: % Mean Control Reproduction: young/female

Test Variability

Test PMSD (growth) N/A Upper and Lower PMSD bound N/A low__ in-bounds__ high___
Test PMSD (reprod.) 12.2% Upper and Lower PMSD bound 13-47% low X in-bounds __ high___

Permit Limits & Test Results

	Limits		Results
LC50	N/A	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC	N/A	A-NOEC	100%
C-NOEC	N/A	C-NOEC	100%
		LOEC	>100%
IC25	N/A	IC25	>100%
IC50	N/A	IC50	>100%

PMSD Comparison Discussion (Test Variability/Sensitivity)

Reproduction

_ 1. PMSD exceeds upper bounds. Test results are highly variable and may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC).

_ 1a. Test results indicate the discharge is not toxic at the PLC. Test is not sufficiently sensitive and must be repeated within 30 days of the initial test completion date using fresh samples.

_ 1b. Test results indicate the discharge is toxic at the PLC. Test results are considered acceptable and the test does not have to be repeated.

_ 2. The PMSD falls within the upper (47%) and lower (13%) bounds. Results are reportable.

X 3. PMSD falls below the lower bound test variability criterion. The test is very sensitive. The relative percent difference (RPD) between the control and each treatment was calculated and compared to the lower PMSD boundary.

_ 3a. The RPD values for each concentration fall below the lower bound. The differences observed in this test are considered statistically insignificant.

_ 3b. The RPDs for the following concentrations are above the lower bound_____. The results at these concentrations are considered statistically significantly lower than controls.

Concentration-Response Evaluation

Survival: No concentration-response curve – no mortality observed at any concentration.

Reproduction: No significant effects at any test concentration with a flat concentration-response curve. Test concentrations performed very similarly to dilution control.

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

Survival	Reprod.	
X	X	1. Results are reliable and reportable.
_	_	2. Results are anomalous. An explanation is provided in the body of the report.
_	_	3. Results are inconclusive. A retest with fresh samples is required. An explanation is provided in the body of the report.

NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TOXICITY TEST SUMMARY SHEET

Facility Name: Commuter Rail Maintenance Facility Test Start Date: 5/2/17
NPDES Permit Number: MA0003590 Outfall Number: _____

Test Type	Test Species	Sample Type	Sample Method
_ Acute	X Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia Dubia	_ Dechlorinated	X Composite
X Modified (Chronic reporting LC50 values)	_ Daphnia Pulex	_ Unchlorinated	_ Flow-thru
	_ Mysid Shrimp	_ Chlorinated	_ Other
_ 24-Hour Screening	_ Sheepshead		
	_ Menidia		
	_ Sea Urchin	TRC conc. 0.020 mg/L	
	_ Selenastrum		
	_ Other _____		

Dilution Water

X Receiving water collected at a point immediately upstream of or away from the discharge; (Receiving water name and sampling location: Millers River -see COC)

_ Alternate Surface Water of known quality and a hardness to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ Synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ Artificial sea salts mixed with deionized water;

_ Other _____

Effluent Sampling Date (s): 5/1/17 5/3/17 5/5/17

Effluent Concentrations Tested (in%): 0 6.25 12.5 25 50 100

* (Permit Limit Concentration): Monitor only

Was effluent salinity adjusted? No If yes, to what value? N/A ppt

Reference Toxicant test date: 5/1/17 Reference Toxicant Test Acceptable: Yes X No _

Age and Age Range of Test Organisms < 24 hours Source of Organisms NEB Lab

TEST RESULTS &PERMIT LIMITS

Test Acceptability Criteria

A. Synthetic Water Control
Mean Control Survival: 87.5% Mean Control Weight: 0.649 mg

B. Receiving Water Control
Mean Control Survival: 100% Mean Control Weight: 0.695 mg

C. Lab Culture Control Yes_ No X
Mean Control Survival: % Mean Control Weight: mg

D. Thiosulfate Control Yes_ No X
Mean Control Survival: % Mean Control Weight: mg

Test Variability

Test PMSD (growth) 9.6%	Upper and Lower PMSD bound 12-30%	low X	in-bounds __	high___
Test PMSD (reprod.) N/A	Upper and Lower PMSD bound N/A___	low__	in-bounds__	high___

Permit Limits & Test Results

	Limits		Results
LC50	N/A	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC	N/A	A-NOEC	100%
C-NOEC	N/A	C-NOEC	100%
		LOEC	>100%
IC25	N/A	IC25	>100%
IC50	N/A	IC50	>100%

PMSD Comparison Discussion (Test Variability/Sensitivity)

Growth

_ 1. PMSD exceeds upper bounds. Test results are highly variable and may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC).

_ 1a. Test results indicate the discharge is not toxic at the PLC. Test is not sufficiently sensitive and must be repeated within 30 days of the initial test completion date using fresh samples.

_ 1b. Test results indicate the discharge is toxic at the PLC. Test results are considered acceptable and the test does not have to be repeated.

_ 2. The PMSD falls within the upper (30%) and lower (12%) bounds. Results are reportable.

X 3. PMSD falls below the lower bound test variability criterion. The test is very sensitive. The relative percent difference (RPD) between the control and each treatment was calculated and compared to the lower PMSD boundary.

_ 3a. The RPD values for each concentration fall below the lower bound. The differences observed in this test are considered statistically insignificant.

_ 3b. The RPDs for the following concentrations are above the lower bound_____. The results at these concentrations are considered statistically significantly lower than controls.

Concentration-Response Evaluation

Survival: No significant effects at any test concentration with a flat concentration-response curve. Test concentrations performed very similarly to dilution control.

Growth: No significant effects at any test concentration with a flat concentration-response curve. Test concentrations performed very similarly to dilution control.

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

Survival	Growth	
X	X	1. Results are reliable and reportable.
_	_	2. Results are anomalous. An explanation is provided in the body of the report.
_	_	3. Results are inconclusive. A retest with fresh samples is required. An explanation is provided in the body of the report.

Whole Effluent Toxicity Testing Report Conclusions and Notes

Client Name/Project: Alpha/Commuter Rail Maintenance Facility Test Date: 5/2/17

Sample ID: ABCB (L1713794, L1714121, L1714523)

Your results were as follows:

☒ Passed all whole effluent toxicity permit limits

☐ Failed the following permit limit(s): *C. dubia*: ☐ LC50 ☐ C-NOEC *P. promelas*: ☐ LC50 ☐ C-NOEC
Please proceed according to the instructions in your permit.

☐ Original Test Invalid – **Valid retest performed. Both test and retest results are attached.**

☐ A retest using fresh samples must be performed within 30 days of the initial test completion date (____) due to the test condition described below. See next page for further explanation.
☐ Test Invalid due to: ☐ Diluent toxicity ☐ Synthetic control toxicity
☐ Test not sufficiently sensitive. PMSD exceeds upper bound.
☐ Results are inconclusive due to an unusual concentration-response relationship.

☐ Available information is insufficient to determine whether this test passed or failed. Please compare results to your permit limits. Please submit a current copy of your permit to the NEB Lab so that we can determine the status of future tests results and help ensure your compliance with permit requirements.

☐ Additional testing for metals was required on the second and third effluent samples due to the following:
☐ Renewal sample(s) were of sufficient potency to cause lethality to 50% or more of the test organisms:
Sample #: ☐ 2 ☐ 3 Species: ☐ Cd ☐ Pp Conc.: ☐ 6.25% ☐ 12.5% ☐ 25% ☐ 50% ☐ 100% ☐ ___%
☐ The test failed its permit limit for: *C. dubia*: ☐ LC50 ☐ C-NOEC *P. promelas*: ☐ LC50 ☐ C-NOEC

Diluent Toxicity:

☐ Testing ☐will be or ☐has been performed according to the Case 1 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water.

☐ Retesting ☐will be or ☐has been performed according to the Case 1 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water.

☐ This is your _____ case of dilution water toxicity. Please proceed according to the Case 2 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water. The alternate dilution water you select for future tests for this species should be described as follows: "synthetic laboratory water made up according to EPA's toxicity test protocols, by adding specified amounts of salts into deionized water in order to match the hardness of our receiving water." Writing this letter should help you to avoid retests in the future.

Sampling Requirements:
A minimum of 3 samples were collected. ☒ Yes. ☐ No. See explanation on next page.

Samples were first used within 36 hours of collection. ☒ Yes. ☐ No. See explanation on next page.

Dechlorination Procedures: Chlorine was measured using 4500 CL-G DPD Colorimetric Method.
☒ Dechlorination was not required.

☐ Sample was dechlorinated to _____ mg/L by adding sodium thiosulfate to the sample prior to test initiation. A dechlorinated control of diluent water spiked with sodium thiosulfate equal in proportion to the amount added to the effluent sample was included in the test series.

☐ Chlorine elevated due to interference. Chlorine was _____ mg/L after interference check.

☐ Total Residual Chlorine was re-measured following aeration, and was found to be ___ mg/L.

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Permittee)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on _____ [Date]

_____ [Authorized Signature]

_____ [Print or Type Name and Title]

_____ [Print or Type the Permittee's Name]

_____ [Print or Type the NPDES Permit No.]

Since the WET test and report check is complicated, the New England Bioassay Aquatic Toxicity Laboratory has certified the validity of the WET test data in the section below. Please note that this does not relieve the permittee from its responsibility to sign and certify the report under 40 C.F.R. S 122.41(k).

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Bioassay Laboratory)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on 6/1/17 [Date]

[Authorized Signature]

Kim Wills, Laboratory Manager
[Print or Type Name and Title]

New England Bioassay a Division of GZA
[Print or Type Name of Bioassay Laboratory]

24. Telephone Contacts
If you have questions, please contact Joy Hilton, Water Technical Unit, at (617) 918-1877 or David McDonald, Ecosystem Assessment Unit, at (617) 918-8609.

NEW ENGLAND BIOASSAY TOXICITY DATA FORM
CHRONIC COVER SHEET

CLIENT: Alpha Analytical Laboratories
ADDRESS: 8 Walkup Drive
Westborough, MA 01581
SAMPLE TYPE: ABCB (Keolis/Commuter Rail)
DILUTION WATER: ABCB Receiving (Millers River)

C.dubia TEST ID # 17-608a
COC # C37-2035/36
PROJECT # 05.0044887.00

INVERTEBRATES

TEST SET UP (TECH INIT) CB
TEST SPECIES *Ceriodaphnia dubia*
NEB LOT# Cd17 (RMH 076
AGE < 24 hours
TEST SOLUTION VOLUME (mls) 15
NO. ORGANISMS PER TEST CHAMBER 1
NO. ORGANISMS PER CONCENTRATION 10

Laboratory Control Water (CTRMH)

Batch Number	Hardness mg/L $CaCO_3$	Alkalinity mg/L $CaCO_3$
CTR17(MH003)	92	60

	DATE	TIME
TEST START:	5/2/17	1233
TEST END:	5/8/17	1139

Results of *Ceriodaphnia dubia* Chronic Test

		95% Confidence Limits
48 Hour LC50	>100%	100%±∞
7 Day LC50	>100%	100%±∞
Survival NOEC	100%	
Survival LOEC	>100%	
Reproduction NOEC	100%	
Reproduction LOEC	>100%	
Reproduction IC_{25}	>100%	

NOEC: NO OBSERVABLE EFFECT CONCENTRATIC LOEC: LOWEST OBSERVABLE EFFECT CONCENTRATION

Comments:

REVIEWD BY: DATE: 6/1/17

NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS:	Keolis/Commuter Rail Maintenance Facility @ Ambient beyond containment booms				
NEB PROJECT NUMBER:	05.0044887.00	NEB TEST NUMBER:	17-608a	COC #	C37-2035/36
TEST ORGANISM:	*Ceriodaphnia dubia*	AGE:	<24 hours	Lot #	Cd17 (RMH 076
START DATE:	5/2/17	TIME: 1233	END DATE: 5/8/17	TIME:	1139

Effluent Concentration	Cup #	B3	B4	B5	B7	B8	B9	B10	B11	B12	B13	Total Live Young	# Live Adults	Analyst-Transfer	Analyst-Counts
		Culture Lot#				Cd17 (RMH 076									
	Day Number	Replicate													
		A	B	C	D	E	F	G	H	I	J				
NEB Lab Synthetic Control	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10	CB	
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10	PD	
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10	CB	
	3	4	5	5	2	4	4	5	5	3	4	41	10	CW	CW
	4	10	✓	✓	8	✓	✓	10	10	✓	✓	38	10	CW	CW
	5	✓	13	13	✓	14	9	✓	✓	9	9	67	10	CW	CW
	6	14	15	18	13	14	16	16	20	16	14	156	10	CB	CB
	7														
	totals	28	33	36	23	32	29	31	35	28	27	302	10		MG
Millers River Diluent (ABCB site)		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	5	5	3	6	6	5	4	6	4	6	50	10		
	4	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	10		
	5	✓	10	10	10	12	12	10	12	9	9	94	10		
	6	15	12	15	16	19	19	14	16	15	18	159	10		
	7														
	totals	30	27	28	32	37	36	28	34	28	33	313	10		
6.25%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	4	7	3	3	6	5	5	3	4	5	45	10		
	4	10	✓	10	11	10	12	13	✓	✓	✓	66	10		
	5	✓	12	✓	✓	✓	✓	✓	12	8	10	42	10		
	6	16	16	13	13	18	16	16	15	14	14	151	10		
	7														
	totals	30	35	26	27	34	33	34	30	26	29	304	10		

Notes: _____

NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS:	Keolis/Commuter Rail Maintenance Facility @ Ambient beyond containment booms		
NEB PROJECT NUMBER:	05.0044887.00	ORGANISM: *Ceriodaphnia dubia*	START DATE: 5/2/17

Effluent Concentration	Day Number	Replicate A	B	C	D	E	F	G	H	I	J	Total Live Young	# Live Adults	Analyst-Transfer	Analyst-Counts
12.5%	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	5	6	6	5	6	6	6	7	3	4	54	10		
	4	✓	✓	✓	✓	✓	10	✓	✓	✓	✓	10	10		
	5	12	12	10	10	13	✓	12	12	12	12	105	10		
	6	15	14	11	16	16	20	19	15	18	17	161	10		
	7														
	totals	32	32	27	31	35	36	37	34	33	33	330	10		
25%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	4	5	5	6	4	5	6	✓	5	4	44	10		
	4	11	✓	12	12	10	12	8	6	✓	✓	71	10		
	5	✓	13	✓	✓	✓	✓	✓	13	8	12	46	10		
	6	19	19	14	17	14	17	16	✓	17	16	149	10		
	7														
	totals	34	37	31	35	28	34	30	19	30	32	310	10		
50%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	4	6	4	3	6	4	6	5	5	4	47	10		
	4	8	✓	✓	12	✓	12	✓	✓	✓	✓	32	10		
	5	✓	8	17	✓	10	✓	12	12	10	12	81	10		
	6	15	15	15	18	18	16	16	15	19	16	163	10		
	7														
	totals	27	29	36	33	34	32	34	32	34	32	323	10		
100%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	6	5	5	4	5	5	6	4	4	5	49	10		
	4	12	✓	8	12	10	10	12	✓	✓	✓	64	10		
	5	✓	12	✓	✓	✓	✓	✓	10	12	3	37	10		
	6	18	21	17	17	12	16	16	14	19	17	167	10		
	7														
	totals	36	38	30	33	27	31	34	28	35	25	317	10		

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	12-1936-3184	**Endpoint:**	2d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:18	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	05-6471-0727	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:33	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	08 May-17 11:39	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	5d 23h	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	14-2409-6783	**Code:**	54E1FE0F	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	31h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	1283650	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	n/a	n/a	<1	n/a	n/a

2d Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	D	10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
6.25		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
12.5		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
25		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
50		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
100		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10

2d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

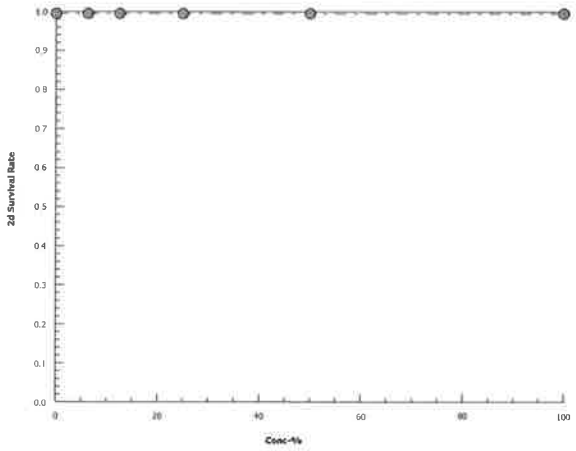
2d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	12-1936-3184	**Endpoint:**	2d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:18	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	04-2824-7590	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:18	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	05-6471-0727	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:33	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	08 May-17 11:39	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	5d 23h	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	14-2409-6783	**Code:**	54E1FE0F	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	31h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	1675605	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	n/a	n/a	<1	n/a	n/a

6d Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	D	10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
6.25		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
12.5		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
25		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
50		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
100		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10

6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

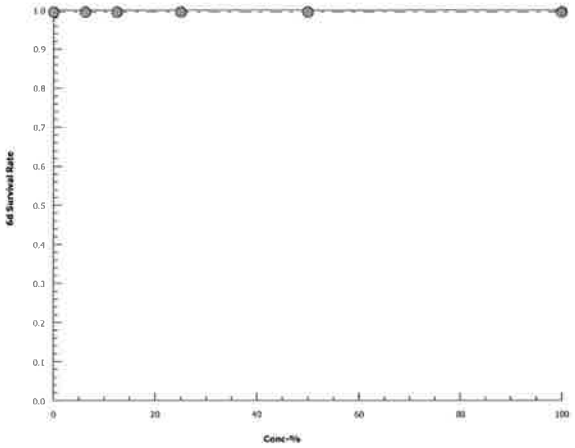
6d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	04-2824-7590	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:18	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	14-2538-6138	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:18	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	05-6471-0727	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:33	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	08 May-17 11:39	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	5d 23h	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	14-2409-6783	**Code:**	54E1FE0F	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	31h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1575518	200	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	31.3	15	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary

			Calculated Variate						
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	D	10	31.3	27	37	1.146	3.622	11.57%	0.0%
6.25		10	30.4	26	35	1.087	3.438	11.31%	2.88%
12.5		10	33	27	37	0.8944	2.828	8.57%	-5.43%
25		10	31	19	37	1.585	5.011	16.16%	0.96%
50		10	32.3	27	36	0.8307	2.627	8.13%	-3.2%
100		10	31.7	25	38	1.334	4.218	13.31%	-1.28%

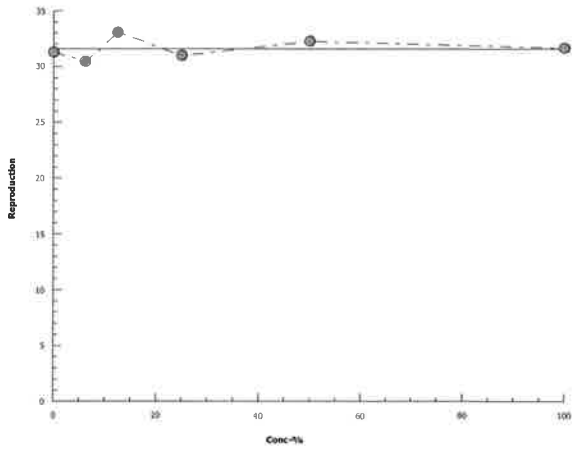
Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	30	27	28	32	37	36	28	34	28	33
6.25		30	35	26	27	34	33	34	30	26	29
12.5		32	32	27	31	35	36	37	34	33	33
25		34	37	31	35	28	34	30	19	30	32
50		27	29	36	33	34	32	34	32	34	32
100		36	38	30	33	27	31	34	28	35	25

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	14-2538-6138	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:18	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



CETIS Analytical Report

Report Date:	17 May-17 11:18 (p 1 of 2)
Test Code:	17-608a | 13-7602-1754

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	11-1293-3616	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:18	**Analysis:**	STP 2xK Contingency Tables	**Official Results:**	Yes

Batch ID:	05-6471-0727	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:33	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	08 May-17 11:39	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	5d 23h	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	14-2409-6783	**Code:**	54E1FE0F	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	31h	**Station:**			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test

Control vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Dilution Water	6.25	1.0000	Exact	1.0000	Non-Significant Effect
	12.5	1.0000	Exact	1.0000	Non-Significant Effect
	25	1.0000	Exact	1.0000	Non-Significant Effect
	50	1.0000	Exact	1.0000	Non-Significant Effect
	100	1.0000	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	D	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%

6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

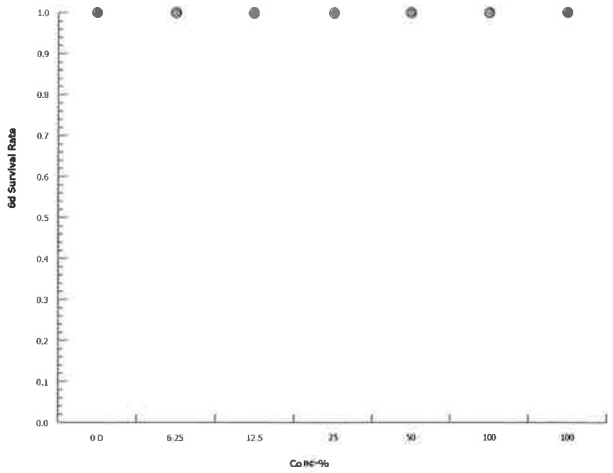
6d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	11-1293-3616	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:18	**Analysis:**	STP 2xK Contingency Tables	**Official Results:**	Yes

Graphics



CETIS Analytical Report

Report Date:	17 May-17 11:18 (p 1 of 2)
Test Code:	17-608a | 13-7602-1754

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	08-1348-3032	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:18	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Batch ID:	05-6471-0727	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:33	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	08 May-17 11:39	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	5d 23h	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	14-2409-6783	**Code:**	54E1FE0F	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	31h	**Station:**			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	12.15%

Dunnett Multiple Comparison Test

Control vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water	6.25	0.5419	2.289	3.802	18	CDF	0.6274	Non-Significant Effect
	12.5	-1.024	2.289	3.802	18	CDF	0.9854	Non-Significant Effect
	25	0.1806	2.289	3.802	18	CDF	0.7742	Non-Significant Effect
	50	-0.6021	2.289	3.802	18	CDF	0.9538	Non-Significant Effect
	100	-0.2409	2.289	3.802	18	CDF	0.8951	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	31.3	15	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	43.4833	8.69667	5	0.6306	0.6771	Non-Significant Effect
Error	744.7	13.7907	54			
Total	788.183		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	5.063	15.09	0.4083	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9685	0.9459	0.1227	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	31.3	28.71	33.89	31	27	37	1.146	11.57%	0.00%
6.25		10	30.4	27.94	32.86	30	26	35	1.087	11.31%	2.88%
12.5		10	33	30.98	35.02	33	27	37	0.8944	8.57%	-5.43%
25		10	31	27.42	34.58	31.5	19	37	1.585	16.16%	0.96%
50		10	32.3	30.42	34.18	32.5	27	36	0.8307	8.13%	-3.19%
100		10	31.7	28.68	34.72	32	25	38	1.334	13.31%	-1.28%

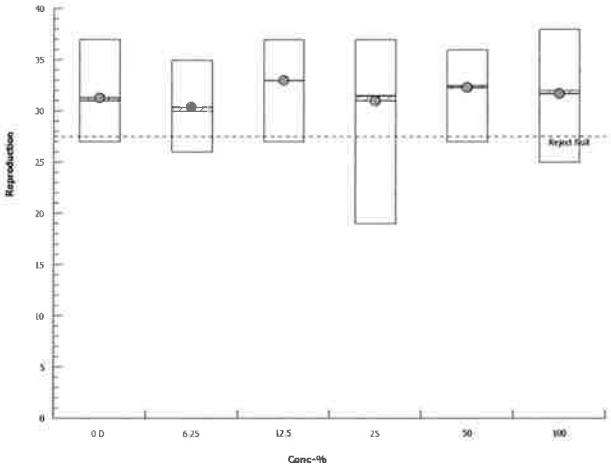
Reproduction Detail

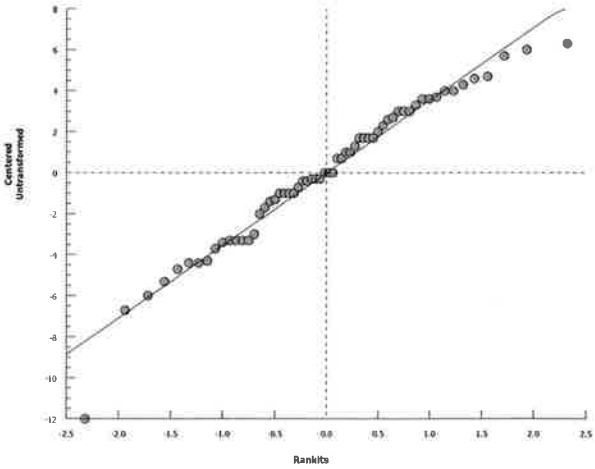
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	30	27	28	32	37	36	28	34	28	33
6.25		30	35	26	27	34	33	34	30	26	29
12.5		32	32	27	31	35	36	37	34	33	33
25		34	37	31	35	28	34	30	19	30	32
50		27	29	36	33	34	32	34	32	34	32
100		36	38	30	33	27	31	34	28	35	25

