New England Bioassay
A Division of GZA

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

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CHRONIC AQUATIC TOXICITY TEST REPORT

Barnhardt Manufacturing Company
Colrain, MA

Ceriodaphnia dubia Survival and Reproduction Test EPA 1002.0

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: 1/4/17

Test Period: January 2017

Report Prepared by:

New England Bioassay
A division of GZA GeoEnvironmental, Inc.
77 Batson Drive
Manchester CT, 06042

NEB Project Number: 05.0044654.00

Report Date: January 27, 2017

Report Submitted to:

Barnhardt Manufacturing Company
247 Main Road
Colrain, MA 01340

Sample ID: Effluent

Please contact the Lab Manager, Kim Wills, at **(860) 858-3153** or kimberly.wills@gza.com if you have any questions concerning these results.

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

Facility Name: Barnhardt Manufacturing Company Test Start Date: 1/4/17
NPDES Permit Number: MA0003697 Outfall Number: 001

Test Type	Test Species	Sample Type	Sample Method
_ Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
X Chronic	X Ceriodaphnia Dubia	_ Dechlorinated	X Composite
_ Modified (Chronic reporting LC50 values)	_ Daphnia Pulex	_ Unchlorinated	_ Flow-thru
	_ Mysid Shrimp	_ Chlorinated	_ Other
_ 24-Hour Screening	_ Sheepshead		
	_ Menidia		
	_ Sea Urchin	TRC conc. 0.007 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: North 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): 1/3-4/17 1/5-6/17 1/8-9/17

Effluent Concentrations Tested (in%): 0% 6.25% 5.0% 12.5% 25% 50% 100%
* (Permit Limit Concentration): 5.0% (C-NOEC)

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

Reference Toxicant test date: 1/3/17 Reference Toxicant Test Acceptable: YesX 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: 40.6 young/female

B. Receiving Water Control
Mean Control Survival: 0%* Mean Control Reproduction: 38.3 young/female

C. Lab Culture Control Yes_ No X
Mean Control Survival: N/A Mean Control Reproduction: N/A

D. Thiosulfate Control Yes_ No X
Mean Control Survival: N/A Mean Control Reproduction: N/A

Test Variability

Test PMSD (growth) N/A Upper and Lower PMSD bound N/A low in-bounds__ high__
Test PMSD (reprod.) 14.2% Upper and Lower PMSD bound 13-47% low__ in-bounds X high__

Permit Limits & Test Results

	Limits		Results
LC50	100%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC	N/A	A-NOEC	100%
C-NOEC	5.0%	C-NOEC	12.5%
		LOEC	25%
IC25	N/A	IC25	15.8%
IC50	N/A	IC50	20.6%

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

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:

Survival	Reprod.	
X	X	1. Ideal concentration-response relationship
_	_	2. All or nothing response
_	_	3. Stimulatory response at low concentrations and detrimental effects at higher concentrations
_	_	4. Stimulation at low concentrations but no significant effect at higher concentrations
_	_	5. Interrupted concentration-response: significant effects bracketed by non-significant effects
_	_	6. Interrupted concentration-response: non-significant effects bracketed by significant effects
_	_	7. Significant effects only at highest concentration
_	_	8. Significant effects at all test concentrations but flat concentration-response curve
_	_	9. Significant effects at all test concentrations with a sloped concentration-response curve
_	_	10. Inverse concentration-response relationship

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.

Whole Effluent Toxicity Testing Report Conclusions and Notes

Client Name/Project: Barnhardt Manufacturing Company Test Date: 1/4/17

Sample ID: Effluent

Your results were as follows:

☒ Passed all whole effluent toxicity permit limits

☐ Failed the following permit limit(s): ☐ 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 GZA 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 as follows: Effluent #: ☐ 2 ☐ 3 Concentration: ☐ 6.25% ☐ 12.5% ☐ 25% ☐ 50% ☐ 100% ☐ ___%
☐ The test failed to meet its permit limit for: ☐ 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.

Additional Notes or Other Conditions Affecting the Test:

*Please note that on Day 6 of the test, all of the adult *Ceriodaphnia* in the North River dilution water control were found dead. Similar mortality was not seen in any of the other test concentrations including those mixed with the North River. Technically, 0% survival in the dilution water control would make this test invalid (the EPA acceptability criterion is ≥80% survival); however, we feel that this was an anomalous isolated event. The data in the test is otherwise good and enough data exists between Day 0 and Day 5 to make an accurate assessment of the toxicity of the Barnhardt effluent. Therefore, we are considering this test to be conditionally valid.

Survival statistics were run at Day 5 when the North River control had 100% survival. Therefore adults that died in the test on Day 6 (replicate I in 5%, replicate E in 25%, and Replicate D in 50%) were not included. However, survival in the test concentrations on Test Day 6 was ≥ 80% (mortality ≤ 20%) which was not large enough to affect either the LC50 or the NOEC. Therefore, we can confidently report the survival C-NOEC as 100% effluent.

The North River control, as well as all the test concentrations, had produced their 3rd brood of young by Day 5. Therefore, statistical analysis for reproduction could be run at Day 5 without any loss of data as any broods that were produced on Day 6 would be considered 4th broods and would not be included in the statistical analysis of reproduction. Therefore, we can confidently report the reproduction C-NOEC as 12.5% effluent.

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, a division of GZA GeoEnvironmental, Inc. 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. § 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 1/27/17 _____
[Date] [Authorized Signature]

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

New England Bioassay
[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: Barnhardt
ADDRESS: 247 Main Road
Colrain, MA 01340
SAMPLE TYPE: Barnhardt Industrial Effluent
DILUTION WATER: North River

C.dubia TEST ID # 17-17
COC # C37-1001/1002
PROJECT # 05.0044654.00

INVERTEBRATES

TEST SET UP (TECH INIT)	CB
TEST SPECIES	*Ceriodaphnia dubia*
NEB LOT#	Cd16 (RMH 283)
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 $CaCO_3$
CTR16-M1013	90	60

	DATE	TIME
TEST START:	1/4/17	1049
TEST END:	1/10/17	1024

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	12.5%	
Reproduction LOEC	25%	
Reproduction IC_{25}	15.8%	

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

Comments:

REVIEWD BY: DATE: 1/27/17

NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS:	Barnhardt, 247 Main Road, Colrain, MA 01340				
NEB PROJECT NUMBER:	05.0044654.00	NEB TEST NUMBER:	17-17	COC #	C37-1001/1002
TEST ORGANISM:	*Ceriodaphnia dubia*	AGE:	<24 hours	Lot #	Cd16 (RMH 283)
START DATE: 1/4/17	TIME: 1049	END DATE:	1/10/17	TIME:	1024

Effluent Concentration	Cup # / Day Number	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	Total Live Young	# Live Adults	Analyst-Transfer	Analyst-Counts
		Culture Lot# Cd16 (RMH 283)													
		Replicate													
		A	B	C	D	E	F	G	H	I	J				
NEB Lab Synthetic Control	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10	CB	
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10	ER	
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10	KO	
	3	8	7	8	5	8	9	6	5	2	6	64	10	CW	CW
	4	16	✓	15	13	14	13	12	17	12	16	128	10	CW	CW
	5	24	15	✓	✓	✓	✓	✓	20	✓	18	77	10	ER	ER
	6	✓	19	17	20	24	21	22	✓	14	~~2~~	137	10	KO	KO
	7														
	totals	48	41	40	38	46	43	40	42	28	40	406	10		MG
North River Diluent		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	5	8	8	3	6	5	6	5	8	5	59	10		
	4	10	12	12	14	10	12	10	12	14	7	113	10		
	5	21	22	19	22	20	21	20	23	22	21	211	10		
	6	✓/x	✓/x	✓/x	✓/x	✓/x	✓/x	✓/x	✓/x	✓/x	✓/x	0	0		
	7														
	totals	36	42	39	39	36	38	36	40	44	33	383	0		
5.0%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	6	5	5	7	5	7	7	6	7	7	62	10		
	4	12	12	12	12	12	13	14	5/x	11	12	110	9		
	5	21	17	21	20	19	25	20	X	24	20	187	9		
	6	13	12	11	~~17~~	✓	~~19~~	✓	X	~~16/x~~	~~7~~	0	8		
	7														
	totals	39	34	38	39	36	45	41	11	42	39	359	8		

Notes: Neonates marked with a strike are considered 4th broods and were not included in the statistical analysis of reproduction per EPA-821-R-02-013

Adults that did not produce young by day 6 were identified as non-reproducing females at test termination.

NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS:	Barnhardt, 247 Main Road, Colrain, MA 01340		
NEB PROJECT NUMBER:	05.0044654.00	ORGANISM: *Ceriodaphnia dubia*	START DATE: 1/4/17

Effluent Concentration	Day Number	Replicate A	B	C	D	E	F	G	H	I	J	Total Live Young	# Live Adults	Analyst-Transfer	Analyst-Counts
6.25%	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	5	8	9	8	5	8	5	6	5	7	66	10		
	4	10	14	13	14	12	10	12	15	13	12	125	10		
	5	15	21	18	18	19	21	19	19	20	18	188	10		
	6	✓	✓	✓	✓	✓	✓	✓	✓	~~9~~	~~16~~	0	10		
	7														
	totals	30	43	40	40	36	39	36	40	38	37	379	10		
12.5%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	6	3	7	7	6	7	8	6	6	5	61	10		
	4	13	16	14	13	13	12	14	10	12	13	130	10		
	5	11	19	13	18	13	12	20	18	21	17	162	10		
	6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	7														
	totals	30	38	34	38	32	31	42	34	39	35	353	10		
25%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	4	5	4	5	3	3	4	3	3	4	38	10		
	4	6	✓	9	✓	8	2	✓	✓	9	5	39	10		
	5	1	✓	5	4	✓	7	✓	2	5	4	28	10		
	6	✓	✓	✓	✓	✓/x	✓	✓	✓	✓	✓	0	9		
	7														
	totals	11	5	18	9	11	12	4	5	17	13	105	9		
50%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	4	✓	✓	✓	✓	✓/x	✓	✓	✓	✓	✓	0	9		
	5	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	0	9		
	6	✓	✓	✓	✓/x	X	✓	✓	✓	✓	✓	0	8		
	7														
	totals	0	0	0	0	0	0	0	0	0	0	0	8		

NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS:	Barnhardt, 247 Main Road, Colrain, MA 01340		
NEB PROJECT NUMBER:	05.0044654.00	ORGANISM: *Ceriodaphnia dubia*	START DATE: 1/4/17

Effluent Concentration	Day Number	Replicate A	B	C	D	E	F	G	H	I	J	Total Live Young	# Live Adults	Analyst-Transfer	Analyst-Counts
100%	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	4	✓	✓	✓	✓	✓	✓	✓/x	✓	✓	✓	0	9		
	5	✓	✓	✓	✓	✓	✓	X	✓/x	✓	✓	0	8		
	6	✓	✓	✓	✓	✓	✓	X	X	✓	✓	0	8		
	7														
	totals	0	0	0	0	0	0	0	0	0	0	0	8		

CETIS Analytical Report

Report Date:	17 Jan-17 13:14 (p 1 of 6)
Test Code:	17-17 | 18-4946-1142

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

Analysis ID:	15-1802-5623	**Endpoint:**	2d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Jan-17 13:13	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	13-8531-2419	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	04 Jan-17 10:49	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	10 Jan-17 10:24	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	06-6363-1588	**Code:**	27BE36E4	**Client:**	Barnhardt
Sample Date:	04 Jan-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	04 Jan-17 09:00	**Source:**	Barnhardt (BBA Fiberweb)		
Sample Age:	5h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	1330275	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
5		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
5		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

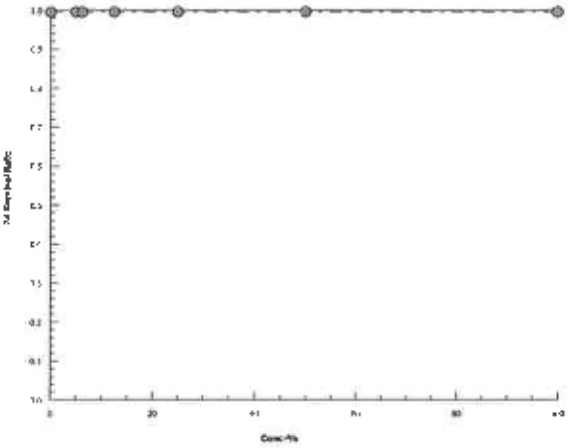
2d Survival Rate Binomials

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
5		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:	15-1802-5623	**Endpoint:**	2d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Jan-17 13:13	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



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

Analysis ID:	21-4257-4222	**Endpoint:**	5d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Jan-17 13:13	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	13-8531-2419	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	04 Jan-17 10:49	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	10 Jan-17 10:24	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	06-6363-1588	**Code:**	278E36E4	**Client:**	Barnhardt
Sample Date:	04 Jan-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	04 Jan-17 09:00	**Source:**	Barnhardt (BBA Fiberweb)		
Sample Age:	5h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	779779	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

5d 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
5		10	0.9000	0.0000	1.0000	0.1000	0.3162	35.14%	10.0%	9	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	0.9000	0.0000	1.0000	0.1000	0.3162	35.14%	10.0%	9	10
100		10	0.8000	0.0000	1.0000	0.1333	0.4216	52.70%	20.0%	8	10

5d Survival Rate Detail

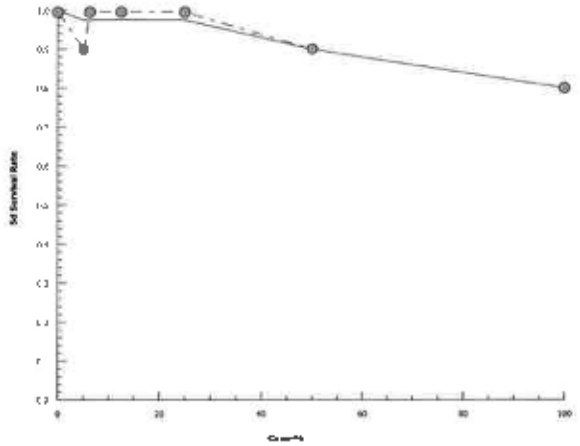
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5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

5d 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
5		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

Analysis ID:	21-4257-4222	**Endpoint:**	5d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Jan-17 13:13	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



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

Analysis ID:	08-7840-6829	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Jan-17 13:14	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	13-8531-2419	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	04 Jan-17 10:49	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	10 Jan-17 10:24	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	06-6363-1588	**Code:**	278E36E4	**Client:**	Barnhardt
Sample Date:	04 Jan-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	04 Jan-17 09:00	**Source:**	Barnhardt (BBA Fiberweb)		
Sample Age:	5h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1319370	200	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	38.3	15	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	15.81	14.75	16.69	6.324	5.992	6.78
IC50	20.64	19.7	21.77	4.845	4.593	5.075