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	08-1348-3032	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:18	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Graphics





NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:	Keolis/Commuter Rail Maintenance Facility @ Ambient beyond containment booms							
NEB PROJECT NUMBER:	05.0044887.00			TEST ORGANISM		*Ceriodaphnia dubia*		
DILUTION WATER SOURCE:	ABCB Receiving (Millers River)			START DATE:		5/2/17	TIME:	1233
ANALYST	KW	CW	KO	KO	CW	CW		
NEB Lab Synthetic Control	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.9	24.7	24.6	24.0	24.8	24.7		
D.O. mg/L Initial	8.1	8.2	8.4	8.5	8.1	8.3		
pH s.u. Initial	7.8	7.7	7.6	7.6	7.8	7.8		
Conductivity µS Initial	392	394	394	391	385	447		
Temp °C Final	24.4	24.2	24.6	24.3	24.9	24.1		
D.O. mg/L Final	8.4	9.4	8.2	8.0	8.4	8.7		
pH s.u. Final	7.9	8.3	8.0	8.3	8.3	8.0		
Conductivity µS Final	408	403	414	407	413	461		
Millers River Diluent (at ABCB site)	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.9	25.4	25.1	25.9	25.9	25.5		
D.O. mg/L Initial	8.6	8.8	8.3	8.3	8.6	8.4		
pH s.u. Initial	7.0	7.1	7.3	7.0	7.0	7.3		
Conductivity µS Initial	1,291	1,278	1,286	1,285	1,529	1,534		
Temp °C Final	24.7	24.3	24.1	24.3	24.9	24.3		
D.O. mg/L Final	8.2	9.1	8.5	8.2	8.4	8.5		
pH s.u. Final	7.8	8.1	7.8	8.0	7.9	7.8		
Conductivity µS Final	1,287	1,270	1,489	1,348	1,588	1,669		
6.25%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.8	25.4	25.4	26.0	26.0	25.5		
D.O. mg/L Initial	9.0	8.9	8.8	8.4	8.7	8.7		
pH s.u. Initial	6.9	7.1	7.3	7.0	7.0	7.3		
Conductivity µS Initial	1,319	1,307	1,305	1,301	1,534	1,539		
Temp °C Final	24.7	24.3	24.0	24.3	24.9	24.4		
D.O. mg/L Final	8.2	9.2	8.5	8.3	8.3	8.6		
pH s.u. Final	7.8	8.2	7.9	8.1	8.0	7.9		
Conductivity µS Final	1,303	1,325	1,350	1,324	1,562	1,573		
12.5%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.9	25.4	24.4	26.0	26.0	25.3		
D.O. mg/L Initial	8.9	8.8	8.8	8.3	8.6	8.8		
pH s.u. Initial	6.9	7.1	7.3	7.1	7.0	7.3		
Conductivity µS Initial	1,355	1,339	1,326	1,323	1,540	1,545		
Temp °C Final	24.6	24.2	24.0	24.2	24.9	24.6		
D.O. mg/L Final	8.1	9.1	8.5	8.3	8.3	8.6		
pH s.u. Final	7.8	8.2	7.9	8.1	8.0	7.9		
Conductivity µS Final	1,374	1,421	1,472	1,411	1,599	1,651		

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:	Keolis/Commuter Rail Maintenance Facility @ Ambient beyond containment booms		
NEB PROJECT NUMBER:	05.0044887.00	TEST ORGANISM	*Ceriodaphnia dubia*
DILUTION WATER SOURCE:	ABCB Receiving (Millers River)	START DATE:	5/2/17 TIME: 1233

25%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.8	25.3	24.3	26.0	26.0	25.2		
D.O. mg/L Initial	8.8	8.8	8.9	8.3	8.6	8.7		
pH s.u. Initial	7.0	7.1	7.2	7.1	7.0	7.3		
Conductivity µS Initial	1,417	1,404	1,369	1,363	1,550	1,555		
Temp °C Final	24.8	24.5	24.0	24.3	24.9	24.6		
D.O. mg/L Final	8.3	9.3	8.5	8.3	8.3	8.7		
pH s.u. Final	7.9	8.3	7.9	8.1	8.0	8.0		
Conductivity µS Final	1,389	1,404	1,489	1,384	1,553	1,575		
50%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.0	25.2	24.3	26.0	26.0	24.9		
D.O. mg/L Initial	8.8	8.8	8.8	8.3	8.6	8.7		
pH s.u. Initial	7.0	7.1	7.2	7.1	7.0	7.3		
Conductivity µS Initial	1,546	1,530	1,456	1,449	1,572	1,575		
Temp °C Final	24.8	24.4	24.0	24.2	24.9	24.7		
D.O. mg/L Final	8.4	9.3	8.5	8.3	8.4	8.7		
pH s.u. Final	7.9	8.3	7.9	8.1	8.1	8.0		
Conductivity µS Final	1,550	1,567	1,557	1,525	1,615	1,645		
100%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.0	25.2	24.0	26.0	26.0	24.6		
D.O. mg/L Initial	8.8	8.9	8.8	8.3	8.7	8.6		
pH s.u. Initial	7.0	7.1	7.1	7.1	7.0	7.2		
Conductivity µS Initial	1,801	1,781	1,622	1,614	1,614	1,616		
Temp °C Final	24.7	24.5	24.0	24.2	24.9	24.8		
D.O. mg/L Final	8.4	9.5	8.6	8.3	8.4	8.7		
pH s.u. Final	8.1	8.4	8.0	8.1	8.1	8.0		
Conductivity µS Final	1,779	1,777	1,661	1,624	1,632	1,633		
	1	2	3	4	5	6	7	Remarks
Temp °C Initial								
D.O. mg/L Initial								
pH s.u. Initial								
Conductivity µS Initial								
Temp °C Final								
D.O. mg/L Final								
pH s.u. Final								
Conductivity µS Final								

Table of Random Permutations of 16 **C.dubia Test ID#** 17-608a

7	12	15	15	1	2	7	16	10	2	14	15	7	13	13	10	6	1	8	10
13	3	8	16	7	10	11	10	13	5	11	7	13	16	7	7	5	13	2	14
3	1	4	5	14	13	3	14	9	13	13	2	9	15	6	2	8	4	5	8
11	8	16	14	15	6	2	6	2	16	8	5	12	3	9	13	4	3	10	4
14	9	1	6	3	9	14	13	8	6	5	8	14	7	3	15	13	11	4	7
2	16	10	13	5	5	13	2	11	7	3	12	5	14	12	16	2	2	9	15
4	6	13	7	2	15	1	9	1	4	7	10	6	9	11	9	7	6	16	11
6	14	6	10	4	14	4	15	3	3	4	16	2	6	5	1	12	10	6	9
10	15	2	1	13	12	16	3	4	8	10	1	15	5	14	12	14	12	3	2
12	10	7	12	9	11	9	8	12	14	15	4	11	8	16	8	9	14	14	1
15	7	5	2	10	7	8	12	6	15	6	13	16	12	15	4	11	8	12	6
16	2	11	8	8	8	15	5	16	1	1	9	8	1	8	14	16	5	13	5
9	13	14	3	6	4	10	11	5	12	9	3	10	4	4	3	10	9	1	3
8	11	9	4	11	3	12	7	7	10	12	14	3	10	1	6	15	16	15	12
1	5	12	11	16	16	5	4	14	9	16	11	1	2	10	5	1	15	7	13
5	4	3	9	12	1	6	1	15	11	2	6	4	11	2	11	3	7	11	16
								conc											
11	8	16	5	5	13	1	13	2	16	14	12	9	8	7	5	13	3	13	3
2	2	8	8	14	16	4	3	8	11	10	14	15	1	2	11	4	5	15	9
6	13	2	13	6	5	9	15	11	10	12	6	16	15	16	9	10	12	16	15
14	12	4	16	16	11	14	10	5	12	3	3	12	14	15	13	6	4	1	16
8	6	3	9	4	10	6	4	16	2	2	9	8	16	4	6	5	15	7	8
9	15	12	10	3	2	12	6	1	15	4	13	7	7	9	12	14	8	8	11
3	10	11	12	13	12	5	11	7	8	9	5	14	11	10	1	3	13	3	5
16	1	13	14	8	14	15	5	3	7	11	15	6	12	5	7	11	1	14	4
1	14	14	2	9	15	16	14	6	14	7	8	3	13	11	8	7	7	12	7
4	4	6	4	12	3	11	8	15	9	8	1	13	6	3	3	15	9	9	12
15	5	1	11	10	6	3	7	10	5	5	11	10	10	12	15	16	14	5	2
5	3	5	6	7	7	13	2	14	3	16	4	5	5	13	4	9	16	2	6
12	7	15	15	15	9	8	12	12	13	15	10	1	4	6	16	2	6	11	1
10	11	10	3	2	4	2	1	4	6	6	7	11	9	14	10	8	11	4	13
7	9	7	7	11	1	7	16	13	1	13	2	4	2	1	2	12	2	10	14
13	16	9	1	1	8	10	9	9	4	1	16	2	3	8	14	1	10	6	10
								rep											
1	6	7	4	8	6	5	2	8	15	4	6	6	1	4	5	7	13	2	10
9	15	11	3	11	15	9	10	1	3	8	2	15	7	9	8	16	1	14	3
10	16	4	5	12	9	16	11	7	1	7	16	11	8	3	3	12	2	3	4
4	14	1	9	5	5	4	13	6	8	15	5	12	5	7	16	5	11	8	1
7	3	13	14	15	2	1	14	16	5	14	9	2	16	1	12	6	14	4	13
16	11	2	1	14	16	6	9	3	4	16	14	3	15	11	11	3	9	12	5
3	10	16	16	13	7	13	1	11	14	9	10	16	2	10	2	10	7	10	16
11	13	9	13	4	13	8	3	5	13	10	12	5	12	5	14	13	16	5	6
15	2	3	12	9	12	2	4	13	10	3	13	14	4	2	1	14	8	6	12
14	1	14	6	10	1	3	12	4	2	2	4	13	3	16	9	9	3	7	14
13	12	5	11	3	11	15	8	2	7	11	7	8	14	6	4	4	4	15	11
12	5	10	7	2	14	7	15	14	16	13	1	9	10	12	10	11	10	9	8
8	9	8	10	6	4	11	7	10	11	6	8	4	9	8	15	8	6	11	9
2	7	6	2	1	8	10	6	15	12	1	11	7	11	13	6	1	15	13	15
6	4	15	8	16	10	14	16	9	6	12	3	10	6	14	7	2	12	16	7
5	8	12	15	7	3	12	5	12	9	5	15	1	13	15	13	15	5	1	2
13	4	10	4	16	13	16	13	5	3	6	14	1	16	8	7	2	3	3	12
5	14	4	6	8	2	15	1	13	14	16	4	15	4	3	12	12	1	4	7
2	2	2	15	14	16	9	12	16	6	10	15	14	9	10	1	14	8	8	16
7	12	15	8	12	3	5	14	7	12	5	13	16	1	7	5	11	2	9	3
6	9	7	14	9	14	10	11	15	11	12	1	12	12	14	16	3	11	11	8
14	5	16	7	10	8	11	8	14	13	7	11	6	3	11	4	4	6	6	9
15	11	8	9	7	12	8	7	1	15	9	3	3	7	13	11	10	4	5	1
11	6	6	1	4	1	3	16	12	5	4	9	13	13	6	8	15	9	1	14
4	10	3	16	2	11	7	9	6	9	1	8	4	11	5	2	16	10	12	4
1	8	1	13	1	15	4	4	11	4	2	16	5	8	1	9	5	12	16	6
9	7	14	2	6	4	14	10	9	8	15	10	7	10	9	10	6	14	10	11
12	1	9	10	15	5	2	15	10	2	14	2	8	2	4	13	8	5	15	5
3	3	12	11	5	9	6	6	3	10	13	12	9	6	2	15	7	15	7	13
10	15	11	5	13	7	12	5	2	7	11	5	10	15	12	3	1	13	13	10
8	13	13	3	3	10	13	2	4	1	8	6	11	14	15	6	9	16	2	2
16	16	5	12	11	6	1	3	8	16	3	7	2	5	16	14	13	7	14	15

Ceriodaphnia dubia **Culture Chart** **Lot #** Cd17 (RMH 076) **B**

Brood mother source: RMH 073 A-11 Source's brood size: 17 (Qty.)

ABCB 5-2-17

Tech	AH	AH	MG	AH	AH		AH	AH		AH						
Date	4-24	4-25	4-26	4-27	4-28		4-30	5-1		5-2						
Day acc.	0	1	2	3	4	5	6	7		8	9	10	11	12	13	14
Cup # 1	N	N	N	N	4		10	T1 Y 16	1	~~AH T1~~ Y ~~T8~~						
2	N	N	N	N	5		2Y	N	2	~~AH T2~~ Y ~~T9~~						
3	N	N	N	N	7		11	T2 Y 17	3	T1 Y 18						
4	N	N	N	N	5		10	T3 Y 16	4	T2 Y 17						
5	N	N	N	N	4		8	T4 Y 15	5	T3 Y 15						
6	N	N	N	N	6		10	T5 Y 14	6	Y						
7	N	N	N	N	4		9	Y	7	T4 Y 17						
8	N	N	N	N	4		10	T6 Y 17	8	T5 Y 17						
9	N	N	N	N	7		11	T7 Y 16	9	T6 Y 15						
10	N	N	N	N	7		8	T8 Y 15	10	T7 Y 16						
11	N	N	N	N	5		10	T9 Y 15	11	T8 Y 18						
12	N	N	N	N	5		10	Y	12	T9 Y 15						
13	N	N	N	N	5		9	T10 Y 15	13	T10 Y 17						

Y = neonates present, and *criterion has been met:* ≥ 20 neonates produced in total by 3rd brood. **N** = no neonates

2B = two broods present. **2Y** = two broods and criterion met: ≥ 20 neos. by 3rd brood. **X** = brood mother dead **ae** = aborted eggs

✓ or **P** = neonates present after renewal on previous day (see time in log). **A→** = acceptable for acute testing only

T# = neonates used in test, replicate number of test noted (and brood counted). **acc.** = *if acclimated*, H_2O type used w/ renewal **this** day.

Test organism collection:

Project #	Symbols (✓ / P)	Tray diagram used? (Y/N)	Time period, neonates released	Collection date / time
0044626 NaCl	T	Y	4-30-17/1115 → 4-30-17/1430	5-1-17/0945
0044887	T	Y	5-1-17/1630 → 5-2-17/0800	5-2-17/1000
	T			
	T			
	T			
	T			

NEW ENGLAND BIOASSAY TOXICITY DATA FORM
CHRONIC COVER SHEET

CLIENT: Alpha Analytical Laboratories
ADDRESS: 8 Walkup Drive
Westborough, MA 01581
SAMPLE TYPE: ABCB (Keolis/Commuter Rail)
DILUTION WATER: ABCB Receiving (Millers River)

P.promelas TEST ID # 17-608b
COC # C37-2035/36
PROJECT # 05.0044887.00

VERTEBRATES

TEST SET UP (TECH INIT)	KW
TEST SPECIES	*Pimephales promelas*
NEB LOT#	Pp17(5-2)
AGE	< 24 hours
TEST SOLUTION VOLUME (mls)	400
NO. ORGANISMS PER TEST CHAMBER	10
NO. ORGANISMS PER CONCENTRATION	40

Laboratory Control Water (SRCF)

Batch Number	Hardness mg/L $CaCO_3$	Alkalinity mg/L $CaCO_3$
C37-S008	46	30

	DATE	TIME
TEST START:	5/2/17	1225
TEST END:	5/9/17	1213

Results of *Pimephales promelas* Chronic Test

		95% Confidence Limits
48 Hour LC50	>100%	100%±∞
7 Day LC50	>100%	100%±∞
Survival NOEC	100%	
Survival LOEC	>100%	
Growth NOEC	100%	
Growth LOEC	>100%	
Growth IC_{25}	>100%	

NOEC: NO OBSERVABLE EFFECT CONCENTRATI LOEC: LOWEST OBSERVABLE EFFECT CONCENTRATION

Comments:

REVIEWD BY: DATE: 6/1/17

NEB'S SURVIVAL DATA SHEET FOR FATHEAD MINNOW LARVAL SURVIVAL AND GROWTH TEST

FACILITY NAME & ADDRESS:	Keolis/Commuter Rail Maintenance Facility @ Ambient beyond containment booms						
NEB PROJECT NUMBER:	05.0044887.00	TEST NUMBER:	17-608b	COC #	C37-2035/36		
TEST ORGANISM:	*Pimephales promelas*	AGE:	<24 hours	Lot #	Pp17(5-2)		
START DATE:	5/2/17	TIME:	1225	END DATE:	5/9/17	TIME:	1213

Effluent Concentration	Replicate Number	Number of Survivors								
		Day								
		0	1	2	3	4	5	6	7	Remarks
	ANALYST	KW	PD	CB	KO	CW	CW	KO	KW	
NEB Lab Synthetic Control	A	10	10	10	10	10	10	10	10	
	B	10	10	10	10	10	10	10	10	
	C	10	7	7	7	7	6	6	6	
	D	10	10	10	10	10	10	9	9	
Millers River Diluent (at ABCB site)	A	10	10	10	10	10	10	10	10	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	10	10	10	10	10	
6.25%	A	10	10	10	10	10	10	10	10	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	10	10	10	10	10	
12.5%	A	10	10	10	10	10	10	10	10	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	10	10	10	10	10	
25%	A	10	10	10	10	9	9	9	9	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	10	10	10	10	10	
50%	A	10	10	10	10	10	10	10	10	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	10	10	10	10	10	
100%	A	10	10	10	9	9	9	9	9	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	10	10	10	10	10	

D.O. concentration fell below 4.0 mg/L _____

All test solutions were aerated at <100 bubbles/minute as of _____

NEW ENGLAND BIOASSAY WEIGHT DATA FOR FATHEAD MINNOW LARVAL SURVIVAL AND GROWTH TEST

FACILITY NAME & ADDRESS:	Keolis/Commuter Rail Maintenance Facility @ Ambient beyond containment booms		
NEB PROJECT #	05.0044887.00	NEB TEST NUMBER:	17-608b
TEST START DATE	5/2/17	WEIGHING DATE:	5/23/17
TEST END DATE	5/9/17		
DRYING TEMPERATURE (°C)	100 ± 4	DRYING TIME:	minimum 6 hours
ANALYST-INITIAL WEIGHTS	PD	ANALYST-FINAL WEIGHTS	TBP

Effluent Concentration	Replicate Number	A Weight of boat (mg)	B Dry Weight: Foil and Larvae (mg)
NEB Lab Synthetic Control	A	940.42	946.80
	B	938.58	945.66
	C	940.69	946.14
	D	939.49	946.55
Millers River Diluent (at ABCB site)	A	940.16	947.21
	B	942.69	949.13
	C	940.53	947.50
	D	940.13	947.45
6.25%	A	943.09	949.71
	B	939.37	946.35
	C	935.00	941.84
	D	937.41	944.02
12.5%	A	939.94	946.86
	B	938.92	946.14
	C	935.97	942.04
	D	933.37	939.62
25%	A	935.44	941.16
	B	937.10	943.32
	C	934.17	940.98
	D	936.19	943.02
50%	A	939.70	946.79
	B	936.87	943.51
	C	939.25	945.86
	D	940.85	947.45
100%	A	941.59	948.72
	B	940.22	947.83
	C	937.09	944.60
	D	938.52	946.48

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	03-2559-0419	**Endpoint:**	2d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:20	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	05-9321-7336	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	09 May-17 12:13	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	03-3973-8240	**Code:**	143FFE80	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	30h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	1976821	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	n/a	n/a	<1	n/a	n/a

2d Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	D	4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
6.25		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
12.5		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
25		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
50		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
100		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40

2d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

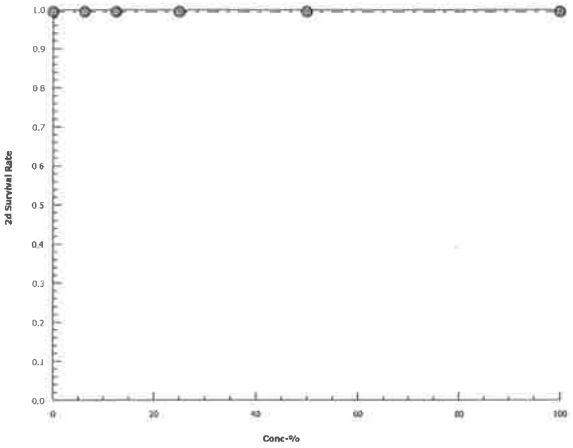
2d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	10/10	10/10
6.25		10/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10
25		10/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	03-2559-0419	**Endpoint:**	2d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:20	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	08-1149-5859	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:20	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	05-9321-7336	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	09 May-17 12:13	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	03-3973-8240	**Code:**	143FFE80	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	30h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	1156932	200	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1	0.8	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	n/a	n/a	<1	n/a	n/a

7d Survival Rate Summary

										Calculated Variate(A/B)	
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	D	4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
6.25		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
12.5		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
25		4	0.9750	0.9000	1.0000	0.0250	0.0500	5.13%	2.5%	39	40
50		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
100		4	0.9750	0.9000	1.0000	0.0250	0.0500	5.13%	2.5%	39	40

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		0.9000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		0.9000	1.0000	1.0000	1.0000

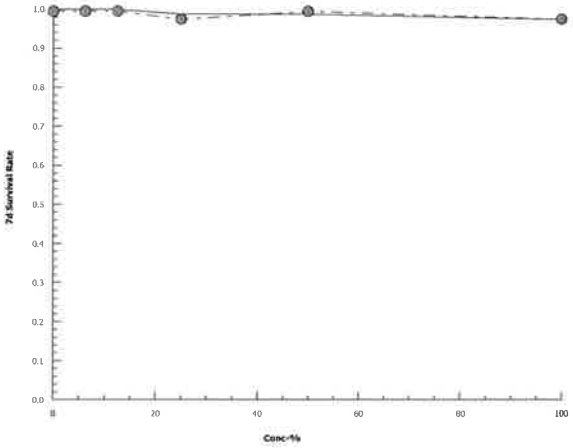
7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	10/10	10/10
6.25		10/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10
25		10/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	08-1149-5859	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:20	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



CETIS Analytical Report

Report Date:	17 May-17 11:21 (p 1 of 2)
Test Code:	17-608b | 03-9119-7153

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	11-7131-1664	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:20	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Batch ID:	05-9321-7336	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	09 May-17 12:13	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	03-3973-8240	**Code:**	143FFE80	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	30h	**Station:**			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	> 100	n/a	1	5.60%

Steel Many-One Rank Sum Test

Control vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water	6.25	18	10	1	6	Asymp	0.8333	Non-Significant Effect
	12.5	18	10	1	6	Asymp	0.8333	Non-Significant Effect
	25	16	10	1	6	Asymp	0.6105	Non-Significant Effect
	50	18	10	1	6	Asymp	0.8333	Non-Significant Effect
	100	16	10	1	6	Asymp	0.6105	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1	0.8	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0088531	0.0017706	5	0.8	0.5640	Non-Significant Effect
Error	0.039839	0.0022133	18			
Total	0.0486921		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	7.2	4.248	7.3E-04	Unequal Variances
Variances	Mod Levene Equality of Variance Test	0.8	4.248	0.5640	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.6154	0.884	9.2E-07	Non-Normal Distribution

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	2.50%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	2.50%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
6.25		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
12.5		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
25		4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	2.89%
50		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
100		4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	2.89%