Reproduction Summary

			Calculated Variate						
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	D	10	38.3	33	44	1.023	3.234	8.44%	0.0%
5		10	36.4	11	45	2.982	9.43	25.91%	4.96%
6.25		10	37.9	30	43	1.11	3.51	9.26%	1.04%
12.5		10	35.3	30	42	1.221	3.86	10.93%	7.83%
25		10	10.5	4	18	1.537	4.859	46.28%	72.58%
50		10	0	0	0	0	0		100.0%
100		10	0	0	0	0	0		100.0%

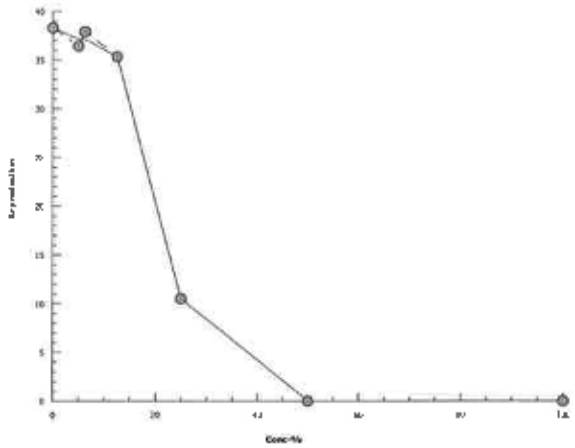
Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	36	42	39	39	36	38	36	40	44	33
5		39	34	38	39	36	45	41	11	42	39
6.25		30	43	40	40	36	39	36	40	38	37
12.5		30	38	34	38	32	31	42	34	39	35
25		11	5	18	9	11	12	4	5	17	13
50		0	0	0	0	0	0	0	0	0	0
100		0	0	0	0	0	0	0	0	0	0

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

Analysis ID:	08-7840-6829	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Jan-17 13:14	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



CETIS Analytical Report

Report Date:	17 Jan-17 13:14 (p 1 of 2)
Test Code:	17-17 | 18-4946-1142

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

Analysis ID:	06-6622-1842	**Endpoint:**	5d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Jan-17 13:13	**Analysis:**	STP 2xK Contingency Tables	**Official Results:**	Yes

Batch ID:	13-8531-2419	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	04 Jan-17 10:49	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	10 Jan-17 10:24	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	06-6363-1588	**Code:**	278E36E4	**Client:**	Barnhardt
Sample Date:	04 Jan-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	04 Jan-17 09:00	**Source:**	Barnhardt (BBA Fiberweb)		
Sample Age:	5h	**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	5	0.5000	Exact	1.0000	Non-Significant Effect
	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	0.5000	Exact	1.0000	Non-Significant Effect
	100	0.2368	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%
5		9	1	10	0.9	0.1	10.0%
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		9	1	10	0.9	0.1	10.0%
100		8	2	10	0.8	0.2	20.0%

5d Survival Rate Detail

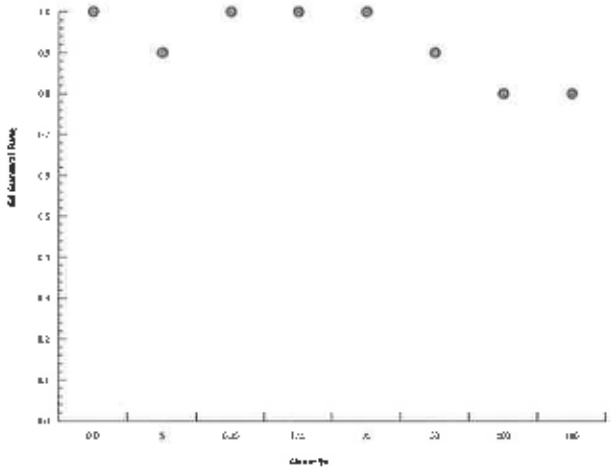
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5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

5d 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
5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	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	0/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	0/1	0/1	1/1	1/1

Analysis ID:	06-6622-1842	**Endpoint:**	5d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Jan-17 13:13	**Analysis:**	STP 2xK Contingency Tables	**Official Results:**	Yes

Graphics



CETIS Analytical Report

Report Date: 17 Jan-17 13:14 (p 1 of 2)
Test Code: 17-17 | 18-4946-1142

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

Analysis ID:	05-9514-8016	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Jan-17 13:13	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Batch ID:	13-8531-2419	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	04 Jan-17 10:49	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	10 Jan-17 10:24	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	06-6363-1589	**Code:**	278E36E4	**Client:**	Barnhardt
Sample Date:	04 Jan-17 06:00	**Material:**	Industrial Effluent	**Project:**	
Receipt Date:	04 Jan-17 09:00	**Source:**	Barnhardt (BBA Fiberweb)		
Sample Age:	5h	**Station:**			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	12.5	25	17.68	8	14.22%

Steel Many-One Rank Sum Test

Control vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water	5	107.5	76	4	18	Asymp	0.8563	Non-Significant Effect
	6.25	106	76	4	18	Asymp	0.8239	Non-Significant Effect
	12.5	81.5	76	3	18	Asymp	0.1129	Non-Significant Effect
	25*	55	76	0	18	Asymp	3.1E-04	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits Lower	Upper	Overlap	Decision
Control Resp	38.3	15	>>	Yes	Passes Criteria
PMSD	0.1422	0.13	0.47	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5664.88	1416.22	4	47.14	<1.0E-37	Significant Effect
Error	1352	30.0444	45			
Total	7016.88		49			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	15.54	13.28	0.0037	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8319	0.9367	5.2E-06	Non-Normal Distribution

Reproduction Summary

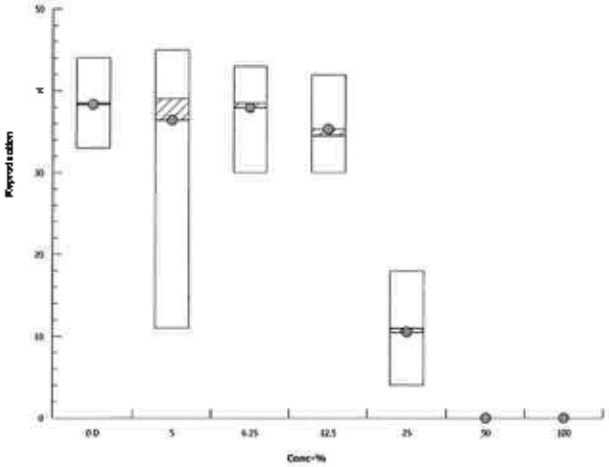
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	38.3	35.99	40.61	38.5	33	44	1.023	8.44%	0.00%
5		10	36.4	29.65	43.15	39	11	45	2.982	25.91%	4.96%
6.25		10	37.9	35.39	40.41	38.5	30	43	1.11	9.26%	1.04%
12.5		10	35.3	32.54	38.06	34.5	30	42	1.221	10.93%	7.83%
25		10	10.5	7.024	13.98	11	4	18	1.537	46.28%	72.58%
50		10	0	0	0	0	0	0	0		100.00%
100		10	0	0	0	0	0	0	0		100.00%

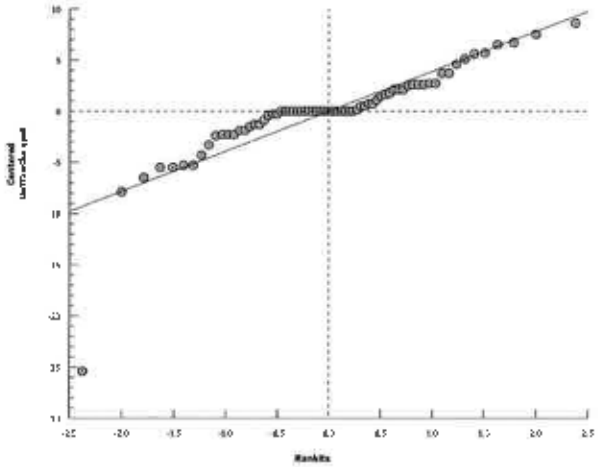
Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	36	42	39	39	36	38	36	40	44	33
5		39	34	38	39	36	45	41	11	42	39
6.25		30	43	40	40	36	39	36	40	38	37
12.5		30	38	34	38	32	31	42	34	39	35
25		11	5	18	9	11	12	4	5	17	13
50		0	0	0	0	0	0	0	0	0	0
100		0	0	0	0	0	0	0	0	0	0