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	11-7131-1664	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:20	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		0.9000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		0.9000	1.0000	1.0000	1.0000

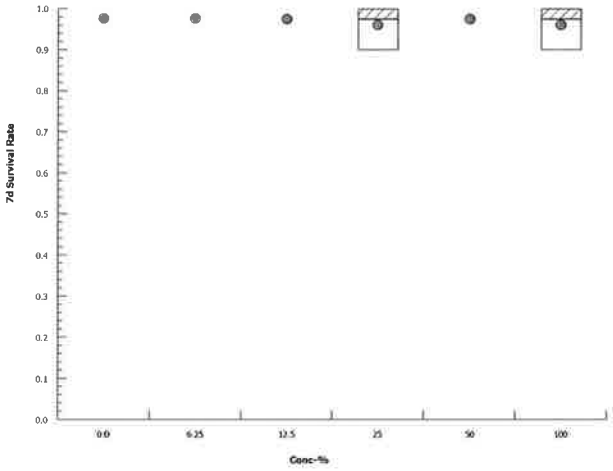
Angular (Corrected) Transformed Detail

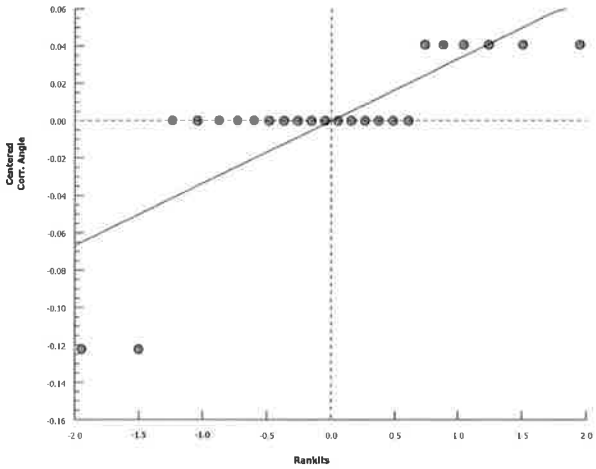
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.412	1.412	1.412	1.412
6.25		1.412	1.412	1.412	1.412
12.5		1.412	1.412	1.412	1.412
25		1.249	1.412	1.412	1.412
50		1.412	1.412	1.412	1.412
100		1.249	1.412	1.412	1.412

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	10/10	10/10
6.25		10/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10
25		9/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10
100		9/10	10/10	10/10	10/10

Graphics





Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	19-8197-5650	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	31 May-17 17:51	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Batch ID:	05-9321-7336	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	09 May-17 12:13	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	03-3973-8240	**Code:**	143FFE80	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	30h	**Station:**			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	9.60%

Dunnett Multiple Comparison Test

Control vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water	6.25	0.6591	2.407	0.067	6	CDF	0.5766	Non-Significant Effect
	12.5	1.192	2.407	0.067	6	CDF	0.3404	Non-Significant Effect
	25	1.986	2.407	0.067	6	CDF	0.1067	Non-Significant Effect
	50	0.7585	2.407	0.067	6	CDF	0.5312	Non-Significant Effect
	100	-2.194	2.407	0.067	6	CDF	0.9995	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.6945	0.25	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0313646	0.0062729	5	4.091	0.0117	Significant Effect
Error	0.027598	0.0015332	18			
Total	0.0589626		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	4.475	15.09	0.4833	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9669	0.884	0.5920	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	0.6945	0.6359	0.7531	0.701	0.644	0.732	0.01842	5.31%	0.00%
6.25		4	0.6763	0.6477	0.7048	0.673	0.661	0.698	0.008984	2.66%	2.63%
12.5		4	0.6615	0.5749	0.7481	0.6585	0.607	0.722	0.02722	8.23%	4.75%
25		4	0.6395	0.5549	0.7241	0.6515	0.572	0.683	0.02658	8.31%	7.92%
50		4	0.6735	0.6357	0.7113	0.6625	0.66	0.709	0.01186	3.52%	3.02%
100		4	0.7552	0.7009	0.8096	0.756	0.713	0.796	0.01707	4.52%	-8.75%

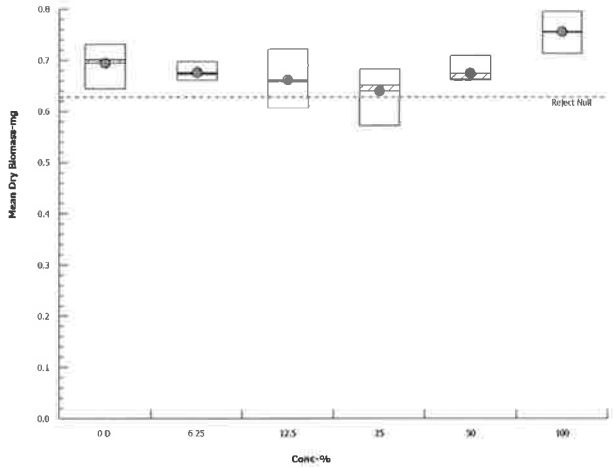
Mean Dry Biomass-mg Detail

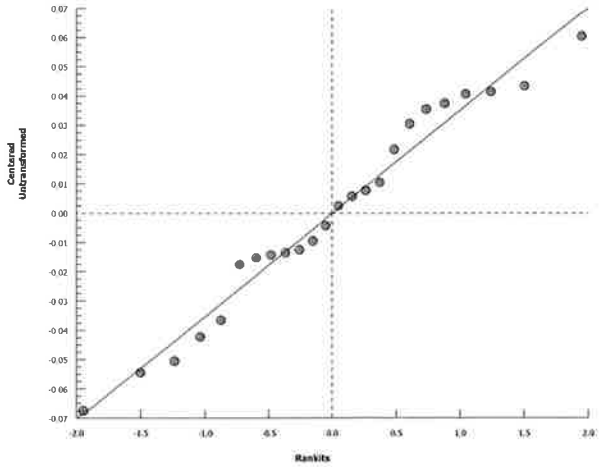
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.705	0.644	0.697	0.732
6.25		0.662	0.698	0.684	0.661
12.5		0.692	0.722	0.607	0.625
25		0.572	0.622	0.681	0.683
50		0.709	0.664	0.661	0.66
100		0.713	0.761	0.751	0.796

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	19-8197-5650	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	31 May-17 17:51	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Graphics





CETIS Analytical Report

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	15-8155-7073	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	31 May-17 17:52	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	05-9321-7336	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	09 May-17 12:13	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	03-3973-8240	**Code:**	143FFE80	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	30h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	715452	200	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.6945	0.25	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Mean Dry Biomass-mg Summary

			Calculated Variate						
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	D	4	0.6945	0.644	0.732	0.01842	0.03685	5.31%	0.0%
6.25		4	0.6763	0.661	0.698	0.008984	0.01797	2.66%	2.63%
12.5		4	0.6615	0.607	0.722	0.02722	0.05445	8.23%	4.75%
25		4	0.6395	0.572	0.683	0.02658	0.05316	8.31%	7.92%
50		4	0.6735	0.66	0.709	0.01186	0.02373	3.52%	3.02%
100		4	0.7552	0.713	0.796	0.01707	0.03414	4.52%	-8.75%

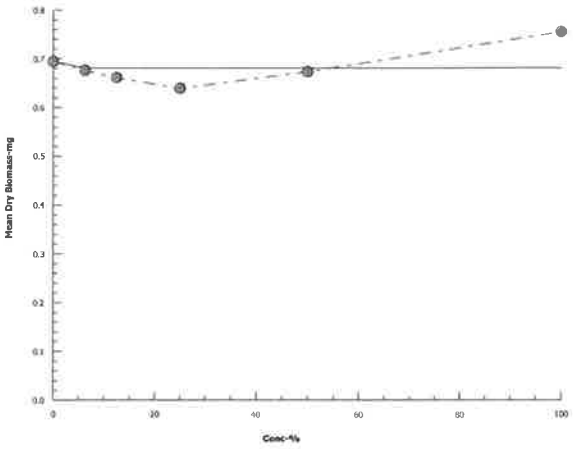
Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.705	0.644	0.697	0.732
6.25		0.662	0.698	0.684	0.661
12.5		0.692	0.722	0.607	0.625
25		0.572	0.622	0.681	0.683
50		0.709	0.664	0.661	0.66
100		0.713	0.761	0.751	0.796

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	15-8155-7073	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	31 May-17 17:52	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Concentration	Rep	Final Weight (mg)	Initial Weight (mg)	Total Weight (mg)	Average per fish (mg)	Mean fish weight (mg)	Standard Deviation
NEB Lab Synthetic Control	1	946.80	940.42	6.38	0.638	0.6492	0.076739277
	2	945.66	938.58	7.08	0.708		
	3	946.14	940.69	5.45	0.545		
	4	946.55	939.49	7.06	0.706		
Millers River Diluent (at ABCB site)	1	947.21	940.16	7.05	0.705	0.6945	0.036846529
	2	949.13	942.69	6.44	0.644		
	3	947.50	940.53	6.97	0.697		
	4	947.45	940.13	7.32	0.732		
6.25%	1	949.71	943.09	6.62	0.662	0.6763	0.017969882
	2	946.35	939.37	6.98	0.698		
	3	941.84	935.00	6.84	0.684		
	4	944.02	937.41	6.61	0.661		
12.5%	1	946.86	939.94	6.92	0.692	0.6615	0.054445692
	2	946.14	938.92	7.22	0.722		
	3	942.04	935.97	6.07	0.607		
	4	939.62	933.37	6.25	0.625		
25%	1	941.16	935.44	5.72	0.572	0.6395	0.053157
	2	943.32	937.10	6.22	0.622		
	3	940.98	934.17	6.81	0.681		
	4	943.02	936.19	6.83	0.683		
50%	1	946.79	939.70	7.09	0.709	0.6735	0.023727621
	2	943.51	936.87	6.64	0.664		
	3	945.86	939.25	6.61	0.661		
	4	947.45	940.85	6.60	0.660		
100%	1	948.72	941.59	7.13	0.713	0.7553	0.03414064
	2	947.83	940.22	7.61	0.761		
	3	944.60	937.09	7.51	0.751		
	4	946.48	938.52	7.96	0.796		

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS: Keolis/Commuter Rail Maintenance Facility @ Ambient beyond containment booms

NEB PROJECT NUMBER: 05.0044887.00 TEST ORGANISM *Pimephales promelas*

DILUTION WATER SOURCE: ABCB Receiving (Millers River) START DATE: 5/2/17 TIME: 1225

ANALYST	KW	PD	KO	KO	CW	CW	CB	
NEB Lab Synthetic Control	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.5	25.5	25.2	25.0	25.7	25.3	25.2	
D.O. mg/L Initial	8.1	8.2	8.3	8.3	7.9	8.1	8.1	
pH s.u. Initial	7.4	7.3	7.8	7.2	7.5	7.6	7.7	
Conductivity µS Initial	150	177	178	178	176	177	177	
Temp °C Final	25.2	25.1	24.8	24.5	24.3	24.0	24.5	
D.O. mg/L Final	7.4	7.0	7.8	7.2	7.4	6.9	7.2	
pH s.u. Final	7.6	7.0	7.0	7.4	7.3	7.3	7.7	
Conductivity µS Final	200	192	194	204	204	207	200	
Millers River Diluent (at ABCB site)	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.9	25.4	25.1	25.9	25.9	25.5	26.0	
D.O. mg/L Initial	8.6	8.8	8.3	8.3	8.6	8.4	8.4	
pH s.u. Initial	7.0	7.1	7.3	7.0	7.0	7.3	7.2	
Conductivity µS Initial	1,291	1,278	1,286	1,285	1,529	1,534	1,567	
Temp °C Final	25.2	25.1	25.0	24.7	24.3	24.8	24.3	
D.O. mg/L Final	7.4	7.2	7.4	7.1	7.4	6.9	7.0	
pH s.u. Final	7.4	6.6	6.8	7.1	6.9	6.8	7.2	
Conductivity µS Final	1,299	1,304	1,308	1,311	1,533	1,570	1,627	
6.25%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.8	25.4	25.4	26.0	26.0	25.5	25.0	
D.O. mg/L Initial	9.0	8.9	8.8	8.4	8.7	8.7	8.6	
pH s.u. Initial	6.9	7.1	7.3	7.0	7.0	7.3	7.3	
Conductivity µS Initial	1,319	1,307	1,305	1,301	1,534	1,539	1,539	
Temp °C Final	25.2	25.1	24.8	25.0	24.6	24.3	24.5	
D.O. mg/L Final	7.2	7.2	7.4	6.7	7.0	7.1	69.0	
pH s.u. Final	7.4	6.7	6.9	7.1	7.0	6.9	7.3	
Conductivity µS Final	1,319	1,336	1,327	1,330	1,555	1,589	1,596	
12.5%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.9	25.4	24.4	26.0	26.0	25.3	24.9	
D.O. mg/L Initial	8.9	8.8	8.8	8.3	8.6	8.8	8.6	
pH s.u. Initial	6.9	7.1	7.3	7.1	7.0	7.3	7.3	
Conductivity µS Initial	1,355	1,339	1,326	1,323	1,540	1,545	1,544	
Temp °C Final	25.2	25.2	25.0	24.9	24.7	24.8	24.3	
D.O. mg/L Final	7.3	7.0	7.3	6.7	7.1	6.8	7.1	
pH s.u. Final	7.3	6.7	6.9	7.2	7.1	7.0	7.3	
Conductivity µS Final	1,351	1,366	1,351	1,358	1,560	1,584	1,605	

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS: Keolis/Commuter Rail Maintenance Facility @ Ambient beyond containment booms
NEB PROJECT NUMBER: 05.0044887.00 TEST ORGANISM *Pimephales promelas*
DILUTION WATER SOURCE: ABCB Receiving (Millers River) START DATE: 5/2/17 TIME: 1225

25%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.8	25.3	24.3	26.0	26.0	25.2	25.1	
D.O. mg/L Initial	8.8	8.8	8.9	8.3	8.6	8.7	8.6	
pH s.u. Initial	7.0	7.1	7.2	7.1	7.0	7.3	7.3	
Conductivity µS Initial	1,417	1,404	1,369	1,363	1,550	1,555	1,555	
Temp °C Final	25.3	25.1	25.1	25.0	24.8	24.9	24.6	
D.O. mg/L Final	7.3	7.1	7.3	6.8	7.1	6.8	7.1	
pH s.u. Final	7.3	6.7	7.0	7.2	7.0	7.0	7.3	
Conductivity µS Final	1,409	1,429	1,384	1,387	1,565	1,592	1,599	
50%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.0	25.2	24.3	26.0	26.0	24.9	25.2	
D.O. mg/L Initial	8.8	8.8	8.8	8.3	8.6	8.7	8.6	
pH s.u. Initial	7.0	7.1	7.2	7.1	7.0	7.3	7.3	
Conductivity µS Initial	1,546	1,530	1,456	1,449	1,572	1,575	1,575	
Temp °C Final	25.3	25.1	24.9	24.9	25.0	25.1	24.3	
D.O. mg/L Final	7.3	7.1	7.4	6.8	6.9	6.7	7.1	
pH s.u. Final	7.3	6.7	7.0	7.2	7.1	7.0	7.3	
Conductivity µS Final	1,538	1,560	1,487	1,485	1,600	1,612	1,640	
100%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.0	25.2	24.0	26.0	26.0	24.6	25.8	
D.O. mg/L Initial	8.8	8.9	8.8	8.3	8.7	8.6	8.7	
pH s.u. Initial	7.0	7.1	7.1	7.1	7.0	7.2	7.3	
Conductivity µS Initial	1,801	1,781	1,622	1,614	1,614	1,616	1,618	
Temp °C Final	25.3	25.3	24.8	25.0	25.0	24.2	24.3	
D.O. mg/L Final	7.2	6.8	7.3	6.8	6.8	6.9	7.1	
pH s.u. Final	7.4	6.8	7.0	7.2	7.1	7.1	7.3	
Conductivity µS Final	1,771	1,815	1,660	1,652	1,672	1,680	1,680	
	1	2	3	4	5	6	7	Remarks
Temp °C Initial								
D.O. mg/L Initial								
pH s.u. Initial								
Conductivity µS Initial								
Temp °C Final								
D.O. mg/L Final								
pH s.u. Final								
Conductivity µS Final								

Table of Random Permutations of 16 **P.promelas Test ID#** 17-608b

7	12	15	15	1	2	7	16	10	2	14	15	7	13	13	10	6	1	8	10
13	3	8	16	7	10	11	10	13	5	11	7	13	16	7	7	5	13	2	14
3	1	4	5	14	13	3	14	9	13	13	2	9	15	6	2	8	4	5	8
11	8	16	14	15	6	2	6	2	16	8	5	12	3	9	13	4	3	10	4
14	9	1	6	3	9	14	13	8	6	5	8	14	7	3	15	13	11	4	7
2	16	10	13	5	5	13	2	11	7	3	12	5	14	12	16	2	2	9	15
4	6	13	7	2	15	1	9	1	4	7	10	6	9	11	9	7	6	16	11
6	14	6	10	4	14	4	15	3	3	4	16	2	6	5	1	12	10	6	9
10	15	2	1	13	12	16	3	4	8	10	1	15	5	14	12	14	12	3	2
12	10	7	12	9	11	9	8	12	14	15	4	11	8	16	8	9	14	14	1
15	7	5	2	10	7	8	12	6	15	6	13	16	12	15	4	11	8	12	6
16	2	11	8	8	8	15	5	16	1	1	9	8	1	8	14	16	5	13	5
9	13	14	3	6	4	10	11	5	12	9	3	10	4	4	3	10	9	1	3
8	11	9	4	11	3	12	7	7	10	12	14	3	10	1	6	15	16	15	12
1	5	12	11	16	16	5	4	14	9	16	11	1	2	10	5	1	15	7	13
5	4	3	9	12	1	6	1	15	11	2	6	4	11	2	11	3	7	11	16
																		Conc	
11	8	16	5	5	13	1	13	2	16	14	12	9	8	7	5	13	3	13	3
2	2	8	8	14	16	4	3	8	11	10	14	15	1	2	11	4	5	15	9
6	13	2	13	6	5	9	15	11	10	12	6	16	15	16	9	10	12	16	15
14	12	4	16	16	11	14	10	5	12	3	3	12	14	15	13	6	4	1	16
8	6	3	9	4	10	6	4	16	2	2	9	8	16	4	6	5	15	7	8
9	15	12	10	3	2	12	6	1	15	4	13	7	7	9	12	14	8	8	11
3	10	11	12	13	12	5	11	7	8	9	5	14	11	10	1	3	13	3	5
16	1	13	14	8	14	15	5	3	7	11	15	6	12	5	7	11	1	14	4
1	14	14	2	9	15	16	14	6	14	7	8	3	13	11	8	7	7	12	7
4	4	6	4	12	3	11	8	15	9	8	1	13	6	3	3	15	9	9	12
15	5	1	11	10	6	3	7	10	5	5	11	10	10	12	15	16	14	5	2
5	3	5	6	7	7	13	2	14	3	16	4	5	5	13	4	9	16	2	6
12	7	15	15	15	9	8	12	12	13	15	10	1	4	6	16	2	6	11	1
10	11	10	3	2	4	2	1	4	6	6	7	11	9	14	10	8	11	4	13
7	9	7	7	11	1	7	16	13	1	13	2	4	2	1	2	12	2	10	14
13	16	9	1	1	8	10	9	9	4	1	16	2	3	8	14	1	10	6	10
													Rep						
1	6	7	4	8	6	5	2	8	15	4	6	6	1	4	5	7	13	2	10
9	15	11	3	11	15	9	10	1	3	8	2	15	7	9	8	16	1	14	3
10	16	4	5	12	9	16	11	7	1	7	16	11	8	3	3	12	2	3	4
4	14	1	9	5	5	4	13	6	8	15	5	12	5	7	16	5	11	8	1
7	3	13	14	15	2	1	14	16	5	14	9	2	16	1	12	6	14	4	13
16	11	2	1	14	16	6	9	3	4	16	14	3	15	11	11	3	9	12	5
3	10	16	16	13	7	13	1	11	14	9	10	16	2	10	2	10	7	10	16
11	13	9	13	4	13	8	3	5	13	10	12	5	12	5	14	13	16	5	6
15	2	3	12	9	12	2	4	13	10	3	13	14	4	2	1	14	8	6	12
14	1	14	6	10	1	3	12	4	2	2	4	13	3	16	9	9	3	7	14
13	12	5	11	3	11	15	8	2	7	11	7	8	14	6	4	4	4	15	11
12	5	10	7	2	14	7	15	14	16	13	1	9	10	12	10	11	10	9	8
8	9	8	10	6	4	11	7	10	11	6	8	4	9	8	15	8	6	11	9
2	7	6	2	1	8	10	6	15	12	1	11	7	11	13	6	1	15	13	15
6	4	15	8	16	10	14	16	9	6	12	3	10	6	14	7	2	12	16	7
5	8	12	15	7	3	12	5	12	9	5	15	1	13	15	13	15	5	1	2
13	4	10	4	16	13	16	13	5	3	6	14	1	16	8	7	2	3	3	12
5	14	4	6	8	2	15	1	13	14	16	4	15	4	3	12	12	1	4	7
2	2	2	15	14	16	9	12	16	6	10	15	14	9	10	1	14	8	8	16
7	12	15	8	12	3	5	14	7	12	5	13	16	1	7	5	11	2	9	3
6	9	7	14	9	14	10	11	15	11	12	1	12	12	14	16	3	11	11	8
14	5	16	7	10	8	11	8	14	13	7	11	6	3	11	4	4	6	6	9
15	11	8	9	7	12	8	7	1	15	9	3	3	7	13	11	10	4	5	1
11	6	6	1	4	1	3	16	12	5	4	9	13	13	6	8	15	9	1	14
4	10	3	16	2	11	7	9	6	9	1	8	4	11	5	2	16	10	12	4
1	8	1	13	1	15	4	4	11	4	2	16	5	8	1	9	5	12	16	6
9	7	14	2	6	4	14	10	9	8	15	10	7	10	9	10	6	14	10	11
12	1	9	10	15	5	2	15	10	2	14	2	8	2	4	13	8	5	15	5
3	3	12	11	5	9	6	6	3	10	13	12	9	6	2	15	7	15	7	13
10	15	11	5	13	7	12	5	2	7	11	5	10	15	12	3	1	13	13	10
8	13	13	3	3	10	13	2	4	1	8	6	11	14	15	6	9	16	2	2
16	16	5	12	11	6	1	3	8	16	3	7	2	5	16	14	13	7	14	15

NEW ENGLAND BIOASSAY
INITIAL CHEMISTRY DATA

CLIENT: Alpha - Commuter Rail Ambient Beyond Containment Booms
NEB JOB # 05.0044887.00
TEST ID # C.dubia 17-608a P.promelas 17-608b

DATE RECEIVED	5/1/17		5/3/17		5/5/17	
SAMPLE TYPE:	EFF #1	RIVER #1	EFF #2	RIVER #2	EFF #3	RIVER #3
COC #	C37-2035	C37-2036	C37-2053	C37-2054	C37-2073	C37-2074
pH (SU)	6.9	7.0	6.4	6.4	7.2	7.1
Temperature (^{0}C)	3.7	8.5	3.3	6.9	5.5	5.8, 1.4
Dissolved Oxygen (mg/L)	8.7	8.8	9.3	9.9	8.7	9.1
Conductivity (µmhos)	1,805	1,295	1,645	1,292	1,645	1,552
Salinity (ppt)	1	<1	<1	<1	<1	<1
TRC - DPD (mg/L)	0.020	0.016	0.020	0.008	0.016	0.045
TRC - Amperometric (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A
Hardness (mg/L as $CaCO_3$)	148	122	158	126	156	152
Alkalinity (mg/l as $CaCO_3$)	60	40	55	40	45	45
Tech Initials	CB	CB	KO	KO	CB	CB

NOTE: NA = NOT APPLICABLE

Data Reviewed By: Date Reviewed: 6/1/17

SUB COURIER: NEB, CT

CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1713794

Report Information — Data Deliverables — **Billing Information**

- ☐ FAX
- ☐ EMAIL
- ☐ ADEx
- ☐ Add'l Deliverables
- ☐ Same as Client info
- PO #:

Regulatory Requirements/Report Limits

State/Fed Program | Criteria

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

- ☐ Yes ☐ No Are MCP Analytical Methods Required?
- ☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

Client Information

Client: Alpha Analytical Lab
Address: 8 Walkup Drive
Westborough, Ma 01581
Phone: 508-898-9220
Fax:
Email: subreports@alphalab.com
☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name:
Project Location: MA
Project #:
Project Manager: Ashaley Kane
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)
Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:
Please reference Alpha Job #L1713794 on this report.

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☐ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	BIOASSAY												Sample Specific Comments	TOTAL # BOTTLES
	DMH 13.4 (DOWNSTREAM MH) EFFLUENT COMPOSITE	5/1/17	06:00	W		x													1
	DMH 13.4 (DOWNSTREAM MH) RECEIVING WATER	5/1/17	06:40	W		x													1
	ABCBEH AMBIENT (MILLERS RIVER BEYOND BOOMS) COMPOSITE	5/1/17	06:00	W		x													1
	ABCB.nv AMBIENT (MILLERS RIVER BEYOND BOOMS) REC. WATER	5/1/17	07:00	W		x													1

Container Type	Cube	-	-	-	-	-	-	-	-	-	-	-
Preservative	A	-	-	-	-	-	-	-	-	-	-	-

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP *or* CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
[illegible]	5/1/17 1130	[illegible]	5/1/17 1019
[illegible]	5/1/17 1130	[illegible]	5/1/17 1140

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms

FORM NO: 01-01(I)

SUB COURIER: NEB, CT

CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1714121

Project Information

Project Name:

Project Location: MA

Project #:

Project Manager: Ashaley Kane

ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Client Information

Client: Alpha Analytical Lab

Address: 8 Walkup Drive

Westborough, Ma 01581

Phone: 508-898-9220

Fax:

Email: subreports@alphalab.com

☐ These samples have been Previously analyzed by Alpha

Report Information Data Deliverables

☐ FAX ☐ EMAIL

☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed Program Criteria

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?

☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:

Please reference Alpha Job #L1714121 on this report.

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☐ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	BIOASSAY	Sample Specific Comments	TOTAL # BOTTLES
C37-2051	DMH 13.4 (DOWNSTREAM MH) COMPOSITE	5/3/17	06:00	Water		X		1
C37-2052	DMH 13.4 (DOWNSTREAM MH) RECEIVING WATER	5/3/17	10:20	Water		X		1
C37-2053	AMBIENT (MILLERS RIVER BEYOND BOOMS) COMPOSITE	5/3/17	06:00	Water		X		1
C37-2054	AMBIENT (MILLERS RIVER BEYOND BOOMS) REC. WATER	5/3/17	10:40	Water		X		1

Received
Unpreserved

Container Type	Cube	-	-	-	-	-	-	-	-	-	-	-
Preservative	A	-	-	-	-	-	-	-	-	-	-	-

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP *or* CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	5/3/17	[signature] PAL	5/3/17 13:15
[signature] AAL	5/3/17 14:45	[signature]	5/3/17 1445

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms

FORM NO: 01-91(I)

SUB COURIER: NEB, CT

CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1714523

Report Information — Data Deliverables

- ☐ FAX
- ☐ EMAIL
- ☐ ADEx
- ☐ Add'l Deliverables

Billing Information

- ☐ Same as Client info
- PO #:

Regulatory Requirements/Report Limits

State/Fed Program | *Criteria*

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

- ☐ Yes ☐ No Are MCP Analytical Methods Required?
- ☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

Client Information

Client: Alpha Analytical Lab
Address: 8 Walkup Drive
Westborough, Ma 01581
Phone: 508-898-9220
Fax:
Email: subreports@alphalab.com

☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name:
Project Location: MA
Project #:
Project Manager: Ashaley Kane
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:
Please reference Alpha Job #L1714523 on this report.

ANALYSIS

SAMPLE HANDLING
Filtration
- ☐ Done
- ☐ Not Needed
- ☐ Lab to do

Preservation
- ☐ Lab to do

(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	BIOASSAY	Sample Specific Comments	TOTAL # BOTTLES
	DMH 13.4 (DOWNSTREAM MH) COMPOSITE	5/5/17	06:00	W		X		1
	DMH 13.4 (DOWNSTREAM MH) RECEIVING WATER	5/5/17	07:30	W		X		1
	AMBIENT (MILLERS RIVER BEYOND BOOMS) COMPOSITE	5/5/17	06:00	W		X		1
	AMBIENT (MILLERS RIVER BEYOND BOOMS) REC. WATER	5/5/17	08:30	W		X		1

Received ON ICE

Container Type	Cube	-	-	-	-	-	-	-	-	-	-	-
Preservative	A	-	-	-	-	-	-	-	-	-	-	-

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP *or* CT RCP?

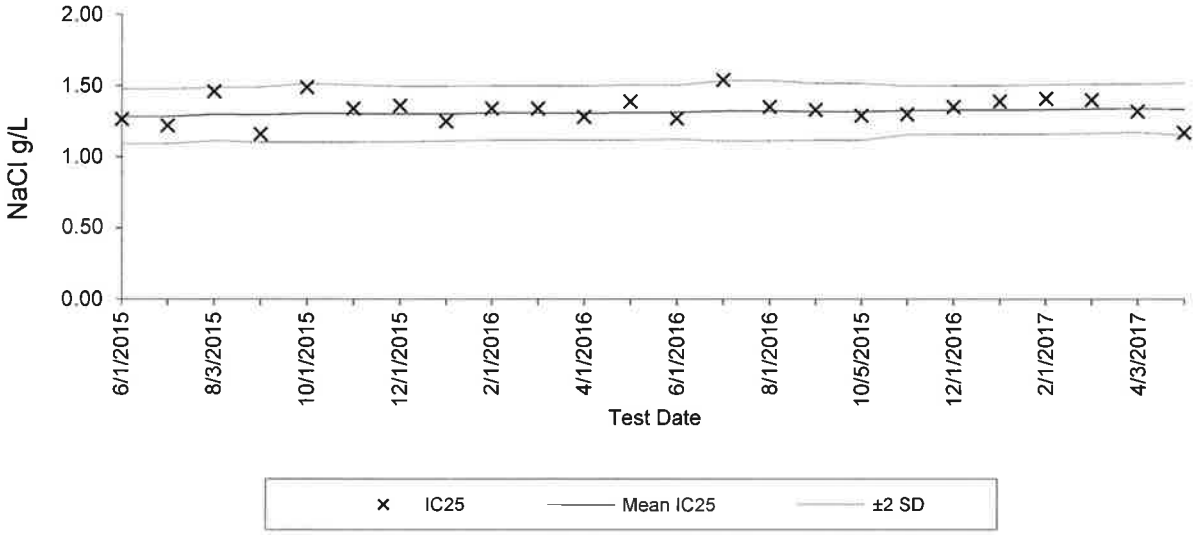
Relinquished By:	Date/Time	Received By:	Date/Time
[illegible] AAC	5/5/17	[illegible] AAC	5-5-17 10:15
[illegible] AAC	5-5-17 12:30	[illegible]	5/5/17 1230

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms

FORM NO: 01-01(I)

New England Bioassay
Reference Toxicant Data: *Pimephales promelas* 7-day Chronic Growth IC25

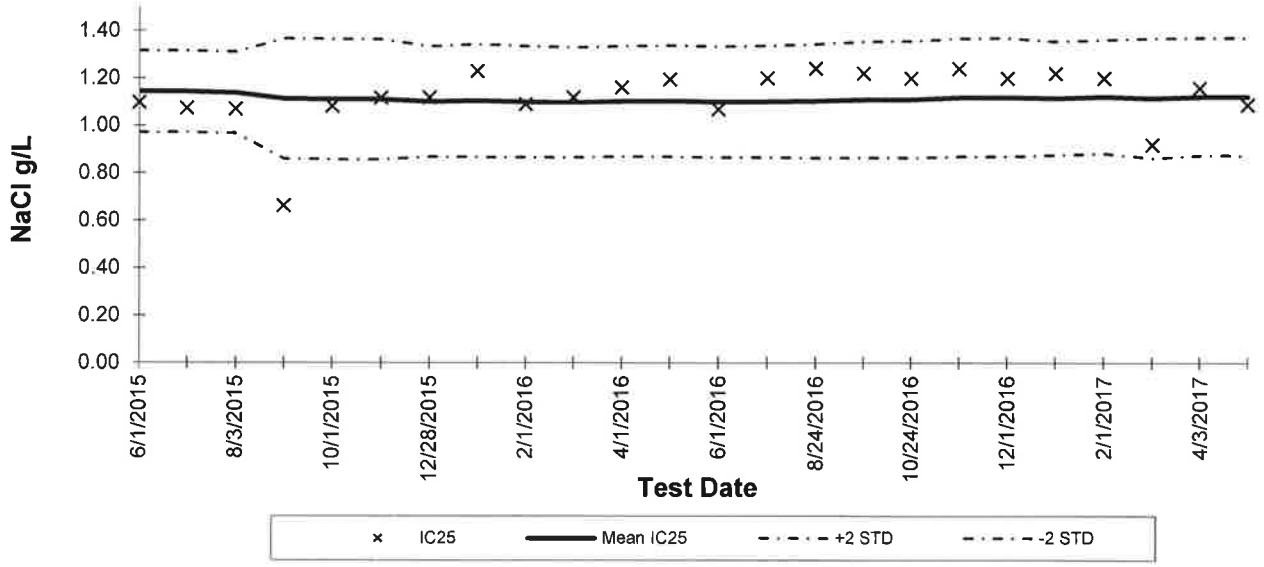
Reference Toxicant: Sodium chloride
Test Dates: June 2015 - May 2017



Test ID	Date	IC_{25}	Mean IC_{25}	STD	-2STD	+2STD	CV	CV National 75th	CV National 90th
15-803	6/1/2015	1.27	1.28	0.10	1.09	1.48	0.08	0.38	0.45
15-956	7/1/2015	1.22	1.28	0.10	1.09	1.48	0.07	0.38	0.45
15-1212	8/3/2015	1.46	1.30	0.09	1.11	1.49	0.07	0.38	0.45
15-1376	9/9/2015	1.16	1.29	0.10	1.10	1.49	0.08	0.38	0.45
15-1541	10/1/2015	1.49	1.31	0.10	1.10	1.51	0.08	0.38	0.45
15-1742	11/2/2015	1.34	1.30	0.10	1.10	1.50	0.08	0.38	0.45
15-1881	12/1/2015	1.36	1.30	0.10	1.10	1.50	0.08	0.38	0.45
16-36	1/4/2016	1.25	1.30	0.10	1.11	1.49	0.07	0.38	0.45
16-139	2/1/2016	1.34	1.31	0.10	1.12	1.50	0.07	0.38	0.45
16-308	3/1/2016	1.34	1.31	0.10	1.12	1.50	0.07	0.38	0.45
16-464	4/1/2016	1.28	1.31	0.10	1.12	1.50	0.07	0.38	0.45
16-597	5/2/2016	1.39	1.31	0.10	1.12	1.50	0.07	0.38	0.45
16-708	6/1/2016	1.27	1.31	0.10	1.12	1.50	0.07	0.38	0.45
16-881	7/1/2016	1.54	1.32	0.11	1.11	1.53	0.08	0.38	0.45
16-1064	8/1/2016	1.35	1.32	0.11	1.11	1.54	0.08	0.38	0.45
16-1259	9/8/2016	1.33	1.32	0.10	1.12	1.52	0.08	0.38	0.45
16-1473	10/5/2015	1.29	1.32	0.10	1.12	1.52	0.08	0.38	0.45
16-1593	11/1/2016	1.30	1.33	0.09	1.16	1.50	0.06	0.38	0.45
16-1735	12/1/2016	1.35	1.33	0.09	1.16	1.50	0.06	0.38	0.45
17-15	1/3/2017	1.39	1.33	0.08	1.16	1.50	0.06	0.38	0.45
17-152	2/1/2017	1.41	1.33	0.09	1.16	1.51	0.06	0.38	0.45
17-268	3/1/2017	1.40	1.34	0.09	1.16	1.51	0.06	0.38	0.45
17-481	4/3/2017	1.32	1.34	0.08	1.17	1.51	0.06	0.38	0.45
17-617	5/1/2017	1.17	1.33	0.09	1.15	1.52	0.07	0.38	0.45

New England Bioassay
Reference Toxicant Data: *Ceriodaphia dubia* Chronic Reproduction IC25

Reference Toxicant: Sodium chloride
Test Dates: June 2015 - May 2017



Test ID	Date	IC_{25}	Mean IC_{25}	STD	-2STD	+2STD	CV	CV National 75th%	CV National 90th%
15-750	6/1/2015	1.10	1.14	0.09	0.97	1.32	0.08	0.45	0.62
15-955	7/1/2015	1.07	1.14	0.09	0.97	1.32	0.07	0.45	0.62
15-1211	8/3/2015	1.07	1.14	0.09	0.97	1.31	0.08	0.45	0.62
15-1375	9/9/2015	0.66	1.11	0.13	0.86	1.37	0.11	0.45	0.62
15-1540	10/1/2015	1.08	1.11	0.13	0.86	1.37	0.11	0.45	0.62
15-1691	11/2/2015	1.12	1.11	0.13	0.86	1.36	0.11	0.45	0.62
15-1897	12/28/2015	1.12	1.10	0.12	0.87	1.33	0.11	0.45	0.62
16-37	1/4/2016	1.23	1.11	0.12	0.87	1.34	0.11	0.45	0.62
16-138	2/1/2016	1.09	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-307	3/1/2016	1.12	1.10	0.12	0.87	1.33	0.11	0.45	0.62
16-463	4/1/2016	1.16	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-596	5/2/2016	1.19	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-707	6/1/2016	1.07	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-880	7/1/2016	1.20	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-1212	8/24/2016	1.24	1.10	0.12	0.86	1.34	0.11	0.45	0.62
16-1258	9/8/2016	1.22	1.11	0.12	0.87	1.35	0.11	0.45	0.62
16-1553	10/24/2016	1.20	1.11	0.12	0.87	1.36	0.11	0.45	0.62
16-1592	11/1/2016	1.24	1.12	0.12	0.87	1.37	0.11	0.45	0.62
16-1734	12/1/2016	1.20	1.12	0.13	0.87	1.37	0.11	0.45	0.62
17-14	1/3/2017	1.22	1.12	0.12	0.88	1.36	0.11	0.45	0.62
17-151	2/1/2017	1.20	1.12	0.12	0.88	1.36	0.11	0.45	0.62
17-267	3/1/2017	0.92	1.12	0.13	0.86	1.37	0.11	0.45	0.62
17-480	4/3/2017	1.16	1.12	0.12	0.87	1.37	0.11	0.45	0.62
17-616	5/1/2017	1.09	1.12	0.12	0.88	1.37	0.11	0.45	0.62

New England Bioassay

A Division of GZA

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

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CHRONIC AQUATIC TOXICITY TEST REPORT

Commuter Rail Maintenance Facility
Somerville, Massachusetts

Ceriodaphnia dubia Survival and Reproduction Test – EPA 1002.0

Pimephales promelas Larval Survival and Growth Test – EPA 1000.0

EPA 821-R-02-013, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms", Fourth Edition

Test Start Date: 5/2/17

Test Period: May 2017

Report Prepared by:

New England Bioassay
A Division of GZA GeoEnvironmental, Inc.
77 Batson Dr.
Manchester, CT 06042

NEB Project Number: 05.0044887.00

Report Date: June 1, 2017

Report Submitted to:

Alpha Analytical Laboratories
8 Walkup Drive
Westborough, MA 01581

Sample ID: DMH 13.4 (L1713794, L1714121, L1714523)

This report shall not be reproduced, except in its entirety, without written approval of New England Bioassay (NEB). NEB is the sole authority for authorizing edits or modifications to the data contained in this report. Test results relate only to samples analyzed. Please contact the Lab Manager, Kimberly Wills, at 860-858-3153 or kimberly.wills@gza.com if you have any questions concerning these results.

NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TOXICITY TEST SUMMARY SHEET

Facility Name: Commuter Rail Maintenance Facility Test Start Date: 5/2/17
NPDES Permit Number: MA0003590 Outfall Number: _____

Test Type	Test Species	Sample Type	Sample Method
_ Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	X Ceriodaphnia Dubia	_ Dechlorinated	X Composite
X Modified (Chronic reporting LC50 values)	_ Daphnia Pulex	_ Unchlorinated	_ Flow-thru
_ 24-Hour Screening	_ Mysid Shrimp	_ Chlorinated	_ Other
	_ Sheepshead		
	_ Menidia		
	_ Sea Urchin	TRC conc. 0.008 mg/L	
	_ Selenastrum		
	_ Other _____		

Dilution Water

X Receiving water collected at a point immediately upstream of or away from the discharge; (Receiving water name and sampling location: Millers River -see COC)

_ Alternate Surface Water of known quality and a hardness to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ Synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ Artificial sea salts mixed with deionized water;

_ Other _____

Effluent Sampling Date (s): 5/1/17 5/3/17 5/5/17

Effluent Concentrations Tested (in%): 0 6.25 12.5 25 50 100
* (Permit Limit Concentration): monitor only

Was effluent salinity adjusted? No If yes, to what value? N/A ppt

Reference Toxicant test date: 5/1/17 Reference Toxicant Test Acceptable: Yes X No _

Age and Age Range of Test Organisms < 24 hours Source of Organisms NEB Lab

TEST RESULTS &PERMIT LIMITS

Test Acceptability Criteria

A. Synthetic Water Control
Mean Control Survival: 90% Mean Control Reproduction: 33.6 young/female

B. Receiving Water Control
Mean Control Survival: 100% Mean Control Reproduction: 27.5 young/female

C. Lab Culture Control Yes_ No X
Mean Control Survival: % Mean Control Reproduction: young/female

D. Thiosulfate Control Yes_ No X
Mean Control Survival: % Mean Control Reproduction: young/female

Test Variability

Test PMSD (growth) N/A Upper and Lower PMSD bound N/A low__ in-bounds__ high__
Test PMSD (reprod.) 15.6% Upper and Lower PMSD bound 13-47% low__ in-bounds X high__

Permit Limits & Test Results

	Limits		Results
LC50	N/A	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC	N/A	A-NOEC	100%
C-NOEC	N/A	C-NOEC	100%
		LOEC	>100%
IC25	N/A	IC25	>100%
IC50	N/A	IC50	>100%

PMSD Comparison Discussion (Test Variability/Sensitivity)

Reproduction

_ 1. PMSD exceeds upper bounds. Test results are highly variable and may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC).

_ 1a. Test results indicate the discharge is not toxic at the PLC. Test is not sufficiently sensitive and must be repeated within 30 days of the initial test completion date using fresh samples.

_ 1b. Test results indicate the discharge is toxic at the PLC. Test results are considered acceptable and the test does not have to be repeated.

X 2. The PMSD falls within the upper (47%) and lower (13%) bounds. Results are reportable.

_ 3. PMSD falls below the lower bound test variability criterion. The test is very sensitive. The relative percent difference (RPD) between the control and each treatment was calculated and compared to the lower PMSD boundary

_ 3a. The RPD values for each concentration fall below the lower bound. The differences observed in this test are considered statistically insignificant.

_ 3b. The RPDs for the following concentrations are above the lower bound_____. The results at these concentrations are considered statistically significantly lower than controls.

Concentration-Response Evaluation

Survival: No significant effects at any test concentration with a flat concentration-response curve. Test concentrations performed very similarly to dilution control.

Reproduction: No significant effects at any test concentration with a relatively flat concentration-response curve. Test concentrations performed equal to or better than the dilution control.

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

Survival	Reprod.	
X	X	1. Results are reliable and reportable.
_	_	2. Results are anomalous. An explanation is provided in the body of the report.
_	_	3. Results are inconclusive. A retest with fresh samples is required. An explanation is provided in the body of the report.

NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TOXICITY TEST SUMMARY SHEET

Facility Name: Commuter Rail Maintenance Facility Test Start Date: 5/2/17
NPDES Permit Number: MA0003590 Outfall Number: _____

Test Type	Test Species	Sample Type	Sample Method
_ Acute	X Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia Dubia	_ Dechlorinated	X Composite
X Modified (Chronic reporting LC50 values)	_ Daphnia Pulex	_ Unchlorinated	_ Flow-thru
	_ Mysid Shrimp	_ Chlorinated	_ Other
_ 24-Hour Screening	_ Sheepshead		
	_ Menidia		
	_ Sea Urchin	TRC conc. 0.008 mg/L	
	_ Selenastrum		
	_ Other_____		

Dilution Water

X Receiving water collected at a point immediately upstream of or away from the discharge; (Receiving water name and sampling location: Millers River -see COC)

_ Alternate Surface Water of known quality and a hardness to generally reflect the characteristics of the receiving water; (Surface water name:_____)

_ Synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ Artificial sea salts mixed with deionized water;

_ Other_____

Effluent Sampling Date (s): 5/1/17 5/3/17 5/5/17

Effluent Concentrations Tested (in%): 0 6.25 12.5 25 50 100
* (Permit Limit Concentration): Monitor only

Was effluent salinity adjusted? No If yes, to what value? N/A ppt

Reference Toxicant test date: 5/1/17 Reference Toxicant Test Acceptable: Yes X No _

Age and Age Range of Test Organisms < 24 hours Source of Organisms NEB Lab

TEST RESULTS &PERMIT LIMITS
Test Acceptability Criteria

A. Synthetic Water Control
Mean Control Survival: 100% Mean Control Weight: 0.840 mg

B. Receiving Water Control
Mean Control Survival: 100% Mean Control Weight: 0.649 mg

C. Lab Culture Control Yes_ No X
Mean Control Survival: % Mean Control Weight: mg

D. Thiosulfate Control Yes_ No X
Mean Control Survival: % Mean Control Weight: mg

Test Variability

Test PMSD (growth) 16.5%	Upper and Lower PMSD bound 12-30%	low__	in-bounds X	high___
Test PMSD (reprod.) N/A	Upper and Lower PMSD bound N/A	low__	in-bounds__	high___

Permit Limits & Test Results

	Limits		Results
LC50	N/A	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC	N/A	A-NOEC	100%
C-NOEC	N/A	C-NOEC	100%
		LOEC	>100%
IC25	N/A	IC25	>100%
IC50	N/A	IC50	>100%

PMSD Comparison Discussion (Test Variability/Sensitivity)

Growth

_ 1. PMSD exceeds upper bounds. Test results are highly variable and may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC).

_ 1a. Test results indicate the discharge is not toxic at the PLC. Test is not sufficiently sensitive and must be repeated within 30 days of the initial test completion date using fresh samples.

_ 1b. Test results indicate the discharge is toxic at the PLC. Test results are considered acceptable and the test does not have to be repeated.

X 2. The PMSD falls within the upper (30%) and lower (12%) bounds. Results are reportable.

_ 3. PMSD falls below the lower bound test variability criterion. The test is very sensitive. The relative percent difference (RPD) between the control and each treatment was calculated and compared to the lower PMSD boundary

_ 3a. The RPD values for each concentration fall below the lower bound. The differences observed in this test are considered statistically insignificant.

_ 3b. The RPDs for the following concentrations are above the lower bound_____. The results at these concentrations are considered statistically significantly lower than controls.

Concentration-Response Evaluation

Survival: No significant effects at any test concentration with a flat concentration-response curve. Test concentrations performed very similarly to dilution control.

Growth: The concentration-response relationship observed in this data set corresponds to the following item number in Chapter Four of "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)", EPA 821-B-00-004, July 2000: #10 Inverse concentration-response relationship.

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

Survival	Growth	
X	X	1. Results are reliable and reportable.
_	_	2. Results are anomalous. An explanation is provided in the body of the report.
_	_	3. Results are inconclusive. A retest with fresh samples is required. An explanation is provided in the body of the report.

Whole Effluent Toxicity Testing Report Conclusions and Notes

Client Name/Project: Alpha/Commuter Rail Maintenance Facility Test Date: 5/2/17

Sample ID: DMH 13.4 (L1713794, L1714121, L1714523)

Your results were as follows:

☒ Passed all whole effluent toxicity permit limits

☐ Failed the following permit limit(s): *C. dubia*: ☐ LC50 ☐ C-NOEC *P. promelas*: ☐ LC50 ☐ C-NOEC
Please proceed according to the instructions in your permit.

☐ Original Test Invalid – **Valid retest performed. Both test and retest results are attached.**

☐ A retest using fresh samples must be performed within 30 days of the initial test completion date (____) due to the test condition described below. See next page for further explanation.
☐ Test Invalid due to: ☐ Diluent toxicity ☐ Synthetic control toxicity
☐ Test not sufficiently sensitive. PMSD exceeds upper bound.
☐ Results are inconclusive due to an unusual concentration-response relationship.