Analysis ID:	05-9514-8016	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Jan-17 13:13	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Graphics





NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:	Barnhardt, 247 Main Road, Colrain, MA 01340							
NEB PROJECT NUMBER:	05.0044654.00			TEST ORGANISM		*Ceriodaphnia dubia*		
DILUTION WATER SOURCE:	North River			START DATE:		1/4/17	TIME:	1049

ANALYST	CB	ER	KO	CW	CW	ER		
NEB Lab Synthetic Control	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.2	24.3	24.8	24.8	24.6	24.9		
D.O. mg/L Initial	8.2	8.2	8.4	8.3	8.4	8.5		
pH s.u. Initial	7.6	7.9	7.8	7.8	7.7	8.0		
Conductivity µS Initial	301	298	378	368	368	374		
Temp °C Final	24.0	24.0	24.1	24.0	24.0	24.4		
D.O. mg/L Final	7.8	8.8	8.7	8.7	9.1	8.5		
pH s.u. Final	8.2	8.3	8.2	8.5	8.3	7.9		
Conductivity µS Final	332	375	423	468	465	407		
North River Diluent	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.3	25.0	25.9	25.0	24.8	26.0		
D.O. mg/L Initial	11.1	9.2	9.3	9.2	9.1	9.3		
pH s.u. Initial	7.2	7.9	7.9	7.6	7.7	7.6		
Conductivity µS Initial	86	87	92	92	90	108		
Temp °C Final	24.0	24.0	24.1	24.0	24.0	24.7		
D.O. mg/L Final	7.6	8.6	8.9	8.8	9.0	8.4		
pH s.u. Final	8.1	8.2	8.3	8.5	8.3	7.9		
Conductivity µS Final	116	116	123	124	131	133		
5.0%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.4	25.0	26.0	25.1	24.8	26.0		
D.O. mg/L Initial	10.9	9.1	10.0	9.2	9.2	9.4		
pH s.u. Initial	7.3	7.6	7.7	7.5	7.7	7.5		
Conductivity µS Initial	193	197	234	237	228	253		
Temp °C Final	24.0	24.0	24.3	24.1	24.0	24.8		
D.O. mg/L Final	7.7	8.5	8.6	8.7	9.2	8.5		
pH s.u. Final	8.2	8.2	8.3	8.6	8.5	8.1		
Conductivity µS Final	221	238	276	316	302	290		
6.25%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.4	25.0	26.0	25.2	24.7	26.0		
D.O. mg/L Initial	10.8	9.1	10.2	9.2	9.2	9.3		
pH s.u. Initial	7.3	7.6	7.7	7.6	7.8	7.8		
Conductivity µS Initial	204	218	257	257	261	314		
Temp °C Final	24.0	24.0	24.4	24.0	24.0	24.7		
D.O. mg/L Final	7.8	8.6	8.6	8.9	9.3	8.6		
pH s.u. Final	8.3	8.3	8.3	8.7	8.5	8.3		
Conductivity µS Final	233	247	288	289	308	344		

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:	Barnhardt, 247 Main Road, Colrain, MA 01340							
NEB PROJECT NUMBER:	05.0044654.00			TEST ORGANISM			*Ceriodaphnia dubia*	
DILUTION WATER SOURCE:	North River			START DATE:			1/4/17	TIME: 1049
12.5%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.4	25.0	26.0	25.1	24.8	26.0		
D.O. mg/l. Initial	10.7	9.0	10.0	9.2	9.2	9.3		
pH s.u. Initial	7.4	7.7	7.8	7.7	7.9	7.7		
Conductivity µS Initial	276	296	355	362	361	395		
Temp °C Final	24.0	24.0	24.4	24.0	24.0	24.8		
D.O. mg/l. Final	7.7	8.6	8.6	8.9	9.6	8.6		
pH s.u. Final	8.4	8.4	8.4	8.8	8.7	8.4		
Conductivity µS Final	301	326	381	402	433	219		
25%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.4	25.0	25.9	25.2	24.7	26.0		
D.O. mg/l. Initial	10.7	9.0	9.9	9.2	9.1	9.4		
pH s.u. Initial	7.8	7.9	8.2	8.1	8.3	8.0		
Conductivity µS Initial	523	513	636	636	632	691		
Temp °C Final	24.0	24.0	24.4	24.0	24.0	24.8		
D.O. mg/L Final	7.6	8.7	8.8	9.0	9.7	8.7		
pH s.u. Final	8.6	8.6	8.8	8.9	8.8	8.7		
Conductivity µS Final	542	552	664	697	725	716		
50%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.7	25.0	25.5	25.2	24.7	26.0		
D.O. mg/l. Initial	10.5	8.9	9.7	9.1	9.0	9.4		
pH s.u. Initial	8.2	8.3	8.4	8.4	8.5	8.2		
Conductivity µS Initial	971	960	1,183	1,169	1,173	1,301		
Temp °C Final	24.0	24.0	24.3	24.1	24.0	24.8		
D.O. mg/L Final	7.8	8.8	8.9	9.1	9.7	8.7		
pH s.u. Final	8.9	8.8	8.9	9.1	9.0	8.9		
Conductivity µS Final	992	1,012	1,229	1,217	1,245	1,320		
100%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	25.0	24.8	25.3	25.3	24.6	26.0		
D.O. mg/L Initial	10.2	8.9	9.5	8.8	8.9	9.6		
pH s.u. Initial	8.4	8.5	8.6	8.6	8.6	8.3		
Conductivity µS Initial	1,834	1,828	2,211	2,214	2,211	2,411		
Temp °C Final	24.0	24.0	24.5	24.2	24.0	24.8		
D.O. mg/l. Final	7.6	8.6	8.7	8.9	9.5	8.7		
pH s.u. Final	9.0	9.0	9.1	9.2	9.1	9.1		
Conductivity µS Final	1,845	1,899	2,276	2,296	2,255	2,436		

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

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: Barnhardt
NEB JOB # 05.0044654.00
TEST ID # C.dubia 17-17

DATE RECEIVED	1/4/17		1/6/17		1/9/17	
SAMPLE TYPE:	EFF #1	RIVER #1	EFF #2	RIVER #2	EFF #3	RIVER #3
COC #	C37-1001	C37-1002	C37-1017	C36-1018	C37-1038	C37-1039
pH (SU)	8.3	7.3	8.4	7.6	8.2	7.5
Temperature (^{0}C)	3.2	1.4	3.4	1.4	5.0	3.8
Dissolved Oxygen (mg/L)	10.1	11.3	9.8	12.1	10.0	10.7
Conductivity (µmhos)	1,857	81	2,218	84	2,444	101
Salinity (ppt)	<1	<1	< 1	< 1	1	<1
TRC - DPD (mg/L)	0.007	0.014	<0.001	0.005	<0.001	0.009
TRC - Amperometric (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A
Hardness (mg/L as $CaCO_3$)	52	20	60	20	68	40
Alkalinity (mg/l as $CaCO_3$)	685	15	820	15	965	30
Tech Initials	ER	ER	PD	PD	CB	CB

NOTE: NA = NOT APPLICABLE

Data Reviewed By: [signature] Date Reviewed: 1/27/17

Ceriodaphnia dubia **Culture Chart** **Lot #** Cd16 (RMH-283) **B**

Brood mother source: RMH 279 AH Source's brood size: 23 (Qty.)