☐ Available information is insufficient to determine whether this test passed or failed. Please compare results to your permit limits. Please submit a current copy of your permit to the NEB Lab so that we can determine the status of future tests results and help ensure your compliance with permit requirements.

☐ Additional testing for metals was required on the second and third effluent samples due to the following:
☐ Renewal sample(s) were of sufficient potency to cause lethality to 50% or more of the test organisms:
Sample #: ☐ 2 ☐ 3 Species: ☐ Cd ☐ Pp Conc.: ☐ 6.25% ☐ 12.5% ☐ 25% ☐ 50% ☐ 100% ☐ ___%
☐ The test failed its permit limit for: *C. dubia*: ☐ LC50 ☐ C-NOEC *P. promelas*: ☐ LC50 ☐ C-NOEC

Diluent Toxicity:

☐ Testing ☐will be or ☐has been performed according to the Case 1 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water.

☐ Retesting ☐will be or ☐has been performed according to the Case 1 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water.

☐ This is your _____ case of dilution water toxicity. Please proceed according to the Case 2 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water. The alternate dilution water you select for future tests for this species should be described as follows: "synthetic laboratory water made up according to EPA's toxicity test protocols, by adding specified amounts of salts into deionized water in order to match the hardness of our receiving water." Writing this letter should help you to avoid retests in the future.

Sampling Requirements:
A minimum of 3 samples were collected. ☒ Yes. ☐ No. See explanation on next page.

Samples were first used within 36 hours of collection. ☒ Yes. ☐ No. See explanation on next page.

Dechlorination Procedures: Chlorine was measured using 4500 CL-G DPD Colorimetric Method.
☒ Dechlorination was not required.

☐ Sample was dechlorinated to _____ mg/L by adding sodium thiosulfate to the sample prior to test initiation. A dechlorinated control of diluent water spiked with sodium thiosulfate equal in proportion to the amount added to the effluent sample was included in the test series.

☐ Chlorine elevated due to interference. Chlorine was _____ mg/L after interference check.

☐ Total Residual Chlorine was re-measured following aeration, and was found to be ___ mg/L.

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Permittee)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on _____ _____
[Date] [Authorized Signature]

_____
[Print or Type Name and Title]

_____
[Print or Type the Permittee's Name]

_____
[Print or Type the NPDES Permit No.]

Since the WET test and report check is complicated, the New England Bioassay Aquatic Toxicity Laboratory has certified the validity of the WET test data in the section below. Please note that this does not relieve the permittee from its responsibility to sign and certify the report under 40 C.F.R. S 122.41(k).

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Bioassay Laboratory)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on 6/1/17 _____
[Date] [Authorized Signature]

Kim Wills, Laboratory Manager
[Print or Type Name and Title]

New England Bioassay a Division of GZA
[Print or Type Name of Bioassay Laboratory]

24. Telephone Contacts
If you have questions, please contact Joy Hilton, Water Technical Unit, at (617) 918-1877 or David McDonald, Ecosystem Assessment Unit, at (617) 918-8609.

NEW ENGLAND BIOASSAY TOXICITY DATA FORM
CHRONIC COVER SHEET

CLIENT: Alpha Analytical Laboratories
ADDRESS: 8 Walkup Drive
Westborough, MA 01581
SAMPLE TYPE: DMH 13.4 (Keolis/Commuter Rail)
DILUTION WATER: DMH 13.4 Receiving (Millers River)

C.dubia TEST ID # 17-607a
COC # C37-2033/2034
PROJECT # 05.0044887.00

INVERTEBRATES

TEST SET UP (TECH INIT)	CB
TEST SPECIES	*Ceriodaphnia dubia*
NEB LOT#	Cd17 (RMH 076)
AGE	< 24 hours
TEST SOLUTION VOLUME (mls)	15
NO. ORGANISMS PER TEST CHAMBER	1
NO. ORGANISMS PER CONCENTRATION	10

Laboratory Control Water (CTRMH)

Batch Number	Hardness mg/L $CaCO_3$	Alkalinity mg/L $CaCO_3$
CTR17(MH003)	92	60

	DATE	TIME
TEST START:	5/2/17	1210
TEST END:	5/8/17	1108

Results of *Ceriodaphnia dubia* Chronic Test

		95% Confidence Limits
48 Hour LC50	>100%	100%±∞
7 Day LC50	>100%	100%±∞
Survival NOEC	100%	
Survival LOEC	>100%	
Reproduction NOEC	100%	
Reproduction LOEC	>100%	
Reproduction IC_{25}	>100%	

NOEC: NO OBSERVABLE EFFECT CONCENTRATIC LOEC: LOWEST OBSERVABLE EFFECT CONCENTRATION

Comments:

REVIEWD BY: DATE: 6/1/17

NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS:	Keolis/Commuter Rail Maintenance Facility @ DMH 13.4				
NEB PROJECT NUMBER:	05.0044887.00		NEB TEST NUMBER:	17-607a	COC # C37-2033/2034
TEST ORGANISM:	*Ceriodaphnia dubia*		AGE:	<24 hours	Lot # Cd17 (RMH 076)
START DATE:	5/2/17	TIME: 1210	END DATE:	5/8/17	TIME: 1108

Effluent Concentration	Culture Lot#	Cd17 (RMH 076)										Total Live Young	# Live Adults	Analyst-Transfer	Analyst-Counts
	Cup #	A1	A2	A3	A4	A5	A6	A8	A9	A10	A11				
	Day Number	Replicate													
		A	B	C	D	E	F	G	H	I	J				
NEB Lab Synthetic Control	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10	CB	
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10	CW	
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10	KO	
	3	6	4	4	3	5	6	4	5	4	3	44	10	KO	KO
	4	✓	10	✓	10	✓	✓	✓	10	1	✓	31	10	CW	CW
	5	14	✓/x	16	✓	13	14	11	✓	12	13	93	9	CW	CW
	6	20	X	17	19	19	18	16	22	19	18	168	9	CB	CB
	7														
	totals	40	14	37	32	37	38	31	37	36	34	336	9		MG
Millers River Diluent (DMH 13.4 site)		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	4	3	3	3	4	4	2	3	3	3	32	10		
	4	10	10	9	10	✓	1	10	12	11	✓	73	10		
	5	✓	✓	✓	✓	12	10	✓	✓	✓	12	34	10		
	6	12	11	13	13	14	14	13	12	17	17	136	10		
	7														
	totals	26	24	25	26	30	29	25	27	31	32	275	10		
6.25%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	5	3	5	3	4	4	1	3	5	3	36	10		
	4	10	12	8	14	✓	14	10	12	12	✓	92	10		
	5	✓	✓	✓	✓	10	✓	✓	✓	✓	12	22	10		
	6	18	20	17	15	16	16	14	19	16	18	169	10		
	7														
	totals	33	35	30	32	30	34	25	34	33	33	319	10		

Notes: _____

NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS:	Keolis/Commuter Rail Maintenance Facility @ DMH 13.4		
NEB PROJECT NUMBER:	05.0044887.00	ORGANISM: *Ceriodaphnia dubia*	START DATE: 5/2/17

Effluent Concentration	Day Number	Replicate A	B	C	D	E	F	G	H	I	J	Total Live Young	# Live Adults	Analyst-Transfer	Analyst-Counts
12.5%	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	4	2	4	4	5	2	4	2	4	4	35	10		
	4	✓	11	✓	10	✓	1	12	10	✓	✓	44	10		
	5	14	✓	13	✓	12	12	✓	✓	11	11	73	10		
	6	16	17	13	15	14	12	15	16	17	18	153	10		
	7														
	totals	34	30	30	29	31	27	31	28	32	33	305	10		
25%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	3	3	3	4	4	3	3	3	4	3	33	10		
	4	✓	14	✓	12	10	10	4	8	12	✓	70	10		
	5	14	✓	16	✓	✓/x	✓	✓	✓	✓	12	42	9		
	6	18	14	18	18	X	14	15	18	17	19	151	9		
	7														
	totals	35	31	37	34	14	27	22	29	33	34	296	9		
50%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	3	2	5	4	3	4	2	3	3	3	32	10		
	4	10	14	✓	✓	✓	10	10	10	10	✓	64	10		
	5	✓	✓	15	14	14	✓	✓	✓	✓	17	60	10		
	6	17	15	17	15	16	16	15	19	16	20	166	10		
	7														
	totals	30	31	37	33	33	30	27	32	29	40	322	10		
100%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	4	4	4	5	3	2	4	✓	2	4	32	10		
	4	✓	12	✓	✓	✓	✓	1	✓	✓	1	14	10		
	5	12	✓	14	14	13	13	12	12	16	14	120	10		
	6	16	18	13	18	13	15	16	8	14	13	144	10		
	7														
	totals	32	34	31	37	29	30	33	20	32	32	310	10		

CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	04-7865-8547	**Endpoint:**	2d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:29	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	20-1797-6844	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:10	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	08 May-17 11:08	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	5d 23h	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	11-8163-8173	**Code:**	466E5E1D	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	30h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	936741	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	n/a	n/a	<1	n/a	n/a

2d Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	D	10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
6.25		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
12.5		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
25		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
50		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
100		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10

2d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

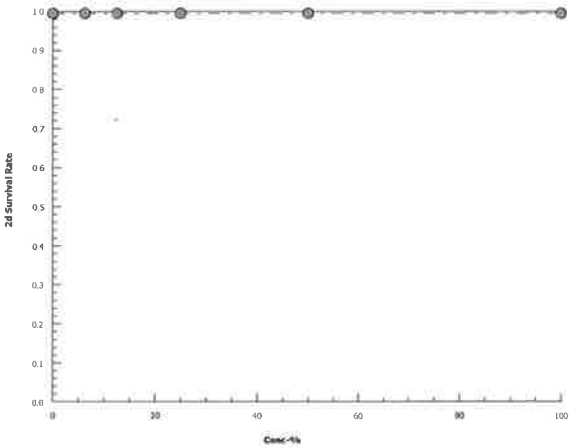
2d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	04-7865-8547	**Endpoint:**	2d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:29	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	08-1307-1730	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:29	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	20-1797-6844	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:10	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	08 May-17 11:08	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	5d 23h	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	11-8163-8173	**Code:**	466E5E1D	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	30h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	990520	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	n/a	n/a	<1	n/a	n/a

6d Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	D	10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
6.25		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
12.5		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
25		10	0.9000	0.0000	1.0000	0.1000	0.3162	35.14%	10.0%	9	10
50		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10
100		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10

6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

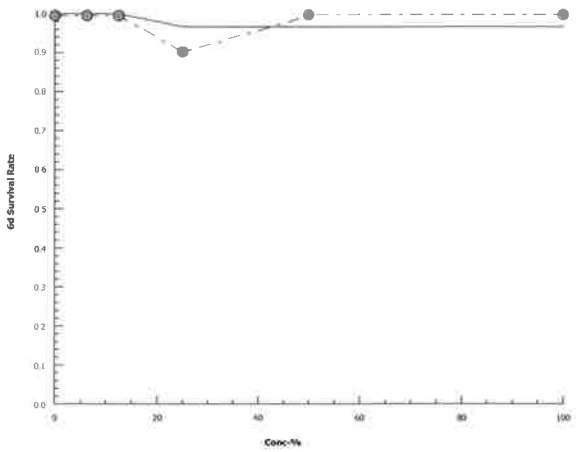
6d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	08-1307-1730	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:29	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	01-5829-6700	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:30	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	20-1797-6844	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:10	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	08 May-17 11:08	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	5d 23h	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	11-8163-8173	**Code:**	466E5E1D	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	30h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	928319	200	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	27.5	15	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary

			Calculated Variate						
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	D	10	27.5	24	32	0.8851	2.799	10.18%	0.0%
6.25		10	31.9	25	35	0.9244	2.923	9.16%	-16.0%
12.5		10	30.5	27	34	0.6872	2.173	7.13%	-10.91%
25		10	29.6	14	37	2.222	7.027	23.74%	-7.64%
50		10	32.2	27	40	1.218	3.853	11.97%	-17.09%
100		10	31	20	37	1.406	4.447	14.35%	-12.73%

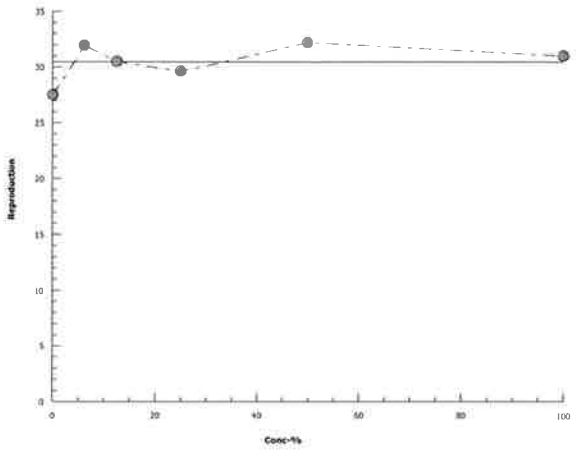
Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	26	24	25	26	30	29	25	27	31	32
6.25		33	35	30	32	30	34	25	34	33	33
12.5		34	30	30	29	31	27	31	28	32	33
25		35	31	37	34	14	27	22	29	33	34
50		30	31	37	33	33	30	27	32	29	40
100		32	34	31	37	29	30	33	20	32	32

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	01-5829-6700	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:30	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



CETIS Analytical Report

Report Date:	17 May-17 11:30 (p 1 of 2)
Test Code:	17-607a | 10-9355-5624

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	10-8894-0983	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:29	**Analysis:**	STP 2xK Contingency Tables	**Official Results:**	Yes

Batch ID:	20-1797-6844	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:10	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	08 May-17 11:08	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	5d 23h	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	11-8163-8173	**Code:**	466E5E1D	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	30h	**Station:**			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test

Control vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Dilution Water	6.25	1.0000	Exact	1.0000	Non-Significant Effect
	12.5	1.0000	Exact	1.0000	Non-Significant Effect
	25	0.5000	Exact	1.0000	Non-Significant Effect
	50	1.0000	Exact	1.0000	Non-Significant Effect
	100	1.0000	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	D	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		9	1	10	0.9	0.1	10.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%

6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

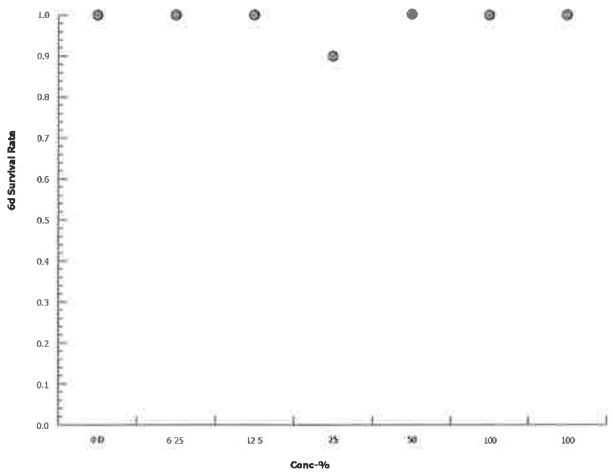
6d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	10-8894-0983	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:29	**Analysis:**	STP 2xK Contingency Tables	**Official Results:**	Yes

Graphics



CETIS Analytical Report

Report Date:	17 May-17 11:30 (p 1 of 2)
Test Code:	17-607a | 10-9355-5624

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	15-4262-1493	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:30	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Batch ID:	20-1797-6844	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 12:10	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	08 May-17 11:08	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	5d 23h	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	11-8163-8173	**Code:**	466E5E1D	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	30h	**Station:**			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	15.58%

Steel Many-One Rank Sum Test

Control vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water	6.25	141.5	75	3	18	Asymp	1.0000	Non-Significant Effect
	12.5	134.5	75	5	18	Asymp	0.9999	Non-Significant Effect
	25	125.5	75	3	18	Asymp	0.9977	Non-Significant Effect
	50	140	75	5	18	Asymp	1.0000	Non-Significant Effect
	100	136	75	4	18	Asymp	0.9999	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits Lower	Upper	Overlap	Decision
Control Resp	27.5	15	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	148.95	29.79	5	1.701	0.1502	Non-Significant Effect
Error	945.9	17.5167	54			
Total	1094.85		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	15.89	15.09	0.0072	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9239	0.9459	0.0011	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	27.5	25.5	29.5	26.5	24	32	0.8851	10.18%	0.00%
6.25		10	31.9	29.81	33.99	33	25	35	0.9244	9.16%	-16.00%
12.5		10	30.5	28.95	32.05	30.5	27	34	0.6872	7.12%	-10.91%
25		10	29.6	24.57	34.63	32	14	37	2.222	23.74%	-7.64%
50		10	32.2	29.44	34.96	31.5	27	40	1.218	11.97%	-17.09%
100		10	31	27.82	34.18	32	20	37	1.406	14.35%	-12.73%

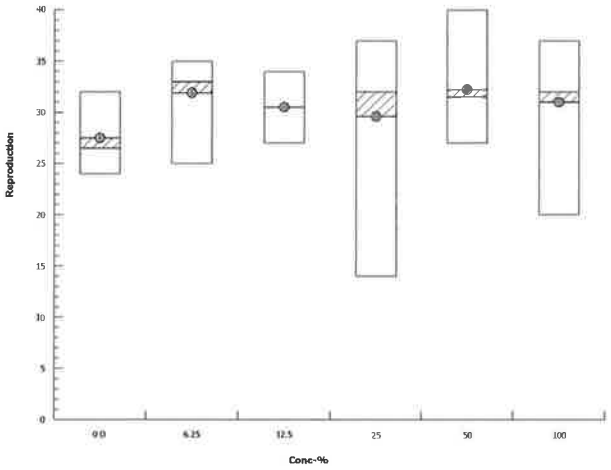
Reproduction Detail

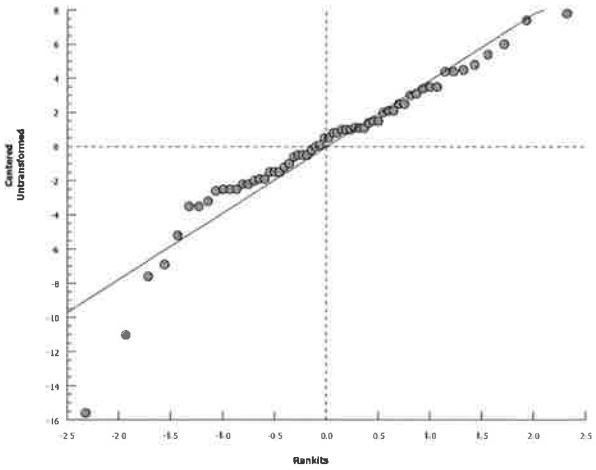
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	26	24	25	26	30	29	25	27	31	32
6.25		33	35	30	32	30	34	25	34	33	33
12.5		34	30	30	29	31	27	31	28	32	33
25		35	31	37	34	14	27	22	29	33	34
50		30	31	37	33	33	30	27	32	29	40
100		32	34	31	37	29	30	33	20	32	32

Ceriodaphnia 7-d Survival and Reproduction Test — **New England Bioassay**

Analysis ID:	15-4262-1493	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:30	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Graphics





NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:	Keolis/Commuter Rail Maintenance Facility @ DMH 13.4							
NEB PROJECT NUMBER:	05.0044887.00			TEST ORGANISM			*Ceriodaphnia dubia*	
DILUTION WATER SOURCE:	DMH 13.4 Receiving (Millers River)			START DATE:			5/2/17	TIME: 1210
ANALYST	CB	CW	KO	KO	CW	CW		
NEB Lab Synthetic Control	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.9	24.6	25.0	24.0	24.8	24.8		
D.O. mg/L Initial	8.2	8.2	8.3	8.5	8.2	8.2		
pH s.u. Initial	7.1	7.7	7.6	7.6	7.6	7.7		
Conductivity µS Initial	410	390	402	392	385	441		
Temp °C Final	25.1	24.0	24.2	24.0	25.1	24.3		
D.O. mg/L Final	7.8	8.6	8.3	8.3	8.3	8.4		
pH s.u. Final	7.9	7.5	8.1	7.9	7.8	7.9		
Conductivity µS Final	420	438	419	439	417	476		
Millers River Diluent (at DMH 13.4 site)	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.6	26.0	24.9	25.2	25.6	25.9		
D.O. mg/L Initial	7.1	8.2	7.5	8.3	7.6	8.1		
pH s.u. Initial	6.8	6.9	6.9	7.0	7.0	7.0		
Conductivity µS Initial	2,200	2,182	2,399	2,390	2,461	2,471		
Temp °C Final	25.1	24.0	24.3	24.0	25.1	24.3		
D.O. mg/L Final	7.8	8.7	8.3	8.3	8.4	8.4		
pH s.u. Final	8.0	8.0	8.2	8.0	7.7	8.1		
Conductivity µS Final	2,209	2,321	2,398	2,460	2,470	2,514		
6.25%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.5	26.0	24.8	26.0	26.0	26.0		
D.O. mg/L Initial	7.1	8.1	6.7	7.8	6.7	7.9		
pH s.u. Initial	6.9	6.9	6.9	7.0	6.9	7.0		
Conductivity µS Initial	2,105	2,075	2,287	2,264	2,345	2,347		
Temp °C Final	25.2	24.0	24.2	24.0	25.4	24.2		
D.O. mg/L Final	7.9	8.8	8.4	8.4	8.5	8.5		
pH s.u. Final	8.2	8.1	8.4	8.0	8.2	8.2		
Conductivity µS Final	2,111	2,104	2,259	2,297	2,342	2,474		
12.5%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.5	26.0	24.8	26.0	26.0	266.0		
D.O. mg/L Initial	7.3	8.1	6.7	7.7	6.6	7.8		
pH s.u. Initial	6.9	7.0	6.9	7.0	6.9	7.0		
Conductivity µS Initial	1,987	1,953	2,153	2,143	2,213	2,214		
Temp °C Final	25.2	24.0	24.2	24.0	25.4	24.4		
D.O. mg/L Final	8.0	8.8	8.5	8.5	8.5	8.5		
pH s.u. Final	8.2	8.1	8.4	8.2	8.3	8.3		
Conductivity µS Final	2,162	2,348	2,203	2,295	2,285	2,487		

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:	Keolis/Commuter Rail Maintenance Facility @ DMH 13.4		
NEB PROJECT NUMBER:	05.0044887.00	TEST ORGANISM	*Ceriodaphnia dubia*
DILUTION WATER SOURCE:	DMH 13.4 Receiving (Millers River)	START DATE:	5/2/17 TIME: 1210

25%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.4	26.0	24.7	26.0	26.0	26.0		
D.O. mg/L Initial	7.4	8.1	6.8	7.7	6.5	7.8		
pH s.u. Initial	6.9	7.0	6.9	7.0	6.9	7.0		
Conductivity µS Initial	1,741	1,723	1,901	1,875	1,930	1,950		
Temp °C Final	25.3	24.0	24.1	24.0	25.5	24.5		
D.O. mg/L Final	8.0	8.7	8.5	8.5	8.5	8.6		
pH s.u. Final	8.2	8.2	8.4	8.3	8.4	8.3		
Conductivity µS Final	1,762	1,788	1,892	1,964	1,957	2,089		
50%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.4	26.0	24.5	25.9	26.0	26.0		
D.O. mg/L Initial	7.3	8.3	6.8	7.7	6.5	7.8		
pH s.u. Initial	6.9	7.0	7.0	7.8	7.0	7.1		
Conductivity µS Initial	1,266	1,249	1,370	1,350	1,406	1,406		
Temp °C Final	25.4	24.0	24.1	24.0	25.5	24.5		
D.O. mg/L Final	8.1	8.7	8.5	8.5	8.6	8.6		
pH s.u. Final	8.2	8.2	8.4	8.3	8.4	8.3		
Conductivity µS Final	1,275	1,334	1,379	1,442	1,446	1,484		
100%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.2	25.6	24.0	25.7	26.0	25.5		
D.O. mg/L Initial	7.7	8.5	6.7	7.8	6.0	7.6		
pH s.u. Initial	7.0	7.2	7.3	7.3	7.2	7.4		
Conductivity µS Initial	265	263	270	268	275	275		
Temp °C Final	25.3	24.0	24.1	24.0	25.5	24.5		
D.O. mg/L Final	8.1	8.6	8.6	8.5	8.5	8.6		
pH s.u. Final	8.2	8.4	8.4	8.6	8.7	8.4		
Conductivity µS Final	317	342	324	337	323	329		
	1	2	3	4	5	6	7	Remarks
Temp °C Initial								
D.O. mg/L Initial								
pH s.u. Initial								
Conductivity µS Initial								
Temp °C Final								
D.O. mg/L Final								
pH s.u. Final								
Conductivity µS Final								

Table of Random Permutations of 16 **C.dubia Test ID#** 17-607a

7	12	15	15	1	2	7	16	10	2	14	15	7	13	13	10	6	1	8	10
13	3	8	16	7	10	11	10	13	5	11	7	13	16	7	7	5	13	2	14
3	1	4	5	14	13	3	14	9	13	13	2	9	15	6	2	8	4	5	8
11	8	16	14	15	6	2	6	2	16	8	5	12	3	9	13	4	3	10	4
14	9	1	6	3	9	14	13	8	6	5	8	14	7	3	15	13	11	4	7
2	16	10	13	5	5	13	2	11	7	3	12	5	14	12	16	2	2	9	15
4	6	13	7	2	15	1	9	1	4	7	10	6	9	11	9	7	6	16	11
6	14	6	10	4	14	4	15	3	3	4	16	2	6	5	1	12	10	6	9
10	15	2	1	13	12	16	3	4	8	10	1	15	5	14	12	14	12	3	2
12	10	7	12	9	11	9	8	12	14	15	4	11	8	16	8	9	14	14	1
15	7	5	2	10	7	8	12	6	15	6	13	16	12	15	4	11	8	12	6
16	2	11	8	8	8	15	5	16	1	1	9	8	1	8	14	16	5	13	5
9	13	14	3	6	4	10	11	5	12	9	3	10	4	4	3	10	9	1	3
8	11	9	4	11	3	12	7	7	10	12	14	3	10	1	6	15	16	15	12
1	5	12	11	16	16	5	4	14	9	16	11	1	2	10	5	1	15	7	13
5	4	3	9	12	1	6	1	15	11	2	6	4	11	2	11	3	7	11	16
																		rep	conc
11	8	16	5	5	13	1	13	2	16	14	12	9	8	7	5	13	3	13	3
2	2	8	8	14	16	4	3	8	11	10	14	15	1	2	11	4	5	15	9
6	13	2	13	6	5	9	15	11	10	12	6	16	15	16	9	10	12	16	15
14	12	4	16	16	11	14	10	5	12	3	3	12	14	15	13	6	4	1	16
8	6	3	9	4	10	6	4	16	2	2	9	8	16	4	6	5	15	7	8
9	15	12	10	3	2	12	6	1	15	4	13	7	7	9	12	14	8	8	11
3	10	11	12	13	12	5	11	7	8	9	5	14	11	10	1	3	13	3	5
16	1	13	14	8	14	15	5	3	7	11	15	6	12	5	7	11	1	14	4
1	14	14	2	9	15	16	14	6	14	7	8	3	13	11	8	7	7	12	7
4	4	6	4	12	3	11	8	15	9	8	1	13	6	3	3	15	9	9	12
15	5	1	11	10	6	3	7	10	5	5	11	10	10	12	15	16	14	5	2
5	3	5	6	7	7	13	2	14	3	16	4	5	5	13	4	9	16	2	6
12	7	15	15	15	9	8	12	12	13	15	10	1	4	6	16	2	6	11	1
10	11	10	3	2	4	2	1	4	6	6	7	11	9	14	10	8	11	4	13
7	9	7	7	11	1	7	16	13	1	13	2	4	2	1	2	12	2	10	14
13	16	9	1	1	8	10	9	9	4	1	16	2	3	8	14	1	10	6	10
1	6	7	4	8	6	5	2	8	15	4	6	6	1	4	5	7	13	2	10
9	15	11	3	11	15	9	10	1	3	8	2	15	7	9	8	16	1	14	3
10	16	4	5	12	9	16	11	7	1	7	16	11	8	3	3	12	2	3	4
4	14	1	9	5	5	4	13	6	8	15	5	12	5	7	16	5	11	8	1
7	3	13	14	15	2	1	14	16	5	14	9	2	16	1	12	6	14	4	13
16	11	2	1	14	16	6	9	3	4	16	14	3	15	11	11	3	9	12	5
3	10	16	16	13	7	13	1	11	14	9	10	16	2	10	2	10	7	10	16
11	13	9	13	4	13	8	3	5	13	10	12	5	12	5	14	13	16	5	6
15	2	3	12	9	12	2	4	13	10	3	13	14	4	2	1	14	8	6	12
14	1	14	6	10	1	3	12	4	2	2	4	13	3	16	9	9	3	7	14
13	12	5	11	3	11	15	8	2	7	11	7	8	14	6	4	4	4	15	11
12	5	10	7	2	14	7	15	14	16	13	1	9	10	12	10	11	10	9	8
8	9	8	10	6	4	11	7	10	11	6	8	4	9	8	15	8	6	11	9
2	7	6	2	1	8	10	6	15	12	1	11	7	11	13	6	1	15	13	15
6	4	15	8	16	10	14	16	9	6	12	3	10	6	14	7	2	12	16	7
5	8	12	15	7	3	12	5	12	9	5	15	1	13	15	13	15	5	1	2
13	4	10	4	16	13	16	13	5	3	6	14	1	16	8	7	2	3	3	12
5	14	4	6	8	2	15	1	13	14	16	4	15	4	3	12	12	1	4	7
2	2	2	15	14	16	9	12	16	6	10	15	14	9	10	1	14	8	8	16
7	12	15	8	12	3	5	14	7	12	5	13	16	1	7	5	11	2	9	3
6	9	7	14	9	14	10	11	15	11	12	1	12	12	14	16	3	11	11	8
14	5	16	7	10	8	11	8	14	13	7	11	6	3	11	4	4	6	6	9
15	11	8	9	7	12	8	7	1	15	9	3	3	7	13	11	10	4	5	1
11	6	6	1	4	1	3	16	12	5	4	9	13	13	6	8	15	9	1	14
4	10	3	16	2	11	7	9	6	9	1	8	4	11	5	2	16	10	12	4
1	8	1	13	1	15	4	4	11	4	2	16	5	8	1	9	5	12	16	6
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16	16	5	12	11	6	1	3	8	16	3	7	2	5	16	14	13	7	14	15

NEW ENGLAND BIOASSAY TOXICITY DATA FORM
CHRONIC COVER SHEET

CLIENT: Alpha Analytical Laboratories
ADDRESS: 8 Walkup Drive
Westborough, MA 01581
SAMPLE TYPE: DMH 13.4 (Keolis/Commuter Rail)
DILUTION WATER: DMH 13.4 Receiving (Millers River)

P.promelas TEST ID # 17-607b
COC # C37-2033/34
PROJECT # 05.0044887.00

VERTEBRATES

TEST SET UP (TECH INIT) KW
TEST SPECIES *Pimephales promelas*
NEB LOT# Pp17(5-2)
AGE < 24 hours
TEST SOLUTION VOLUME (mls) 400
NO. ORGANISMS PER TEST CHAMBER 10
NO. ORGANISMS PER CONCENTRATION 40

Laboratory Control Water (SRCF)

Batch Number	Hardness mg/L $CaCO_3$	Alkalinity mg/L $CaCO_3$
C37-S008	46	30

	DATE	TIME
TEST START:	5/2/17	1300
TEST END:	5/9/17	1241

Results of *Pimephales promelas* Chronic Test

		95% Confidence Limits
48 Hour LC50	>100%	100%±∞
7 Day LC50	>100%	100%±∞
Survival NOEC	100%	
Survival LOEC	>100%	
Growth NOEC	100%	
Growth LOEC	>100%	
Growth IC_{25}	>100%	

NOEC: NO OBSERVABLE EFFECT CONCENTRATI LOEC: LOWEST OBSERVABLE EFFECT CONCENTRATION

Comments:

REVIEWD BY: [signature] DATE: 6/1/17

NEB'S SURVIVAL DATA SHEET FOR FATHEAD MINNOW LARVAL SURVIVAL AND GROWTH TEST

FACILITY NAME & ADDRESS:	Keolis/Commuter Rail Maintenance Facility @ DMH 13.4						
NEB PROJECT NUMBER:	05.0044887.00	TEST NUMBER:	17-607b			COC #	C37-2033/34
TEST ORGANISM:	*Pimephales promelas*	AGE:	<24 hours			Lot #	Pp17(5-2)
START DATE:	5/2/17	TIME:	1300	END DATE:	5/9/17	TIME:	1241

Effluent Concentration	Replicate Number	Number of Survivors								
		Day								
		0	1	2	3	4	5	6	7	Remarks
	ANALYST	KW	PD	CB	KO	CW	CW	KO	KW	
NEB Lab Synthetic Control	A	10	10	10	10	10	10	10	10	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	10	10	10	10	10	
Millers River Diluent (at DMH 13.4 site)	A	10	10	10	10	10	10	10	10	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	10	10	10	10	10	
6.25%	A	10	10	10	10	10	10	10	10	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	10	10	10	10	10	
12.5%	A	10	10	10	10	10	9	9	9	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	10	10	10	10	10	
25%	A	10	10	10	10	10	10	10	10	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	10	10	10	10	10	
50%	A	10	10	10	10	10	10	10	10	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	10	10	10	10	10	
100%	A	10	10	10	10	10	10	10	10	
	B	10	10	10	10	10	10	10	10	
	C	10	10	10	10	10	10	10	10	
	D	10	10	10	10	10	10	10	10	

D.O. concentration fell below 4.0 mg/L _____

All test solutions were aerated at <100 bubbles/minute as of _____

NEW ENGLAND BIOASSAY WEIGHT DATA FOR FATHEAD MINNOW LARVAL SURVIVAL AND GROWTH TEST

FACILITY NAME & ADDRESS:	Keolis/Commuter Rail Maintenance Facility @ DMH 13.4		
NEB PROJECT #	05.0044887.00	NEB TEST NUMBER:	17-607b
TEST START DATE	5/2/17	WEIGHING DATE:	5/23/17
TEST END DATE	5/9/17		
DRYING TEMPERATURE (°C)	100 ± 4	DRYING TIME:	minimum 6 hours
ANALYST-INITIAL WEIGHTS	PD	ANALYST-FINAL WEIGHTS	TBP

Effluent Concentration	Replicate Number	A Weight of boat (mg)	B Dry Weight: Foil and Larvae (mg)
NEB Lab Synthetic Control	A	942.29	951.45
	B	942.48	950.63
	C	937.92	946.21
	D	932.32	940.33
Millers River Diluent (at DMH 13.4 site)	A	932.59	938.78
	B	932.32	939.19
	C	935.76	941.85
	D	933.66	940.48
6.25%	A	932.86	939.92
	B	932.43	938.62
	C	933.33	939.98
	D	933.36	940.21
12.5%	A	941.56	948.38
	B	939.78	945.75
	C	941.00	947.28
	D	943.58	949.94
25%	A	934.02	940.78
	B	938.26	945.35
	C	941.76	947.67
	D	939.12	946.51
50%	A	938.08	945.59
	B	938.78	948.00
	C	938.89	945.48
	D	935.43	942.40
100%	A	932.89	941.78
	B	935.53	943.69
	C	934.10	943.12
	D	932.64	940.92

CETIS Analytical Report

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	18-7689-7333	**Endpoint:**	2d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:32	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	08-4136-1492	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 13:00	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	09 May-17 12:41	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	10-1787-5203	**Code:**	3CAB8B03	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	31h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	827022	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	n/a	n/a	<1	n/a	n/a

2d Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	D	4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
6.25		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
12.5		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
25		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
50		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
100		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40

2d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

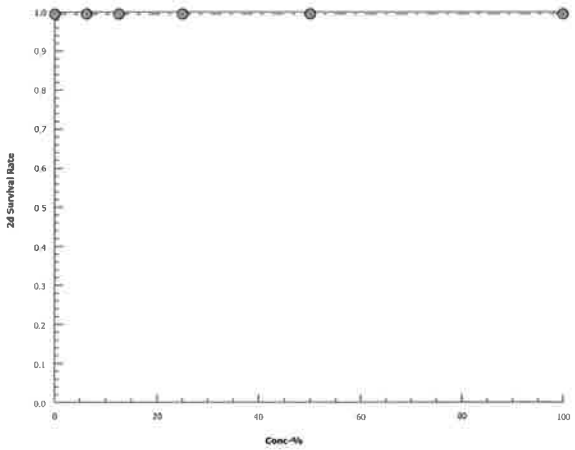
2d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	10/10	10/10
6.25		10/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10
25		10/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	18-7689-7333	**Endpoint:**	2d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:32	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	05-5693-4236	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:32	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	08-4136-1492	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 13:00	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	09 May-17 12:41	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	10-1787-5203	**Code:**	3CAB8B03	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	31h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	1207624	200	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1	0.8	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	n/a	n/a	<1	n/a	n/a

7d Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	D	4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
6.25		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
12.5		4	0.9750	0.9000	1.0000	0.0250	0.0500	5.13%	2.5%	39	40
25		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
50		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
100		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		0.9000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

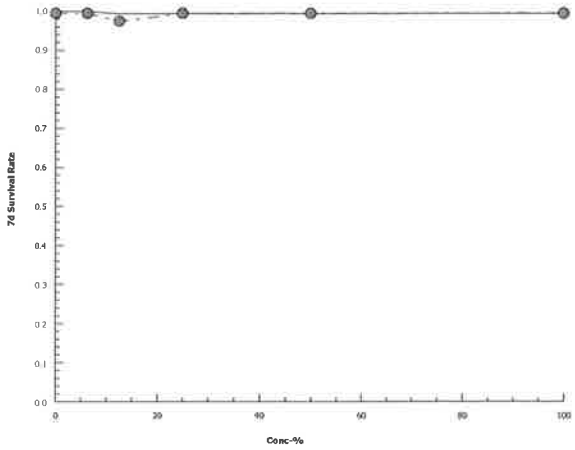
7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	10/10	10/10
6.25		10/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10
25		10/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	05-5693-4236	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:32	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



CETIS Analytical Report

Report Date:	17 May-17 11:33 (p 1 of 2)
Test Code:	17-607b | 15-1294-8381

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	13-7299-4279	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:33	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Batch ID:	08-4136-1492	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 13:00	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	09 May-17 12:41	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	10-1787-5203	**Code:**	3CAB8B03	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	31h	**Station:**			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	> 100	n/a	1	4.57%

Steel Many-One Rank Sum Test

Control vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water	6.25	18	10	1	6	Asymp	0.8333	Non-Significant Effect
	12.5	16	10	1	6	Asymp	0.6105	Non-Significant Effect
	25	18	10	1	6	Asymp	0.8333	Non-Significant Effect
	50	18	10	1	6	Asymp	0.8333	Non-Significant Effect
	100	18	10	1	6	Asymp	0.8333	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1	0.8	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0055332	0.0011066	5	1	0.4457	Non-Significant Effect
Error	0.0199195	0.0011066	18			
Total	0.0254527		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	9	4.248	2.0E-04	Unequal Variances
Variances	Mod Levene Equality of Variance Test	1	4.248	0.4457	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.4634	0.884	2.5E-08	Non-Normal Distribution

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	2.50%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
6.25		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
12.5		4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	2.89%
25		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
50		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
100		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	13-7299-4279	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 May-17 11:33	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		0.9000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

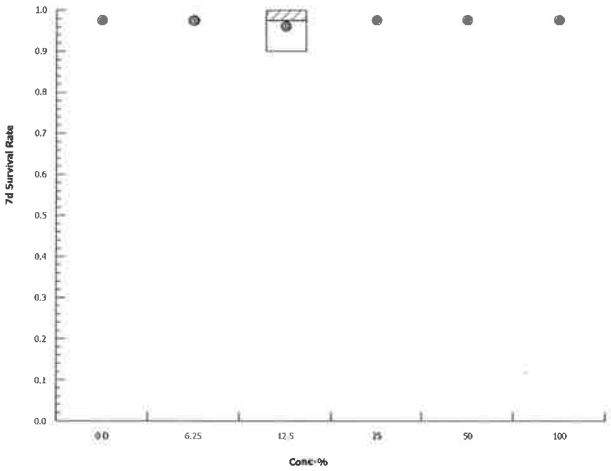
Angular (Corrected) Transformed Detail

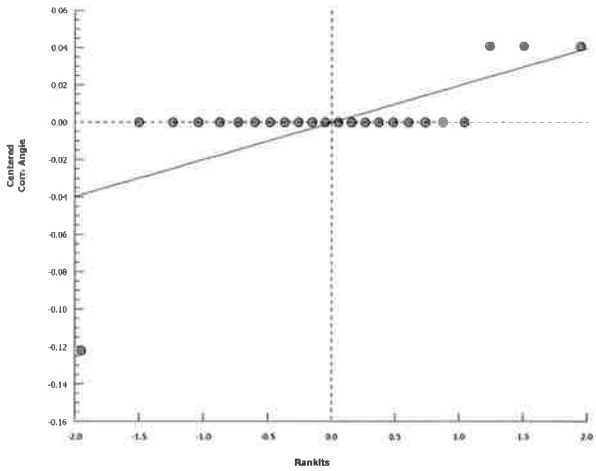
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.412	1.412	1.412	1.412
6.25		1.412	1.412	1.412	1.412
12.5		1.249	1.412	1.412	1.412
25		1.412	1.412	1.412	1.412
50		1.412	1.412	1.412	1.412
100		1.412	1.412	1.412	1.412

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	10/10	10/10
6.25		10/10	10/10	10/10	10/10
12.5		9/10	10/10	10/10	10/10
25		10/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Graphics





CETIS Analytical Report

Test Code: 17-607b | 15-1294-8381

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	09-2728-3492	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	31 May-17 17:55	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Batch ID:	08-4136-1492	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 13:00	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	09 May-17 12:41	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	10-1787-5203	**Code:**	3CAB8B03	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	31h	**Station:**			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	16.48%

Dunnett Multiple Comparison Test

Control vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water	6.25	-0.4386	2.407	0.107	6	CDF	0.9307	Non-Significant Effect
	12.5	0.3037	2.407	0.107	6	CDF	0.7288	Non-Significant Effect
	25	-0.6636	2.407	0.107	6	CDF	0.9590	Non-Significant Effect
	50	-2.429	2.407	0.107	6	CDF	0.9998	Non-Significant Effect
	100	-4.712	2.407	0.107	6	CDF	1.0000	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.6492	0.25	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.144875	0.028975	5	7.33	6.6E-04	Significant Effect
Error	0.0711515	0.0039529	18			
Total	0.216027		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	6.828	15.09	0.2337	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.939	0.884	0.1553	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	0.6492	0.5841	0.7144	0.6505	0.609	0.687	0.02048	6.31%	0.00%
6.25		4	0.6687	0.6096	0.7279	0.675	0.619	0.706	0.01858	5.56%	-3.00%
12.5		4	0.6357	0.5799	0.6916	0.632	0.597	0.682	0.01756	5.52%	2.08%
25		4	0.6787	0.5771	0.7804	0.6925	0.591	0.739	0.03195	9.42%	-4.54%
50		4	0.7572	0.5724	0.9421	0.724	0.659	0.922	0.05807	15.34%	-16.63%
100		4	0.8587	0.7903	0.9272	0.8585	0.816	0.902	0.02152	5.01%	-32.27%

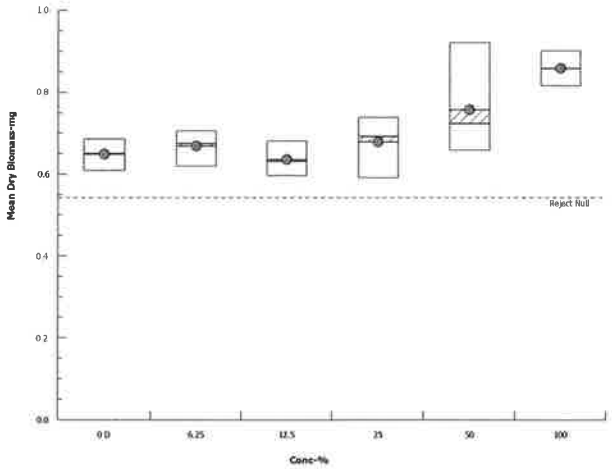
Mean Dry Biomass-mg Detail

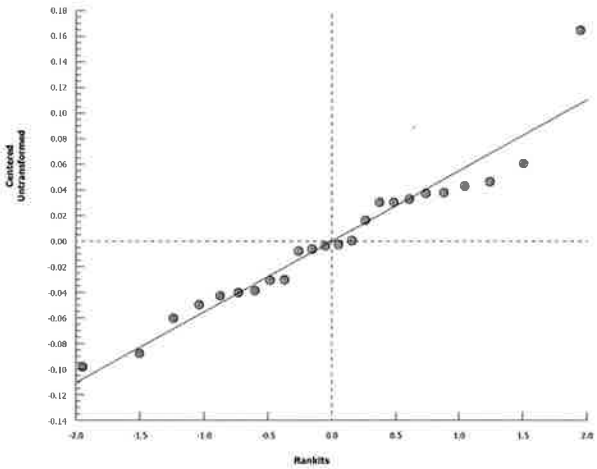
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.619	0.687	0.609	0.682
6.25		0.706	0.619	0.665	0.685
12.5		0.682	0.597	0.628	0.636
25		0.676	0.709	0.591	0.739
50		0.751	0.922	0.659	0.697
100		0.889	0.816	0.902	0.828

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	09-2728-3492	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	31 May-17 17:55	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Graphics





CETIS Analytical Report

Report Date:	31 May-17 17:55 (p 1 of 2)
Test Code:	17-607b | 15-1294-8381

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	13-9693-6046	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	31 May-17 17:55	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	08-4136-1492	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	02 May-17 13:00	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	09 May-17 12:41	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	10-1787-5203	**Code:**	3CAB8B03	**Client:**	Alpha Analytical Lab
Sample Date:	01 May-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	01 May-17 11:40	**Source:**	Commuter Rail		
Sample Age:	31h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	526477	200	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.6492	0.25	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Mean Dry Biomass-mg Summary

			Calculated Variate						
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	D	4	0.6492	0.609	0.687	0.02048	0.04096	6.31%	0.0%
6.25		4	0.6687	0.619	0.706	0.01858	0.03715	5.56%	-3.0%
12.5		4	0.6357	0.597	0.682	0.01756	0.03512	5.53%	2.08%
25		4	0.6787	0.591	0.739	0.03195	0.06391	9.42%	-4.54%
50		4	0.7572	0.659	0.922	0.05807	0.1161	15.34%	-16.63%
100		4	0.8587	0.816	0.902	0.02152	0.04305	5.01%	-32.27%

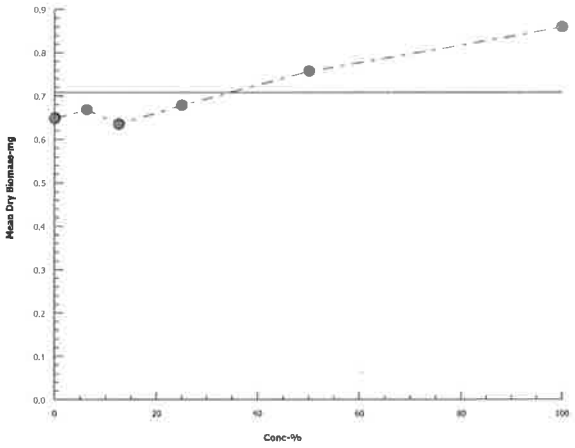
Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.619	0.687	0.609	0.682
6.25		0.706	0.619	0.665	0.685
12.5		0.682	0.597	0.628	0.636
25		0.676	0.709	0.591	0.739
50		0.751	0.922	0.659	0.697
100		0.889	0.816	0.902	0.828

Fathead Minnow 7-d Larval Survival and Growth Test — **New England Bioassay**

Analysis ID:	13-9693-6046	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	31 May-17 17:55	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Ceriodaphnia dubia Culture Chart Lot # Cd17 (RMH 076) A

Brood mother source: RMH 072 A-9 Source's brood size: 15 (Qty.)