Burnhardt 1-4-17

Tech	MG	MG	MG	MG		JJP	JJP	AH		AH						
Date	12-27	12-28	12-29	12-30		1-1	1-2	1-3		1-4						
Day acc.	0	1	2	3	4	5	6	7		8	9	10	11	12	13	14
Cup # 1	N	N	N	5		10	Y	N	1	T1 Y 20						
2	N	N	N	4		10	Y	N	2	T2 Y 17						
3	N	N	N	4		10	Y	N	3	T3 Y 16						
4	N	N	N	4		10	Y	N	4	T4 Y 20						
5	N	N	N	4		11	Y	N	5	T5 Y 18						
6	N	N	N	4		12	Y	N	6	T6 Y 19						
7	N	N	N	2		11	Y	N	7	T7 Y 18						
8	N	N	N	4		10	Y	N	8	T8 Y 19						
9	N	N	N	5		10	Y	N	9	T9 Y 19						
10	N	N	N	3		11	Y	N	10	T10 Y 19						
11	N	N	N	5		11	Y	N	11	Y						
12	N	N	N	3		12	Y	N	12	Y						
13	N	N	N	4		12	Y	N	13	Y						

Y = neonates present, and *criterion has been met:* ≥ 20 neonates producad 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
004454	T	Y	1-3-17/1100 → 1-3-17/1605	1-4-17/1020
	T			
	T			
	T			
	T			
	T			

PHOENIX
Environmental Laboratories, Inc.

Tuesday, January 10, 2017

Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Project ID: BARNHARDT MFG
Sample ID#s: BX15615 - BX15617

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Telephone (860) 645-1102 Fax (860) 645-0823

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

January 10, 2017

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WASTE WATER	Collected by:		01/04/17	6:00
Location Code:	NEB	Received by:	B	01/04/17	15:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	21892				

Laboratory Data

SDG ID: GBX15615
Phoenix ID: BX15615

Project ID: BARNHARDT MFG
Client ID: EFFLUENT 1 C37-1001

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
Aluminum	0.050	0.010	mg/L	1	01/06/17	TH	E200.7	
Calcium	13.0	0.010	mg/L	1	01/06/17	TH	E200.7	B
Cadmium	0.0002	0.0001	mg/L	1	01/10/17	RS	SM3113B	
Chromium	0.003	0.001	mg/L	1	01/06/17	TH	E200.7	
Copper	0.018	0.002	mg/L	1	01/06/17	TH	E200.7	
Hardness (CaCO3)	56.0	0.1	mg/L	1	01/06/17		E200.7	
Magnesium	5.72	0.010	mg/L	1	01/06/17	TH	E200.7	
Nickel	< 0.001	0.001	mg/L	1	01/06/17	TH	E200.7	
Lead	0.0003	0.0003	mg/L	1	01/05/17	RS	SM3113B	
Zinc	0.033	0.002	mg/L	1	01/06/17	TH	E200.7	
Alkalinity-CaCO3	705	5.00	mg/L	1	01/05/17	RR/EG	SM2320B-97	
Conductivity	1640	5.00	umhos/cm	1	01/05/17	RR/EG	SM2510B-97	
Ammonia as Nitrogen	0.12	0.10	mg/L	2	01/09/17	WHM	E350.1	
Tot. Diss. Solids	1200	67	mg/L	6.7	01/06/17	KH	SM2540C-97	
Tot. Org. Carbon	38.1	1.0	mg/L	2	01/05/17	RWR	SM5310C/E415.1-00	
Total Solids	1300	50	mg/L	5	01/05/17	KH	SM2540B-97	
Total Metals Digestion	Completed				01/04/17	RVM/SF		

Project ID: BARNHARDT MFG
Client ID: **EFFLUENT 1 C37-1001**

Phoenix I.D.: BX15615

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

B = Present in blank, no bias suspected.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
January 10, 2017
Reviewed and Released by: Deb Lawrie, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

January 10, 2017

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		01/04/17	6:45
Location Code:	NEB	Received by:	B	01/04/17	15:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	21892				

Laboratory Data

SDG ID: GBX15615
Phoenix ID: BX15616

Project ID: BARNHARDT MFG
Client ID: RECEIVING WATER 1 C37-1002

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	0.680	0.010	mg/L	1	01/06/17	MA	SW6010C/E200.7
Cadmium	< 0.0001	0.0001	mg/L	1	01/10/17	RS	SM3113B/SW7010
Copper	0.003	0.002	mg/L	1	01/06/17	TH	SW6010C/E200.7
Hardness (CaCO3)	25.1	0.1	mg/L	1	01/09/17		E200.7
Nickel	< 0.001	0.001	mg/L	1	01/06/17	TH	SW6010C/E200.7
Lead	0.0006	0.0003	mg/L	1	01/05/17	RS	SM3113B/SW7010
Zinc	0.006	0.002	mg/L	1	01/06/17	TH	SW6010C/E200.7
Alkalinity-CaCO3	21.9	5.00	mg/L	1	01/05/17	RR/EG	SM2320B-97
Conductivity	75	5.00	umhos/cm	1	01/05/17	RR/EG	SM2510B-97
Ammonia as Nitrogen	< 0.05	0.05	mg/L	1	01/09/17	WHM	E350.1
pH	7.20	0.10	pH Units	1	01/05/17 04:51	RR/EG	SM4500-H B-00
Tot. Org. Carbon	3.51	0.50	mg/L	1	01/05/17	RWR	SM5310C/E415.1-00
Total Metals Digestion	Completed				01/04/17	RVM/RT	

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
January 10, 2017
Reviewed and Released by: Deb Lawrie, Project Manager

Ver 1

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

January 10, 2017

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WASTE WATER	Collected by:		01/04/17	7:00
Location Code:	NEB	Received by:	B	01/04/17	15:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	21892				

Laboratory Data

SDG ID: GBX15615
Phoenix ID: BX15617

Project ID: BARNHARDT MFG
Client ID: EFFLUENT GRAB 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Chlorine Residual	0.03	0.02	mg/L	1	01/04/17 18:22	O	SM4500CLG-97
pH	8.58	0.10	pH Units	1	01/05/17 04:58	RR/EG	SM4500-H B-00

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

The regulatory hold time for Chlorine is immediately. This Chlorine was performed in the laboratory and may be considered outside of hold-time.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
January 10, 2017
Reviewed and Released by: Deb Lawrie, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

January 10, 2017

QA/QC Data

SDG I.D.: GBX15615

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 371817 (mg/L), QC Sample No: BX15260 (BX15615, BX15616)														
ICP Metals - Aqueous														
Aluminum	BRL	0.010	1.19	0.732	47.7	98.5			79.7			75 - 125	20	r
Calcium	0.010	0.010	17.3	17.1	1.20	99.2			NC			75 - 125	20	
Chromium	BRL	0.001	0.002	0.001	NC	96.8			97.5			75 - 125	20	
Copper	BRL	0.005	0.008	0.007	NC	100			108			75 - 125	20	
Magnesium	BRL	0.010	4.87	4.71	3.30	100			82.4			75 - 125	20	
Nickel	BRL	0.001	0.001	<0.001	NC	96.6			97.9			75 - 125	20	
Zinc	BRL	0.002	0.211	0.204	3.40	97.3			100			75 - 125	20	
QA/QC Batch 371835 (mg/L), QC Sample No: BX15613 (BX15615, BX15616)														
Cadmium - Water	BRL	0.0001	<0.0001	<0.0001	NC	103			112			75 - 125	20	
QA/QC Batch 371818 (mg/L), QC Sample No: BX15655 (BX15615, BX15616)														
Cadmium - Water	BRL	0.0001	0.0001	<0.0001	NC	93.6			99.0			75 - 125	20	
Lead (Furnace) - Water	BRL	0.001	<0.001	0.004	NC	84.5			93.1			75 - 125	30	

r = This parameter is outside laboratory RPD specified recovery limits.

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

January 10, 2017

QA/QC Data

SDG I.D.: GBX15615

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 372006 (mg/L), QC Sample No: BX14965 (BX15615, BX15616)													
Total Organic Carbon	BRL	1.0	2.3	2.2	NC	105			97.0			85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 371824 (mg/L), QC Sample No: BX15101 (BX15617)													
Chlorine Residual	BRL	0.02	<0.02	<0.02	NC	109							
QA/QC Batch 371897 (mg/L), QC Sample No: BX15364 (BX15615)													
Total Solids	BRL	10	740	740	0	97.0						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 371922 (mg/L), QC Sample No: BX15612 (BX15615, BX15616)													
Alkalinity-CaCO3	BRL	5.00	168	166	1.20	101						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 371936 (umhos/cm), QC Sample No: BX15612 (BX15615, BX15616)													
Conductivity	BRL	5.00	1210	1200	0.80	92.7						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 371915 (pH), QC Sample No: BX15612 (BX15616, BX15617)													
pH				7.89		98.7						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 372092 (mg/L), QC Sample No: BX15615 (BX15615, BX15616)													
Ammonia as Nitrogen	BRL	0.05	0.12	0.17	NC	102			93.9			85 - 115	20
QA/QC Batch 372097 (mg/L), QC Sample No: BX15953 (BX15615)													
Tot. Diss. Solids	BRL	10	120	120	0	98.0						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
January 10, 2017

Tuesday, January 10, 2017

Criteria: None

State: MA

Sample Criteria Exceedances Report

GBX15615 - NEB

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

PHOENIX
Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: service@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Temp 6 for WC Tpk Pg of

Data Delivery (check one):
- [ ] Fax #:
- [x] Email: kimberly.wills@gza.com

Format: [ ] Excel [ ] Pdf [ ] Gis Key

Customer: New England Bioassay
Address: 77 Batson Drive
Manchester, CT 06042

Project: Barnhardt Mfg (MA)
Report to: Kim Wills
Invoice to: Kim Wills

Project P.O: 21892
Phone #: 860-643-9560
Fax #: 860-646-7169

Client Sample - Information - Identification

Sampler's Signature _____ Date

Matrix Code:
DW=drinking water WW=wastewater S=soil/solid O=other
GW=groundwater SL=sludge A=air

Analysis Request: Hardness (0.5 mg/L); Alkalinity (2.0 mg/L); Specific Conductance (~); Total Solids (~); Total Dissolved Solids (~); Ammonia (0.1 mg/L); Total Organic Carbon (0.5 mg/L); Cd (AA), Pb (AA), Cu, Zn, Ni, Al; Total Residual Chlorine (0.02 mg/L); pH (~); Cr, Ca, Mg; Soil VOA Vials [ ] methanol [ ] Sod Bisulfate; GL Soil container ( ) oz; PL As is 250 ml; PL 120 As is; GL Amber 120ml [ ] As is [X] H2SO4; PL As is [X] 500ml [ ] 1000ml; PL H2SO4 [X] 250ml [ ] 1000ml; PL HNO3 [X] 250ml [ ] 1000ml; PL NaOH 250ml; Bacteria Bottle

Phoenix Sample #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Hardness (0.5 mg/L)	Alkalinity (2.0 mg/L)	Specific Conductance (~)	Total Solids (~)	Total Dissolved Solids (~)	Ammonia (0.1 mg/L)	Total Organic Carbon (0.5 mg/L)	Cd (AA), Pb (AA), Cu, Zn, Ni, Al	Total Residual Chlorine (0.02 mg/L)	pH (~)	Cr, Ca, Mg	Soil VOA Vials [ ] methanol [ ] Sod Bisulfate	GL Soil container ( ) oz	PL As is 250 ml	PL 120 As is	GL Amber 120ml [ ] As is [X] H2SO4	PL As is [X] 500ml [ ] 1000ml	PL H2SO4 [X] 250ml [ ] 1000ml	PL HNO3 [X] 250ml [ ] 1000ml	PL NaOH 250ml	Bacteria Bottle
15615	Effluent - 1 (37-1001)	WW	1/3-4/17	0600 - 0600	X	X	X	X	X	X	X	X			X					1	1	1	1		
15616	Receiving Water - 1 (37-1002)	O	1/4/17	0645	X	X	X			X	X	X		X						1	1	1	1		
15617	Effluent grab - 1	WW	1/4/17	0700									X	X				1							

Relinquished by:	Accepted by:	Date:	Time:
Kimberly Wills	[signature]	1/4/17	310
[signature]	[signature]	1-4-17	1545

Turnaround:
- [ ] 1 Day*
- [ ] 2 Days*
- [ ] 3 Days*
- [x] Standard
- [ ] Other

* Surcharge Applies

Requirements for CT
- [ ] Res. Criteria
- [ ] GW Protection
- [ ] GA Mobility
- [ ] GB Mobility
- [ ] SW Protection
- [ ] Res. Vol.
- [ ] Ind. Vol.

Requirements for MA
- [ ] GW-1
- [ ] GW-2
- [ ] GW-3
- [ ] S-1
- [ ] S-2
- [ ] S-3
- [ ] MCP Certification
- [ ] Other

Comments, Special Requirements or Regulations:

Please see detection limits (MLs) listed next to each parameter above. Metals MLs are listed below:

Cd - 0.0005 mg/L; Pb - 0.0005 mg/L, Cu - 0.003 mg/L, Zn - 0.005 mg/L; Ni - 0.005 mg/L; Al - 0.02 mg/L

Please CC: Melanie.Cruff@gza.com and Robin.Faulk@gza.com on reports

PHOENIX
Environmental Laboratories, Inc.

Thursday, January 12, 2017

Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Project ID: BARNHARDT MFG
Sample ID#s: BX17328 - BX17329

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Telephone (860) 645-1102 Fax (860) 645-0823

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

January 12, 2017

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WASTE WATER	Collected by:		01/06/17	6:00
Location Code:	NEB	Received by:	B	01/06/17	15:28
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	21892				

Laboratory Data

SDG ID: GBX17328
Phoenix ID: BX17328

Project ID: BARNHARDT MFG
Client ID: EFFLUENT 2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	0.56	0.10	mg/L	2	01/11/17	WHM	E350.1

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
January 12, 2017
Reviewed and Released by: Deb Lawrie, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

January 12, 2017

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		01/06/17	6:45
Location Code:	NEB	Received by:	B	01/06/17	15:28
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	21892				

Laboratory Data

SDG ID: GBX17328
Phoenix ID: BX17329

Project ID: BARNHARDT MFG
Client ID: RECEIVING WATER 2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	0.08	0.05	mg/L	1	01/11/17	WHM	E350.1

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
January 12, 2017
Reviewed and Released by: Deb Lawrie, Project Manager

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Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

January 12, 2017

QA/QC Data

SDG I.D.: GBX17328

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 372381 (mg/L), QC Sample No: BX16796 (BX17328, BX17329)														
Ammonia as Nitrogen	BRL	0.05	13	10.4	22.2	104			106			85 - 115	20	r

r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
January 12, 2017

Thursday, January 12, 2017

Criteria: None

State: MA

Sample Criteria Exceedances Report

GBX17328 - NEB

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

PHOENIX
Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: service@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Temp 5 °C Ice/ Blue Ice/ No Coolant
Pg of
Data Delivery (check one):
☐ Fax #:
☒ Email: kimberly.wills@gza.com
Format: ☐ Excel ☐ Pdf ☐ Gis Key

Customer: New England Bioassay
Address: 77 Batson Drive
Manchester, CT 06042

Project: Bernhardt Mfg (MA)
Report to: Kim Wills
Invoice to: Kim Wills

Project P.O: 21892
Phone #: 860-643-9560
Fax #: 860-646-7169

Client Sample - Information - Identification

Phoenix Sample #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Ammonia (0.1 mg/L)	Soil VOA Vials [ ] methanol [ ] Sod Bisulfate	GL Soil container ( ) oz	PL As is 500 ml	PL As is 120ml	GL Amber 250ml [ ] As is [ ] H2SO4	PL As is 1000ml	PL H2SO4 [X] 250ml [ ] 1000ml	PL HNO3 [ ] 250ml [ ] 1000ml	PL NaOH 250ml	Bacteria Bottle
17328	Effluent-2	WW	1/5-6/17	0600-0600	X							1			
17329	Receiving Water-2	O	1/6/17	0645	X							1			

Relinquished by:	Accepted by:	Date:	Time:
[illegible]	[illegible]	1/6/17	3:05
[illegible]	Krystal Burns	1-6-17	15:28

Comments, Special Requirements or Regulations:

Please see detection limits (MLs) listed next to each parameter above

Please CC: Melanie.Cruff@gza.com and Robin.Faulk@gza.com on reports

Turnaround:
☐ 1 Day*
☐ 2 Days*
☐ 3 Days*
☒ Standard
☐ Other

* Surcharge Applies

Requirements for CT
☐ Res Criteria
☐ GW Protection
☐ GA Mobility
☐ GB Mobility
☐ SW Protection
☐ Res. Vol.
☐ Ind. Vol.

Requirements for MA
☐ GW-1
☐ GW-2
☐ GW-3
☐ S-1
☐ S-2
☐ S-3
☐ MCP Certification
☐ Other

PHOENIX
Environmental Laboratories, Inc.

Friday, January 13, 2017

Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Project ID: BARNHARDT MFG
Sample ID#s: BX18268 - BX18269

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Telephone (860) 645-1102 Fax (860) 645-0823

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

January 13, 2017

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WASTE WATER	Collected by:		01/09/17	6:00
Location Code:	NEB	Received by:	SW	01/09/17	15:02
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBX18268
Phoenix ID: BX18268

Project ID: BARNHARDT MFG
Client ID: C37-1038 EFFLUENT-3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	0.55	0.10	mg/L	2	01/12/17	WHM	E350.1

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller

Phyllis Shiller, Laboratory Director
January 13, 2017
Reviewed and Released by: Deb Lawrie, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike. P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

January 13, 2017

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WASTE WATER	Collected by:		01/09/17	6:45
Location Code:	NEB	Received by:	SW	01/09/17	15:02
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBX18268
Phoenix ID: BX18269

Project ID: BARNHARDT MFG
Client ID: C37-1039 RECEIVING WATER-3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	0.06	0.05	mg/L	1	01/12/17	WHM	E350.1

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
January 13, 2017
Reviewed and Released by: Deb Lawrie, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

January 13, 2017

QA/QC Data

SDG I.D.: GBX18268

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 372558 (mg/L), QC Sample No: BX18640 (BX18268, BX18269)													
Ammonia as Nitrogen	BRL	0.05	0.66	0.68	3.00	109			101			85 - 115	20

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
January 13, 2017

Friday, January 13, 2017

Criteria: None

State: MA

Sample Criteria Exceedances Report

GBX18268 - NEB

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

WCIP

Pg of

PHOENIX Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: service@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Temp 3 °C Ice/ Blue Ice/ No Coolant

Data Delivery (check one):
- [ ] Fax #:
- [x] Email: kimberly.wills@gza.com

Format: [ ] Excel [ ] Pdf [ ] Gis Key

Customer: New England Bioassay
Address: 77 Batson Drive
Manchester, CT 06042

Project: Barnhardt Mfg (MA)
Report to: Kim Wills
Invoice to: Kim Wills

Project P.O:
Phone #: 860-643-9560
Fax #: 860-646-7169

Client Sample - Information - Identification

Phoenix Sample #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Ammonia (0.1 mg/L)	Soil VOA Vials [ ] methanol [ ] Sod Bisulfate	GL Soil container ( ) oz	PL As is 500 ml	PL As is 120ml	GL Amber 250ml [ ] As is [ ] H2SO4	PL As is 1000ml	PL H2SO4 [X] 250ml [ ] 1000ml	PL HNO3 [ ] 250ml [ ] 1000ml	PL NaOH 250ml	Bacteria Bottle
C37-1038	Effluent-3	WW	1/9-1/9/17	600-600	X							1			
C37-1039	Receiving Water-3	O	1/9/17	645	X							1			

Relinquished by:	Accepted by:	Date:	Time:
Celeste M Mf	Colt Sol	1/9	2:50
Colt	TEDM	1/9/17	15:02

Comments, Special Requirements or Regulations:

Please see detection limits (MLs) listed next to each parameter above

Please CC: Melanie.Cruff@gza.com and Robin.Faulk@gza.com on reports

Turnaround:
- [ ] 1 Day*
- [ ] 2 Days*
- [ ] 3 Days*
- [x] Standard
- [ ] Other

* Surcharge Applies

Requirements for CT
- [ ] Res. Criteria
- [ ] GW Protection
- [ ] GA Mobility
- [ ] GB Mobility
- [ ] SW Protection
- [ ] Res. Vol
- [ ] Ind. Vol.

Requirements for MA
- [ ] GW-1
- [ ] GW-2
- [ ] GW-3
- [ ] S-1
- [ ] S-2
- [ ] S-3
- [ ] MCP Certification
- [ ] Other

NEW ENGLAND BIOASSAY - CHAIN-OF-CUSTODY

Sample Set #1

EFFLUENT

Sampler: Keith Gammell
Title: operator
Facility: Barnhardt Manufacturing

Sampling Method: X Composite
Sample ID: Effluent
Start Date: 1-3-17 Time: 6AM
End Date: 1-4-17 Time: 6AM

RECEIVING WATER

Sampler: Keith Gammell
Title: operator
Facility: Barnhardt Manufacturing

Sampling Method: X Grab
Sample ID: North River
Date Collected: 1-4-17
Time Collected: 6:45AM

Sampling Method: X **Grab** (for pH and TRC only X)
Date Collected: 1-4-17
Time Collected: 7AM

Sample Type:
____ Prechlorinated
____ Dechlorinated
____ Unchlorinated
____ Chlorinated

Effluent Sampling Location and Procedures: Composite sampler by flow

Receiving Water Sampling Location and Procedures: North river behind building 118

Requested Analysis: X Chronic and modified acute

Sample Shipment

Method of Shipment: NEB Courier

Relinquished By:	[signature]	Date: 1-4-17	Time: 0710
Received By:	[signature]	Date: 1-4-17	Time: 0710
Relinquished By:	[signature]	Date: 1-4-17	Time: 0900
Received By:	[signature]	Date: 1/4/17	Time: 0900

Optional Information

Purchase Order # to reference on invoice:

FOR NEB USE ONLY

*** Please return all ice packs NEB has provided to insure accurate temperature upon receipt to the NEB laboratory.**

Temperature of Effluent Upon Receipt at Lab: 3.2 °C
Effluent COC# ~~C36~~ C37 - 1001 MG 1-15-17

Temperature of Receiving Water Upon Receipt at Lab: 1.4 °C
Receiving Water COC# ~~C36~~ C37 - 1002 MG 1-15-17

IF THIS COOLER IS MISPLACED OR THE LABEL IS LOST, PLEASE SHIP TO:
KIM WILLS, NEW ENGLAND BIOASSAY 77 BATSON DRIVE MANCHESTER, CT 06042

NEW ENGLAND BIOASSAY - CHAIN-OF-CUSTODY

Sample Set # 2

EFFLUENT

Sampler: Keith Gammell

Title: operator

Facility: Barnhardt Manufacturing

Sampling Method: X **Composite**

Sample ID: Effluent

Start Date: 1-5-17 Time: 6Am

End Date: 1-6-17 Time: 6Am

RECEIVING WATER

Sampler: Keith Gammell

Title: operator

Facility: Barnhardt Manufacturing

Sampling Method: X Grab

Sample ID: North River

Date Collected: 1-6-17

Time Collected: 6:45

Sampling Method: _____ **Grab** (for pH and TRC only _____)

Date Collected: 1-6-17

Time Collected: 7Am

Sample Type:

_____ Prechlorinated

_____ Dechlorinated

_____ Unchlorinated

_____ Chlorinated

Effluent Sampling Location and Procedures: Composite sampler by flow

Receiving Water Sampling Location and Procedures: North river behind building 118

Requested Analysis: X Chronic and modified acute

Sample Shipment

Method of Shipment: NEB Courier

Relinquished By:	[signature]	Date: 1-6-17	Time: 0710
Received By:	[signature]	Date: 1-6-17	Time: 0710
Relinquished By:	[signature]	Date: 1-6-17	Time: 0900
Received By:	[signature]	Date: 1-6-17	Time: 0900

Optional Information

Purchase Order # to reference on invoice: _____

FOR NEB USE ONLY

*** Please return all ice packs NEB has provided to insure accurate temperature upon receipt to the NEB laboratory.**

Temperature of Effluent Upon Receipt at Lab: 3.4 °C

Temperature of Receiving Water Upon Receipt at Lab: 1.4 °C

Effluent COC# C36-1017

Receiving Water COC# C36-1018

IF THIS COOLER IS MISPLACED OR THE LABEL IS LOST, PLEASE SHIP TO:
KIM WILLS, NEW ENGLAND BIOASSAY 77 BATSON DRIVE MANCHESTER, CT 06042

NEW ENGLAND BIOASSAY - CHAIN-OF-CUSTODY

Sample Set #3

EFFLUENT

Sampler: Keith Gammell
Title: operator
Facility: Barnhardt Manufacturing

Sampling Method: X **Composite**
Sample ID: Effluent
Start Date: 1-8-17 Time: 6Am
End Date: 1-9-17 Time: 6Am

RECEIVING WATER

Sampler: Keith Gammell
Title: operator
Facility: Barnhardt Manufacturing

Sampling Method: X Grab
Sample ID: North River
Date Collected: ~~[illegible]~~ 1-9-17
Time Collected: 6:45

Sampling Method: _____ **Grab** (for pH and TRC only _____)
Date Collected: 1-9-17
Time Collected: 7Am

Sample Type:
_____ Prechlorinated
_____ Dechlorinated
_____ Unchlorinated
_____ Chlorinated

Effluent Sampling Location and Procedures: composite sampler by flow

Receiving Water Sampling Location and Procedures: North river behind building 118

Requested Analysis: X _ Chronic and modified acute

Sample Shipment

Method of Shipment: NEB Courier

Relinquished By:	[signature]	Date: 1-9-17	Time: 7:50
Received By:	[signature]	Date: 1-9-17	Time: 7:50
Relinquished By:	[signature]	Date: 1-9-17	Time: 1125
Received By:	[signature]	Date: 1/9/17	Time: 1125

Optional Information

Purchase Order # to reference on invoice: _____

FOR NEB USE ONLY

*** Please return all ice packs NEB has provided to insure accurate temperature upon receipt to the NEB laboratory.**

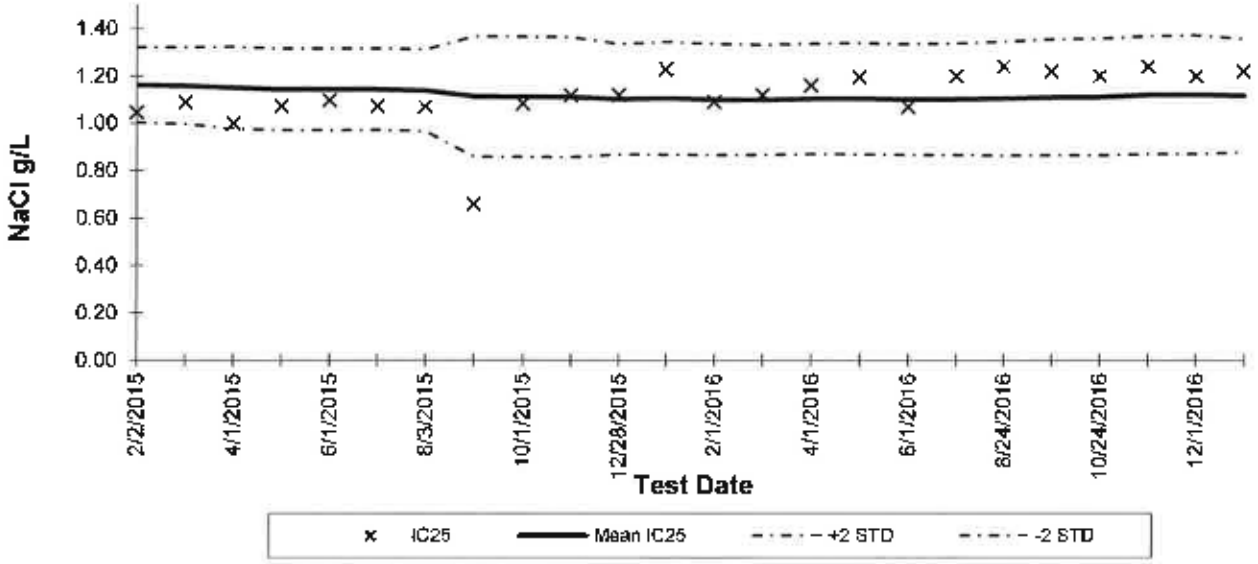
Temperature of Effluent Upon Receipt at Lab: 5.0 °C
Temperature of Receiving Water Upon Receipt at Lab: 3.8 °C

Effluent COC# C37-1038
Receiving Water COC# C37-1039

IF THIS COOLER IS MISPLACED OR THE LABEL IS LOST, PLEASE SHIP TO:
KIM WILLS, NEW ENGLAND BIOASSAY 77 BATSON DRIVE MANCHESTER, CT 06042

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

Reference Toxicant: Sodium chloride
Test Dates: Feb 2015 - Jan 2017



Test ID	Date	IC_{25}	Mean IC_{25}	STD	-2STD	+2STD	CV	CV National 75th%	CV National 90th%
15-148	2/2/2015	1.05	1.16	0.08	1.00	1.32	0.07	0.45	0.62
15-378	3/23/2015	1.09	1.16	0.08	1.00	1.32	0.07	0.45	0.62
15-460	4/1/2015	1.00	1.15	0.09	0.98	1.32	0.08	0.45	0.62
15-602	5/1/2015	1.07	1.14	0.09	0.97	1.32	0.08	0.45	0.62
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