DMH 5-2-17

Tech	AH	AH	MG	AH	AH		AH	AH		AH						
Date	4-24	4-25	4-26	4-27	4-28		4-30	5-1		5-2						
Day acc.	0	1	2	3	4	5	6	7		8	9	10	11	12	13	14
Cup # 1	N	N	N	N	7		9	Y	1	T1 Y 18						
2	N	N	N	N	6		24	N	2	T2 Y 18						
3	N	N	N	N	6		11	Y	3	T3 Y 17						
4	N	N	N	N	6		24	N	4	T4 Y 20						
5	N	N	N	N	5		10	Y	5	T5 Y 17						
6	N	N	N	N	3		24	N	6	T6 Y 17						
7	N	N	N	N	6		24	N	7	Y						
8	N	N	N	N	6		11	Y	8	T7 Y 17						
9	N	N	N	N	6		12	Y	9	T8 Y 18						
10	N	N	N	N	4		24	N	10	T9 Y 19						
11	N	N	N	N	5		10	Y	11	T10 Y 16						
12	N	N	N	N	5		11	Y	12	Y						
13	N	N	N	N	5		10	Y	13	Y						

Y = neonates present, and *criterion has been met:* ≥ 20 neonates produced in total by 3rd brood. **N** = no neonates

2B = two broods present. **2Y** = two broods and criterion met: ≥ 20 neos. by 3rd brood. **X** = brood mother dead **ae** = aborted eggs

✓ or **P** = neonates present after renewal on previous day (see time in log). **A→** = acceptable for acute testing only

T# = neonates used in test, replicate number of test noted (and brood counted). **acc.** = *if acclimated*, H_2O type used w/ renewal **this** day.

Test organism collection:

Project #	Symbols (✓ / P)	Tray diagram used? (Y/N)	Time period, neonates released	Collection date / time
0644887	T	Y	5-1-17/1630 → 5-2-17/0800	5-2-17/0945
	T			
	T			
	T			
	T			
	T			

SUB COURIER: NEB, CT

CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1713794

Client Information

Client: Alpha Analytical Lab
Address: 8 Walkup Drive
Westborough, Ma 01581
Phone: 508-898-9220
Fax:
Email: subreports@alphalab.com

☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name:
Project Location: MA
Project #:
Project Manager: Ashaley Kane
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☐ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed Program | Criteria

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?
☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:
Please reference Alpha Job #L1713794 on this report.

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☐ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	BIOASSAY	Sample Specific Comments	TOTAL # BOTTLES
	DMH 13.4 (DOWNSTREAM MH) EFFLUENT COMPOSITE	5/1/17	06:00	W		x		1
	DMH 13.4 (DOWNSTREAM MH) RECEIVING WATER	5/1/17	06:40	W		x		1
	ABCBeff AMBIENT (MILLERS RIVER BEYOND BOOMS) COMPOSITE	5/1/17	06:00	W		x		1
	ABCB rv AMBIENT (MILLERS RIVER BEYOND BOOMS) REC. WATER	5/1/17	07:00	W		x		1

Container Type	Cube	-	-	-	-	-	-	-	-	-	-	-
Preservative	A	-	-	-	-	-	-	-	-	-	-	-

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP or CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
[illegible]	5/1/17	[illegible]	5/1/17 1019
[illegible]	5/1/17 1130		

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(I)

SUB COURIER: NEB, CT

CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1714121

Project Information

Project Name:

Project Location: MA

Project #:

Project Manager: Ashaley Kane

ALPHA Quote #:

Client Information

Client: Alpha Analytical Lab
Address: 8 Walkup Drive
Westborough, Ma 01581
Phone: 508-898-9220
Fax:
Email: subreports@alphalab.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☐ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed Program Criteria

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?
☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:

Please reference Alpha Job #L1714121 on this report.

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☐ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	BIOASSAY	Sample Specific Comments	TOTAL # BOTTLES
C37-2051	DMH 13.4 (DOWNSTREAM MH) COMPOSITE	5/3/17	06:00	Water		X		1
C37-2052	DMH 13.4 (DOWNSTREAM MH) RECEIVING WATER	5/3/17	10:20	Water		X		1
C37-2053	AMBIENT (MILLERS RIVER BEYOND BOOMS) COMPOSITE	5/3/17	06:00	Water		X		1
C37-2054	AMBIENT (MILLERS RIVER BEYOND BOOMS) REC. WATER	5/3/17	10:40	Water		X		1

Received
Unpreserved

Container Type	Cube	-	-	-	-	-	-	-	-	-	-	-
Preservative	A	-	-	-	-	-	-	-	-	-	-	-

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP *or* CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
[illegible]	5/3/17	[illegible] AAL	5/3/17 13:15
[illegible] AAL	5/2/17 14:45	[illegible]	5/3/17 1445

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms

FORM NO: 01-91(I)

SUB COURIER: NEB, CT

CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1714523

Project Information

Project Name:

Project Location: MA

Project #:

Project Manager: Ashaley Kane

ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Client Information

Client: Alpha Analytical Lab

Address: 8 Walkup Drive

Westborough, Ma 01581

Phone: 508-898-9220

Fax:

Email: subreports@alphalab.com

☐ These samples have been Previously analyzed by Alpha

Report Information Data Deliverables

☐ FAX ☐ EMAIL

☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed Program *Criteria*

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?

☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:

Please reference Alpha Job #L1714523 on this report.

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☐ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	BIOASSAY												Sample Specific Comments	TOTAL # BOTTLES
	DMH 13.4 (DOWNSTREAM MH) COMPOSITE	5/5/17	06:00	W		x													1
	DMH 13.4 (DOWNSTREAM MH) RECEIVING WATER	5/5/17	07:30	W		x													1
	AMBIENT (MILLERS RIVER BEYOND BOOMS) COMPOSITE	5/5/17	06:00	W		x													1
	AMBIENT (MILLERS RIVER BEYOND BOOMS) REC. WATER	5/5/17	08:30	W		x													1

Received ON ICE

Container Type	Cube	-	-	-	-	-	-	-	-	-	-	-
Preservative	A	-	-	-	-	-	-	-	-	-	-	-

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP *or* CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
[illegible] AAC	5/5/17	[illegible] AAC	5-5-17 16:15
[illegible] AAC	5-5-17 12:30	[illegible]	5/5/17 1230

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(I)

Concentration	Rep	Final Weight (mg)	Initial Weight (mg)	Total Weight (mg)	Average per fish (mg)	Mean fish weight (mg)	Standard Deviation
NEB Lab Synthetic Control	1	951.45	942.29	9.16	0.916	0.8403	0.051777569
	2	950.63	942.48	8.15	0.815		
	3	946.21	937.92	8.29	0.829		
	4	940.33	932.32	8.01	0.801		
Millers River Diluent (at DMH 13.4 site)	1	938.78	932.59	6.19	0.619	0.6493	0.040958312
	2	939.19	932.32	6.87	0.687		
	3	941.85	935.76	6.09	0.609		
	4	940.48	933.66	6.82	0.682		
6.25%	1	939.92	932.86	7.06	0.706	0.6688	0.037151716
	2	938.62	932.43	6.19	0.619		
	3	939.98	933.33	6.65	0.665		
	4	940.21	933.36	6.85	0.685		
12.5%	1	948.38	941.56	6.82	0.682	0.6358	0.035122405
	2	945.75	939.78	5.97	0.597		
	3	947.28	941.00	6.28	0.628		
	4	949.94	943.58	6.36	0.636		
25%	1	940.78	934.02	6.76	0.676	0.6787	0.063908137
	2	945.35	938.26	7.09	0.709		
	3	947.67	941.76	5.91	0.591		
	4	946.51	939.12	7.39	0.739		
50%	1	945.59	938.08	7.51	0.751	0.7573	0.116138925
	2	948.00	938.78	9.22	0.922		
	3	945.48	938.89	6.59	0.659		
	4	942.40	935.43	6.97	0.697		
100%	1	941.78	932.89	8.89	0.889	0.8588	0.043045519
	2	943.69	935.53	8.16	0.816		
	3	943.12	934.10	9.02	0.902		
	4	940.92	932.64	8.28	0.828		

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:	Keolis/Commuter Rail Maintenance Facility @ DMH 13.4							
NEB PROJECT NUMBER:	05.0044887.00			TEST ORGANISM			*Pimephales promelas*	
DILUTION WATER SOURCE:	DMH 13.4 Receiving (Millers River)			START DATE:			5/2/17 TIME: 1300	
ANALYST	KW	PD	KO	KO	CW	CW	CB	
NEB Lab Synthetic Control	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.5	25.4	25.0	25.2	25.5	25.3	25.1	
D.O. mg/L Initial	8.1	8.2	8.5	8.2	8.1	8.1	8.2	
pH s.u. Initial	7.6	7.3	7.6	7.4	7.6	7.6	7.7	
Conductivity µS Initial	178	178	178	177	176	177	177	
Temp °C Final	24.8	24.4	24.6	24.8	24.6	24.1	24.0	
D.O. mg/L Final	7.6	8.4	7.7	6.6	7.6	6.7	7.1	
pH s.u. Final	7.4	7.0	7.1	7.2	7.3	7.2	7.2	
Conductivity µS Final	198	195	194	203	205	205	198	
Millers River Diluent (at DMH 13.4 site)	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.6	26.0	24.9	25.2	25.6	25.9	25.2	
D.O. mg/L Initial	7.1	8.2	7.5	8.3	7.6	8.1	8.3	
pH s.u. Initial	6.8	6.9	6.9	7.0	7.0	7.0	7.1	
Conductivity µS Initial	2,200	2,182	2,399	2,390	2,461	2,471	2,466	
Temp °C Final	25.3	24.8	25.1	25.1	24.5	24.6	24.3	
D.O. mg/L Final	7.2	7.3	7.3	6.7	7.1	7.0	7.0	
pH s.u. Final	7.4	7.0	6.9	7.0	7.0	7.3	7.6	
Conductivity µS Final	2,168	2,218	2,395	2,401	2,510	2,520	2,550	
6.25%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.5	26.0	24.8	26.0	26.0	26.0	24.6	
D.O. mg/L Initial	7.1	8.1	6.7	7.8	6.7	7.9	8.5	
pH s.u. Initial	6.9	6.9	6.9	7.0	6.9	7.0	7.2	
Conductivity µS Initial	2,105	2,075	2,287	2,264	2,345	2,347	2,350	
Temp °C Final	25.0	25.2	25.1	25.1	24.6	24.4	24.4	
D.O. mg/L Final	7.2	7.0	7.1	6.8	7.1	6.9	7.0	
pH s.u. Final	7.6	7.2	7.2	7.2	7.2	7.5	7.8	
Conductivity µS Final	2,065	2,118	2,287	2,292	2,403	2,411	2,437	
12.5%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.5	26.0	24.8	26.0	26.0	266.0	24.6	
D.O. mg/L Initial	7.3	8.1	6.7	7.7	6.6	7.8	8.5	
pH s.u. Initial	6.9	7.0	6.9	7.0	6.9	7.0	7.2	
Conductivity µS Initial	1,987	1,953	2,153	2,143	2,213	2,214	2,194	
Temp °C Final	24.8	25.1	24.9	24.9	24.6	24.3	24.4	
D.O. mg/L Final	7.3	7.0	7.2	6.9	7.0	7.0	7.1	
pH s.u. Final	7.7	7.3	7.4	7.3	7.2	7.6	7.9	
Conductivity µS Final	1,975	1,994	2,158	2,180	2,271	2,283	2,281	

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:	Keolis/Commuter Rail Maintenance Facility @ DMH 13.4		
NEB PROJECT NUMBER:	05.0044887.00	TEST ORGANISM	*Pimephales promelas*
DILUTION WATER SOURCE:	DMH 13.4 Receiving (Millers River)	START DATE:	5/2/17 TIME: 1300

25%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.4	26.0	24.7	26.0	26.0	26.0	24.9	
D.O. mg/L Initial	7.4	8.1	6.8	7.7	6.5	7.8	8.6	
pH s.u. Initial	6.9	7.0	6.9	7.0	6.9	7.0	7.3	
Conductivity µS Initial	1,741	1,723	1,901	1,875	1,930	1,950	1,941	
Temp °C Final	24.9	25.1	24.9	24.8	24.5	24.4	24.4	
D.O. mg/L Final	7.3	7.0	7.2	6.9	7.1	7.0	7.2	
pH s.u. Final	7.6	7.4	7.5	7.4	7.1	7.6	7.9	
Conductivity µS Final	1,720	1,763	1,917	1,919	1,989	2,023	2,017	
50%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.4	26.0	24.5	25.9	26.0	26.0	25.0	
D.O. mg/L Initial	7.3	8.3	6.8	7.7	6.5	7.8	8.4	
pH s.u. Initial	6.9	7.0	7.0	7.8	7.0	7.1	7.3	
Conductivity µS Initial	1,266	1,249	1,370	1,350	1,406	1,406	1,401	
Temp °C Final	25.1	25.0	24.9	24.9	24.7	24.4	24.1	
D.O. mg/L Final	7.3	6.9	7.2	6.6	7.0	6.5	7.2	
pH s.u. Final	7.6	7.5	7.5	7.5	7.3	7.6	7.8	
Conductivity µS Final	1,253	1,275	1,376	1,382	1,446	1,459	1,469	
100%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.2	25.6	24.0	25.7	26.0	25.5	25.4	
D.O. mg/L Initial	7.7	8.5	6.7	7.8	6.0	7.6	8.4	
pH s.u. Initial	7.0	7.2	7.3	7.3	7.2	7.4	7.6	
Conductivity µS Initial	265	263	270	268	275	275	276	
Temp °C Final	24.9	25.2	25.1	25.0	24.7	24.3	24.0	
D.O. mg/L Final	7.3	7.0	6.9	6.5	6.8	6.8	7.0	
pH s.u. Final	7.6	7.6	7.7	7.7	7.5	7.7	7.8	
Conductivity µS Final	289	283	291	302	309	312	305	
	1	2	3	4	5	6	7	Remarks
Temp °C Initial								
D.O. mg/L Initial								
pH s.u. Initial								
Conductivity µS Initial								
Temp °C Final								
D.O. mg/L Final								
pH s.u. Final								
Conductivity µS Final								

Table of Random Permutations of 16 **P.promelas Test ID#** 17-607b

7	12	15	15	1	2	7	16	10	2	14	15	7	13	13	10	6	1	8	10
13	3	8	16	7	10	11	10	13	5	11	7	13	16	7	7	5	13	2	14
3	1	4	5	14	13	3	14	9	13	13	2	9	15	6	2	8	4	5	8
11	8	16	14	15	6	2	6	2	16	8	5	12	3	9	13	4	3	10	4
14	9	1	6	3	9	14	13	8	6	5	8	14	7	3	15	13	11	4	7
2	16	10	13	5	5	13	2	11	7	3	12	5	14	12	16	2	2	9	15
4	6	13	7	2	15	1	9	1	4	7	10	6	9	11	9	7	6	16	11
6	14	6	10	4	14	4	15	3	3	4	16	2	6	5	1	12	10	6	9
10	15	2	1	13	12	16	3	4	8	10	1	15	5	14	12	14	12	3	2
12	10	7	12	9	11	9	8	12	14	15	4	11	8	16	8	9	14	14	1
15	7	5	2	10	7	8	12	6	15	6	13	16	12	15	4	11	8	12	6
16	2	11	8	8	8	15	5	16	1	1	9	8	1	8	14	16	5	13	5
9	13	14	3	6	4	10	11	5	12	9	3	10	4	4	3	10	9	1	3
8	11	9	4	11	3	12	7	7	10	12	14	3	10	1	6	15	16	15	12
1	5	12	11	16	16	5	4	14	9	16	11	1	2	10	5	1	15	7	13
5	4	3	9	12	1	6	1	15	11	2	6	4	11	2	11	3	7	11	16
												Rep							
11	8	16	5	5	13	1	13	2	16	14	12	9	8	7	5	13	3	13	3
2	2	8	8	14	16	4	3	8	11	10	14	15	1	2	11	4	5	15	9
6	13	2	13	6	5	9	15	11	10	12	6	16	15	16	9	10	12	16	15
14	12	4	16	16	11	14	10	5	12	3	3	12	14	15	13	6	4	1	16
8	6	3	9	4	10	6	4	16	2	2	9	8	16	4	6	5	15	7	8
9	15	12	10	3	2	12	6	1	15	4	13	7	7	9	12	14	8	8	11
3	10	11	12	13	12	5	11	7	8	9	5	14	11	10	1	3	13	3	5
16	1	13	14	8	14	15	5	3	7	11	15	6	12	5	7	11	1	14	4
1	14	14	2	9	15	16	14	6	14	7	8	3	13	11	8	7	7	12	7
4	4	6	4	12	3	11	8	15	9	8	1	13	6	3	3	15	9	9	12
15	5	1	11	10	6	3	7	10	5	5	11	10	10	12	15	16	14	5	2
5	3	5	6	7	7	13	2	14	3	16	4	5	5	13	4	9	16	2	6
12	7	15	15	15	9	8	12	12	13	15	10	1	4	6	16	2	6	11	1
10	11	10	3	2	4	2	1	4	6	6	7	11	9	14	10	8	11	4	13
7	9	7	7	11	1	7	16	13	1	13	2	4	2	1	2	12	2	10	14
13	16	9	1	1	8	10	9	9	4	1	16	2	3	8	14	1	10	6	10
				Conc															
1	6	7	4	8	6	5	2	8	15	4	6	6	1	4	5	7	13	2	10
9	15	11	3	11	15	9	10	1	3	8	2	15	7	9	8	16	1	14	3
10	16	4	5	12	9	16	11	7	1	7	16	11	8	3	3	12	2	3	4
4	14	1	9	5	5	4	13	6	8	15	5	12	5	7	16	5	11	8	1
7	3	13	14	15	2	1	14	16	5	14	9	2	16	1	12	6	14	4	13
16	11	2	1	14	16	6	9	3	4	16	14	3	15	11	11	3	9	12	5
3	10	16	16	13	7	13	1	11	14	9	10	16	2	10	2	10	7	10	16
11	13	9	13	4	13	8	3	5	13	10	12	5	12	5	14	13	16	5	6
15	2	3	12	9	12	2	4	13	10	3	13	14	4	2	1	14	8	6	12
14	1	14	6	10	1	3	12	4	2	2	4	13	3	16	9	9	3	7	14
13	12	5	11	3	11	15	8	2	7	11	7	8	14	6	4	4	4	15	11
12	5	10	7	2	14	7	15	14	16	13	1	9	10	12	10	11	10	9	8
8	9	8	10	6	4	11	7	10	11	6	8	4	9	8	15	8	6	11	9
2	7	6	2	1	8	10	6	15	12	1	11	7	11	13	6	1	15	13	15
6	4	15	8	16	10	14	16	9	6	12	3	10	6	14	7	2	12	16	7
5	8	12	15	7	3	12	5	12	9	5	15	1	13	15	13	15	5	1	2
13	4	10	4	16	13	16	13	5	3	6	14	1	16	8	7	2	3	3	12
5	14	4	6	8	2	15	1	13	14	16	4	15	4	3	12	12	1	4	7
2	2	2	15	14	16	9	12	16	6	10	15	14	9	10	1	14	8	8	16
7	12	15	8	12	3	5	14	7	12	5	13	16	1	7	5	11	2	9	3
6	9	7	14	9	14	10	11	15	11	12	1	12	12	14	16	3	11	11	8
14	5	16	7	10	8	11	8	14	13	7	11	6	3	11	4	4	6	6	9
15	11	8	9	7	12	8	7	1	15	9	3	3	7	13	11	10	4	5	1
11	6	6	1	4	1	3	16	12	5	4	9	13	13	6	8	15	9	1	14
4	10	3	16	2	11	7	9	6	9	1	8	4	11	5	2	16	10	12	4
1	8	1	13	1	15	4	4	11	4	2	16	5	8	1	9	5	12	16	6
9	7	14	2	6	4	14	10	9	8	15	10	7	10	9	10	6	14	10	11
12	1	9	10	15	5	2	15	10	2	14	2	8	2	4	13	8	5	15	5
3	3	12	11	5	9	6	6	3	10	13	12	9	6	2	15	7	15	7	13
10	15	11	5	13	7	12	5	2	7	11	5	10	15	12	3	1	13	13	10
8	13	13	3	3	10	13	2	4	1	8	6	11	14	15	6	9	16	2	2
16	16	5	12	11	6	1	3	8	16	3	7	2	5	16	14	13	7	14	15

NEW ENGLAND BIOASSAY
INITIAL CHEMISTRY DATA

CLIENT: Alpha - Commuter Rail (DMH 13.4)
NEB JOB # 05.0044887.00
TEST ID # C.dubia 17-607a P.promelas 17-607b

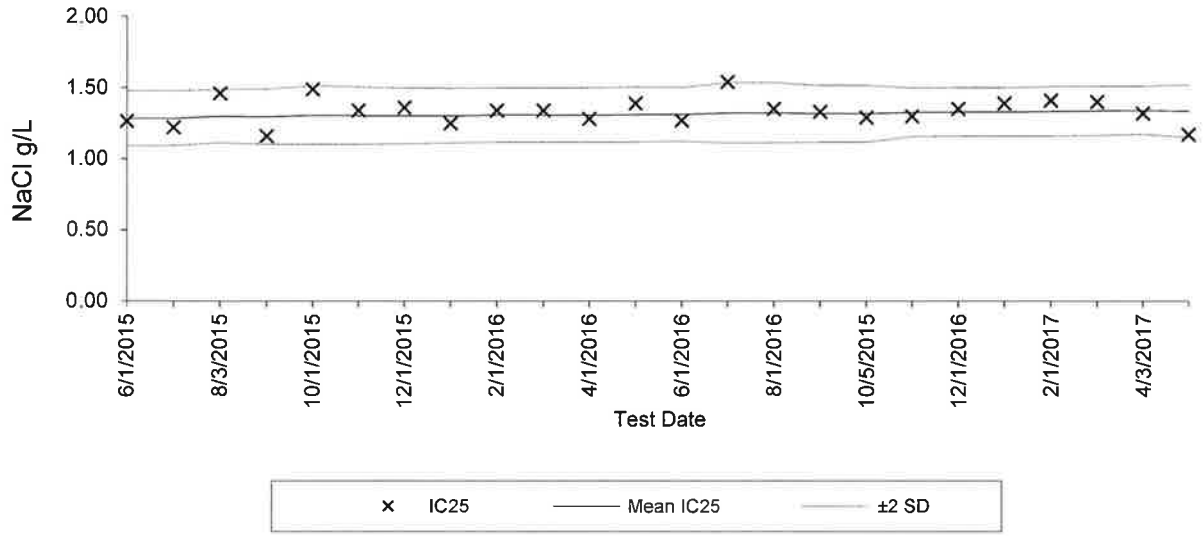
DATE RECEIVED	5/1/17		5/3/17		5/5/17	
SAMPLE TYPE:	EFF #1	RIVER #1	EFF #2	RIVER #2	EFF #3	RIVER #3
COC #	C37-2033	C37-2034	C37-2051	C37-2052	C37-2071	C37-2072
pH (SU)	7.3	6.8	6.6	6.3	7.4	6.7
Temperature (^{0}C)	4.3	6.4	4.2	4.3	6.1	4.1, 1.7
Dissolved Oxygen (mg/L)	7.8	7.4	6.6	6.2	6.6	6.7
Conductivity (µmhos)	266	2,220	275	2,400	278	2,496
Salinity (ppt)	<1	1	<1	1	<1	1
TRC - DPD (mg/L)	0.008	0.018	0.009	0.007	0.002	0.006
TRC - Amperometric (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A
Hardness (mg/L as $CaCO_3$)	36	234	42	262	40	268
Alkalinity (mg/l as $CaCO_3$)	30	135	30	140	35	140
Tech Initials	CB	CB	KO	KO	CB	CB

NOTE: NA = NOT APPLICABLE

Data Reviewed By: _____ Date Reviewed: 6/1/17

New England Bioassay
Reference Toxicant Data: *Pimephales promelas* 7-day Chronic Growth IC25

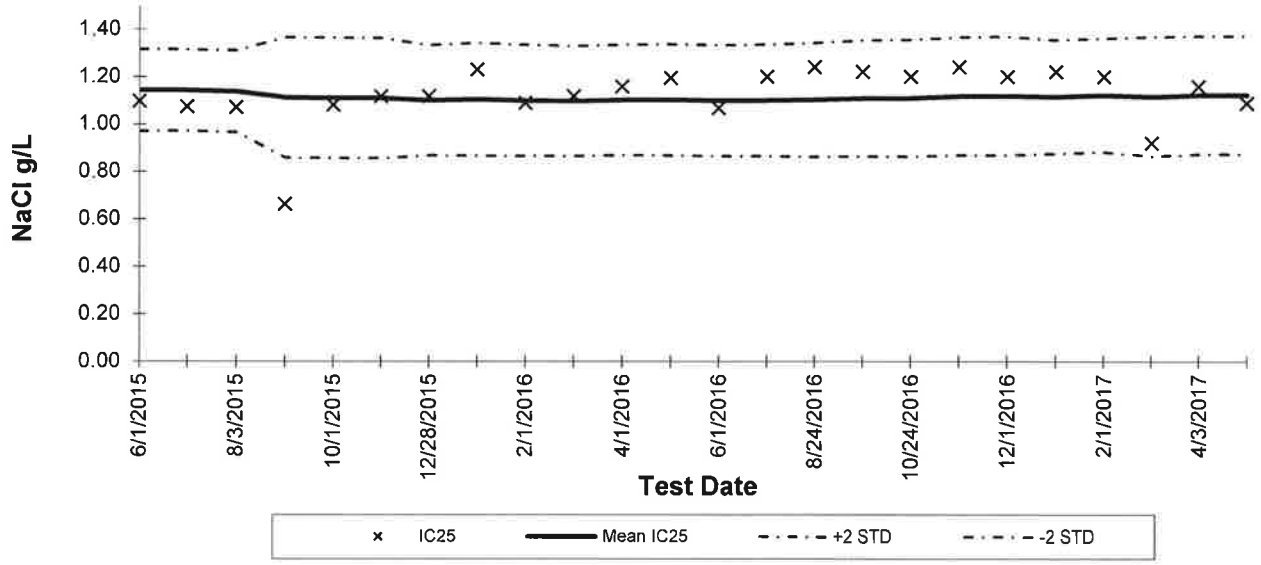
Reference Toxicant: Sodium chloride
Test Dates: June 2015 - May 2017



Test ID	Date	IC_{25}	Mean IC_{25}	STD	-2STD	+2STD	CV	CV National 75th	CV National 90th
15-803	6/1/2015	1.27	1.28	0.10	1.09	1.48	0.08	0.38	0.45
15-956	7/1/2015	1.22	1.28	0.10	1.09	1.48	0.07	0.38	0.45
15-1212	8/3/2015	1.46	1.30	0.09	1.11	1.49	0.07	0.38	0.45
15-1376	9/9/2015	1.16	1.29	0.10	1.10	1.49	0.08	0.38	0.45
15-1541	10/1/2015	1.49	1.31	0.10	1.10	1.51	0.08	0.38	0.45
15-1742	11/2/2015	1.34	1.30	0.10	1.10	1.50	0.08	0.38	0.45
15-1881	12/1/2015	1.36	1.30	0.10	1.10	1.50	0.08	0.38	0.45
16-36	1/4/2016	1.25	1.30	0.10	1.11	1.49	0.07	0.38	0.45
16-139	2/1/2016	1.34	1.31	0.10	1.12	1.50	0.07	0.38	0.45
16-308	3/1/2016	1.34	1.31	0.10	1.12	1.50	0.07	0.38	0.45
16-464	4/1/2016	1.28	1.31	0.10	1.12	1.50	0.07	0.38	0.45
16-597	5/2/2016	1.39	1.31	0.10	1.12	1.50	0.07	0.38	0.45
16-708	6/1/2016	1.27	1.31	0.10	1.12	1.50	0.07	0.38	0.45
16-881	7/1/2016	1.54	1.32	0.11	1.11	1.53	0.08	0.38	0.45
16-1064	8/1/2016	1.35	1.32	0.11	1.11	1.54	0.08	0.38	0.45
16-1259	9/8/2016	1.33	1.32	0.10	1.12	1.52	0.08	0.38	0.45
16-1473	10/5/2015	1.29	1.32	0.10	1.12	1.52	0.08	0.38	0.45
16-1593	11/1/2016	1.30	1.33	0.09	1.16	1.50	0.06	0.38	0.45
16-1735	12/1/2016	1.35	1.33	0.09	1.16	1.50	0.06	0.38	0.45
17-15	1/3/2017	1.39	1.33	0.08	1.16	1.50	0.06	0.38	0.45
17-152	2/1/2017	1.41	1.33	0.09	1.16	1.51	0.06	0.38	0.45
17-268	3/1/2017	1.40	1.34	0.09	1.16	1.51	0.06	0.38	0.45
17-481	4/3/2017	1.32	1.34	0.08	1.17	1.51	0.06	0.38	0.45
17-617	5/1/2017	1.17	1.33	0.09	1.15	1.52	0.07	0.38	0.45

New England Bioassay
Reference Toxicant Data: *Ceriodaphia dubia* Chronic Reproduction IC25

Reference Toxicant: Sodium chloride
Test Dates: June 2015 - May 2017



Test ID	Date	IC_{25}	Mean IC_{25}	STD	-2STD	+2STD	CV	CV National 75th%	CV National 90th%
15-750	6/1/2015	1.10	1.14	0.09	0.97	1.32	0.08	0.45	0.62
15-955	7/1/2015	1.07	1.14	0.09	0.97	1.32	0.07	0.45	0.62
15-1211	8/3/2015	1.07	1.14	0.09	0.97	1.31	0.08	0.45	0.62
15-1375	9/9/2015	0.66	1.11	0.13	0.86	1.37	0.11	0.45	0.62
15-1540	10/1/2015	1.08	1.11	0.13	0.86	1.37	0.11	0.45	0.62
15-1691	11/2/2015	1.12	1.11	0.13	0.86	1.36	0.11	0.45	0.62
15-1897	12/28/2015	1.12	1.10	0.12	0.87	1.33	0.11	0.45	0.62
16-37	1/4/2016	1.23	1.11	0.12	0.87	1.34	0.11	0.45	0.62
16-138	2/1/2016	1.09	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-307	3/1/2016	1.12	1.10	0.12	0.87	1.33	0.11	0.45	0.62
16-463	4/1/2016	1.16	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-596	5/2/2016	1.19	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-707	6/1/2016	1.07	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-880	7/1/2016	1.20	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-1212	8/24/2016	1.24	1.10	0.12	0.86	1.34	0.11	0.45	0.62
16-1258	9/8/2016	1.22	1.11	0.12	0.87	1.35	0.11	0.45	0.62
16-1553	10/24/2016	1.20	1.11	0.12	0.87	1.36	0.11	0.45	0.62
16-1592	11/1/2016	1.24	1.12	0.12	0.87	1.37	0.11	0.45	0.62
16-1734	12/1/2016	1.20	1.12	0.13	0.87	1.37	0.11	0.45	0.62
17-14	1/3/2017	1.22	1.12	0.12	0.88	1.36	0.11	0.45	0.62
17-151	2/1/2017	1.20	1.12	0.12	0.88	1.36	0.11	0.45	0.62
17-267	3/1/2017	0.92	1.12	0.13	0.86	1.37	0.11	0.45	0.62
17-480	4/3/2017	1.16	1.12	0.12	0.87	1.37	0.11	0.45	0.62
17-616	5/1/2017	1.09	1.12	0.12	0.88	1.37	0.11	0.45	0.62

EST Associates, Inc.

51 Fremont Street Needham, MA 02494 Tel: 781-455-0003, Fax: 781-455-8336

CHAIN OF CUSTODY RECORD

L1713794

Laboratory: Alpha Analytical - 508-898-9220

Client	CDW Consultants, Inc
Address	40 Speen Street, Suite 301 Framingham, MA 01701
Contact	Marion Rambelle
Phone #	508-875-2657

Project Name	Keolis- Commuter Rail Maintenance Facility		
Address	70 R Third Avenue Somerville MA 02143		
Contact	William Betters	tel:	508-875-2657
Location ID #	Mult Locs	Fax:	508-875-6617
Description	Monthly EPA Sampling - DAY 1 of 3	PO#	

MATRIX
1. Wastewater
2. Groundwater
3. Drinking Water
4. Soil
5. Surface Water
6. Other _____

EST to Invoice: kshick@cdwconsultants.com

Lab to Invoice: EST

Lab Report to: See Comments

Billing Reference: Q#8750315-17

Field ID / Point of Collection	Collection Date	Collection Time	Matrix	# of bottles Type: Glass	Cube	Plastic	VOA's	Preservation: HCL	NaOH	HNO3	H2So4	MEOH	Other	None	WET- Acute & Chronic Toxicity	Hardness (2340B)	Alkalinity (2320B) - NO HEADSPACE	Spec. Cond. (120.1)	Total Solids (2540B), TDS (2540C)	Ammonia Nitrogen (350.1)	TOC (5310C)	Total Cd, Pb, Cu, Zn, Ni, Al (200.8)				Comments:
DMH 13.4 (Downstream MH) Effluent Composite	4/30/17 5/1/17	0600 0600	6		X	X	X								X	X	X	X	X	X	X	X				TRC = 0 Temp = 10.7 pH = 7.04
DMH 13.4 (Downstream MH) - RECEIVING WATER	5/1/17	0600	6		X	X	X								X	X	X	X		X	X	X				Temp = 10.9 pH = 6.64
Ambient (Millers River beyond containment booms) Composite	4/30/17 5/1/17	0600 0600	6		X	X	X								X	X	X	X	X	X	X	X				TRC = 0 Temp = 11.3 pH = 6.97
Ambient (Millers River beyond containment booms) - RECEIVING WATER	5/1/17	0700	6		X	X	X								X	X	X	X		X	X	X				Temp = 11.5 pH = 6.97

Turnaround Information

- [ ] Std. 10 Day Turnaround
- [ ] 7 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *RUSH*
- [ ] 2 Day *RUSH*
- [ ] 1 Day *RUSH*

Approved By:

QA/QC

SPECIAL QA/QC or DATA Requirements:

*Please use the method with the lowest det limit possible.

Additional Information

EMAIL REPORTS TO: mrambelle@cdwconsultants.com & wbetters@cdwconsultants.com

COMP BOTTLE SETS to Include: Conductivity & TDS - (1) 250ml P w/NP; Metals - (1) 250ml P w/HNO3; TSS - (1) 1L P w/NP; NH3 - (1) 500ml P w/H2SO4; Alk - (1) 250ml P w/NP; TOC - (2) 40ml Vial w/H2SO4.

RECEIVING WATER BOTTLE SETS to Include: Conducivity - (1) 60ml P w/NP; Metals - (1) 250ml P w/HNO3; NH3 - (1) 500ml P w/H2SO4; Alk - (1) 250ml P w/NP; TOC- (2) 40ml Vials w/H2SO4

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Date Time:
1	5/1/17 0830	1	5/1/17 932
2	5/1/17 1004	2	5/1/17 10:04
3		3	

Seal # ☐ Preserve where applicable ☐ On Ice ☐ Temp.

SUB COURIER: NEB, CT

CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1713794

Client Information

Client: Alpha Analytical Lab
Address: 8 Walkup Drive
Westborough, Ma 01581
Phone: 508-898-9220
Fax:
Email: subreports@alphalab.com

☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name:
Project Location: MA
Project #:
Project Manager: Ashaley Kane
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☐ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed Program *Criteria*

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?
☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:
Please reference Alpha Job #L1713794 on this report.

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☐ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	BIOASSAY												Sample Specific Comments	TOTAL # BOTTLES
	DMH 13.4 (DOWNSTREAM MH) EFFLUENT COMPOSITE	5/1/17	06:00	W		X													1
	DMH 13.4 (DOWNSTREAM MH) RECEIVING WATER	5/1/17	06:40	W		X													1
	AMBIENT (MILLERS RIVER BEYOND BOOMS) COMPOSITE	5/1/17	06:00	W		X													1
	AMBIENT (MILLERS RIVER BEYOND BOOMS) REC. WATER	5/1/17	07:00	W		X													1

Container Type	Cube	-	-	-	-	-	-	-	-	-	-	-
Preservative	A	-	-	-	-	-	-	-	-	-	-	-

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP *or* CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(I)

Revised AK 5/4/17

L1714121 5/3/17
~~L1714118~~ EO

EST Associates, Inc.

51 Fremont Street Needham, MA 02494 Tel: 781-455-0003, Fax: 781-455-8336

CHAIN OF CUSTODY RECORD

Laboratory: Alpha Analytical - 508-898-9220

Client	CDW Consultants, Inc
Address	40 Speen Street, Suite 301 Framingham, MA 01701
Contact	Marion Rambelle
Phone #	508-875-2657
Project Name	Keolis- Commuter Rail Maintenance Facility
Address	70 R Third Avenue Somerville MA 02143
Contact	William Betters tel: 508-875-2657
Location ID #	Mult Locs 2 Fax: 508-875-6617
Description	Monthly EPA Sampling - DAY ~~1~~ of 3 PO#

MATRIX
1. Wastewater
2. Groundwater
3. Drinking Water
4. Soil
5. Surface Water
6. Other _____

EST to Invoice: kshick@cdwconsultants.com
Lab to Invoice: EST
Lab Report to: See Comments
Billing Reference: Q#8750315-17

Field ID / Point of Collection	Collection Date	Collection Time	Matrix	# of bottles Type: Glass	Cube	Plastic	VOA's	Preservation: HCL	NaOH	HNO3	H2So4	MEOH	Other	None	WET- Acute & Chronic Toxicity	Hardness (2340B)	Alkalinity (2320B) - NO HEADSPACE	Spec. Cond. (120.1)	Total Solids (2540B), TDS (2540C)	Ammonia Nitrogen (4500NH3-BH)	TOC (5310C)	Total Cd, Pb, Cu, Zn, Ni, Al (200.8)	Comments:
DMH 13.4 (Downstream MH) Effluent Composite	5/23/17	0600-0600	6		X	X	X								X	X	X	X	X	X	X	X	TRC = 0 Temp = 11.4 pH = 6.96
DMH 13.4 (Downstream MH) - RECEIVING WATER	5/3/17	1030	6		X	X	X								X	X	X	X		X	X	X	Temp = 11.6 pH = 6.58
Ambient (Millers River beyond containment booms) Composite	5/23/17	0600-0600	6		X	X	X								X	X	X	X	X	X	X	X	TRC = 0 Temp = 13.1 pH = 6.83
Ambient (Millers River beyond containment booms) - RECEIVING WATER	5/3/17	1040	6		X	X	X								X	X	X	X		X	X	X	Temp = 13.0 pH = 6.55
	5/3/17																						

Turnaround Information
- [ ] Std. 10 Day Turnaround
- [ ] 7 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *RUSH*
- [ ] 2 Day *RUSH*
- [ ] 1 Day *RUSH*

Approved By:

QA/QC
SPECIAL QA/QC or DATA Requirements:
*Please use the method with the lowest det limit possible.

Additional Information
EMAIL REPORTS TO: mrambelle@cdwconsultants.com & wbetters@cdwconsultants.com
BOTTLE SET TO Include:

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Date Time:
1 [signature]	5/3/17 1145	1 [signature] AAL	5/3/17 12:10
2 [signature] AAL 5/3/17	13:05	2 [signature] AAL	5/3/17 1305
3		3	

Seal # ☐ Preserve where applicable ☐ On Ice ☐ Temp.

L1714121 5/3/17
~~L1714118~~ EO

EST Associates, Inc.

51 Fremont Street Needham, MA 02494 Tel: 781-455-0003, Fax: 781-455-8336

CHAIN OF CUSTODY RECORD

Laboratory: Alpha Analytical - 508-898-9220

Client	CDW Consultants, Inc
Address	40 Speen Street, Suite 301 Framingham, MA 01701
Contact	Marion Rambelle
Phone #	508-875-2657

Project Name	Keolis- Commuter Rail Maintenance Facility		
Address	70 R Third Avenue Somerville MA 02143		
Contact	William Betters	tel:	508-875-2657
Location ID #	Mult Locs	Fax:	508-875-6617
Description	Monthly EPA Sampling - DAY 1 of 3	PO#	

MATRIX
1. Wastewater
2. Groundwater
3. Drinking Water
4. Soil
5. Surface Water
6. Other _____

EST to Invoice: kshick@cdwconsultants.com
Lab to Invoice: EST
Lab Report to: See Comments
Billing Reference: Q#8750315-17

Field ID / Point of Collection	Collection Date	Collection Time	Matrix	# of bottles Glass	Cube	Plastic	VOA's	Preservation HCL	NaOH	HNO3	H2So4	MEOH	Other	None	WET- Acute & Chronic Toxicity	Hardness (2340B)	Alkalinity (2320B) - NO HEADSPACE	Spec. Cond. (120.1)	Total Solids (2540B), TDS (2540C)	Ammonia Nitrogen (4500NH3-BH)	TOC (5310C)	Total Cd, Pb, Cu, Zn, Ni, Al (200.8)	Comments:
DMH 13.4 (Downstream MH) Effluent Composite	5/23/17	0600-0600	6		X	X	X								X	X	X	X	X	X	X	X	TRC = 0 Temp = 11.4 pH = 6.96
DMH 13.4 (Downstream MH) - RECEIVING WATER	5/3/17	1030	6		X	X	X								X	X	X	X		X	X	X	Temp = 11.6 pH = 6.58
Ambient (Millers River beyond containment booms) Composite	5/23/17	0600-0600	6		X	X	X								X	X	X	X	X	X	X	X	TRC = 0 Temp = 13.1 pH = 6.83
Ambient (Millers River beyond containment booms) - RECEIVING WATER	5/3/17	1040	6		X	X	X								X	X	X	X		X	X	X	Temp = 13.0 pH = 6.55
	5/3/17																						

Turnaround Information
- ☐ Std. 10 Day Turnaround
- ☐ 7 Day *RUSH*
- ☐ 5 Day *RUSH*
- ☐ 3 Day *RUSH*
- ☐ 2 Day *RUSH*
- ☐ 1 Day *RUSH*

Approved By:

QA/QC
SPECIAL QA/QC or DATA Requirements:
*Please use the method with the lowest det limit possible.

Additional Information
EMAIL REPORTS TO: mrambelle@cdwconsultants.com & wbetters@cdwconsultants.com
BOTTLE SET TO Include:

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Date Time:
1 [signature]	5/3/17 1145	1 [signature] AAL	5/3/17 12:10
2 [signature] AAL 5/3/17	13:05	2 [signature] AAL	5/3/17 1305
3		3	

Seal # ☐ Preserve where applicable ☐ On Ice ☐ Temp.

SUB COURIER: NEB, CT

CHAIN OF CUSTODY

ALPHA ANALYTICAL

estborough, MA
:L: 508-898-9220
X: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1714121

Project Information

Project Name:

Project Location: MA

Project #:

Project Manager: Ashaley Kane

ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information. Data Deliverables

☐ FAX ☐ EMAIL

☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed Program | Criteria

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?

☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

ANALYSIS

lient Information

ient: Alpha Analytical Lab

ldress: 8 Walkup Drive

estborough, Ma 01581

one: 508-898-9220

x:

ail: subreports@alphalab.com

These samples have been Previously analyzed by Alpha

ner Project Specific Requirements/Comments/Detection Limits:

ase reference Alpha Job #L1714121 on this report.

SAMPLE HANDLING
Filtration
☐ Done
☐ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

'HA Lab ID (ab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	BIOASSAY	Sample Specific Comments	TOTAL # BOTTLES
	DMH 13.4 (DOWNSTREAM MH) COMPOSITE	5/3/17	06:00	Water		X		1
	DMH 13.4 (DOWNSTREAM MH) RECEIVING WATER	5/3/17	10:20	Water		X		1
	AMBIENT (MILLERS RIVER BEYOND BOOMS) COMPOSITE	5/3/17	06:00	Water		X		1
	AMBIENT (MILLERS RIVER BEYOND BOOMS) REC. WATER	5/3/17	10:40	Water		X		1

Container Type	Cube	-	-	-	-	-	-	-	-	-	-	-
Preservative	A	-	-	-	-	-	-	-	-	-	-	-

E ANSWER QUESTIONS ABOVE!

YOUR PROJECT MCP or CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	5/3/17		

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to

EST Associates, Inc.

51 Fremont Street Needham, MA 02494 Tel: 781-455-0003, Fax: 781-455-8336

CHAIN OF CUSTODY RECORD

L1714523

Laboratory: Alpha Analytical - 508-898-9220

Client	CDW Consultants, Inc
Address	40 Speen Street, Suite 301 Framingham, MA 01701
Contact	Marion Rambelle
Phone #	508-875-2657
Project Name	Keolis- Commuter Rail Maintenance Facility
Address	70 R Third Avenue Somerville MA 02143
Contact	William Betters tel: 508-875-2657
Location ID #	Mult Locs Fax: 508-875-6617
Description	Monthly EPA Sampling - DAY 3 of 3 PO#

MATRIX
1. Wastewater
2. Groundwater
3. Drinking Water
4. Soil
5. Surface Water
6. Other _____

EST to Invoice: kshick@cdwconsultants.com

Lab to Invoice: EST

Lab Report to: See Comments

Billing Reference: Q#8750315-17

Field ID / Point of Collection	Collection Date	Collection Time	Matrix	# of bottles Glass	Cube	Plastic	VOA's	Preservation HCL	NaOH	HNO3	H2So4	MEOH	Other	None	WET- Acute & Chronic Toxicity	Hardness (2340B)	Alkalinity (2320B) - NO HEADSPACE	Spec. Cond. (120.1)	Ammonia Nitrogen (350.1)	Cd, Pb, Cu, Zn, Ni, Al (200.7) */(SEE COMMENT)	Comments:
MH 13.4 (Downstream MH) Composite	5/4/17-5/5/17	0600-0600	6		X	X	X								X	X	X	X	X	X	TRC = 0 Temp = 10.9°C pH = 6.65
MH 13.4 (Downstream MH) - RECEIVING ATER	5/5/17	0730	6		X	X	X								X	X	X	X	X	X	Temp = 10.3°C pH = 6.63
nbient (Millers River beyond ntainment booms) Composite	5/4/17-5/5/17	0600-0600	6		X	X	X								X	X	X	X	X	X	TRC = 0 Temp = 12.1°C pH = 6.58
nbient (Millers River beyond ntainment booms) RECEIVING WATER	5/5/17	0830	6		X	X	X								X	X	X	X	X	X	Temp = 12.3°C pH = 7.05

Turnaround Information

- [ ] Std. 10 Day Turnaround
- [ ] 7 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *RUSH*
- [ ] 2 Day *RUSH*
- [ ] 1 Day *RUSH*

Approved By:

QA/QC

SPECIAL QA/QC or DATA Requirements:

*Please use the method with the lowest det limit possible.

Additional Information

***HOLD ANALYSIS PENDING RESULTS from TOXICITY**

EMAIL REPORTS TO: mrambelle@cdwconsultants.com & wbetters@cdwconsultants.com

BOTTLE SET TO Include: Cond- (1) 60ml P w/NP; Metals- (1) 250ml P w/HNO3; NH3- (1) 500ml P w/H2SO4; Alk- (1) 250ml P w/NP

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Date Time:
	5/5/17	1 AAL	5-5-17 9:30
2 AAL	5-5-17 1007	2 AAL	5/5/17 1007
3		3	

Seal # ☐ Preserve where applicable ☐ On Ice ☐ Temp.

SUB COURIER: NEB, CT

CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1714523

Project Information

Project Name:

Project Location: MA

Project #:

Project Manager: Ashaley Kane

ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Client Information

Client: Alpha Analytical Lab

Address: 8 Walkup Drive

Westborough, Ma 01581

Phone: 508-898-9220

Fax:

Email: subreports@alphalab.com

☐ These samples have been Previously analyzed by Alpha

Report Information Data Deliverables

☐ FAX ☐ EMAIL

☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed Program Criteria

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?

☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:

Please reference Alpha Job #L1714523 on this report.

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☐ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	BIOASSAY	Sample Specific Comments	TOTAL # BOTTLES
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	DMH 13.4 (DOWNSTREAM MH) RECEIVING WATER	5/5/17	07:30	W		x		1
	AMBIENT (MILLERS RIVER BEYOND BOOMS) COMPOSITE	5/5/17	06:00	W		x		1
	AMBIENT (MILLERS RIVER BEYOND BOOMS) REC. WATER	5/5/17	08:30	W		x		1

Container Type	Cube	-	-	-	-	-	-	-	-	-	-	-
Preservative	A	-	-	-	-	-	-	-	-	-	-	-

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP or CT RCP?

FORM NO: 01-01(I)

Relinquished By:	Date/Time	Received By:	Date/Time
[illegible] AAC	5/5/17	[illegible] AAC	5-5-17 16:15
[illegible] AAC	5-5-17 12:30	[illegible]	5/5/17 1730

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms