New England Bioassay Inc.

Aquatic Toxicity Testing Services

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CHRONIC AQUATIC TOXICITY TEST REPORT

Permitee: Barnhardt Manufacturing Co. NPDES # MA0003697
Report submitted to: 247 Main Road
Colrain, MA 01340
Sample ID: Effluent
Test Month/Year: October 2020
NEB Proj # 44654

Test Type / Method: *Ceriodaphnia dubia* Modified Chronic Static-Renewal Freshwater Test Method 1002.0; EPA 821-R-02-013

Effluent Sample Dates: #1 10/4-5/20 #2 10/6-7/20 #3 10/8-9/20

Test Start Date: 10/5/20

Results Summary

Your results were as follows:

Fail - Please proceed according to the instructions in your permit

Acute Test Results

Species	LC50	A-NOEC	Permit Limit	Pass / Fail
Ceriodaphnia dubia	>100%	100%	≥ 100%	Pass

Chronic Test Results

Species	C-NOEC	C-LOEC	IC25	Permit Limit	Pass/Fail
Ceriodaphnia dubia	<5%	5%	7%	≥ 5.0%	Fail

Data Qualifiers affecting this test:

Certifications & Approvals: NH ELAP (2071), NJ DEP (CT405)

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Test Report Certification

Permittee name:	Barnhardt Manufacturing Co.	Permit number:	MA0003697
Client sample ID:	Effluent	Test Start Date:	10/5/20

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 directly responsible for gathering 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

MA0003697 Print or Type the NPDES Permit Number

Whole Effluent Toxicity Test Report Certification (Bioassay Laboratory)

The results reported relate only to the samples submitted as received

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 directly responsible for gathering 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: 10/29/20 (Date)

Kimberly Wills

Kimberly Wills
Laboratory Director
New England Bioassay Inc.

General Test Conditions

Permittee name: Barnhardt Manufacturing Co. Permit number: MA0003697

Client sample ID: Effluent Test Start Date: 10/5/20

Sample Collection Information

Effluent #1 Dates/Times: 10/4-5/20 @ 0700-0700 Receiving Water #1 Date/Time: 10/5/20 @ 0630

Effluent #2 Dates/Times: 10/6-7/20 @ 0700-0700 Receiving Water #2 Date/Time: 10/7/20 @ 0630

Effluent #3 Dates/Times: 10/8-9/20 @ 0700-0700 Receiving Water #3 Date/Time: 10/9/20 @ 0630

Were a minimum of three samples collected? Yes ☑ No ☐ *(see note below)

Were samples used within the first 36 hours of collection? Yes ☑ No ☐ * (see note below)

* sample collection note:

Test Conditions

Permittee's Receiving Water: North River

- Dilution water: Receiving water collected at a point immediately upstream of or away from the discharge
- Control water: Connecticut River adjusted to moderate hardness (hardness 80 - 100 mg/L CaCO3)

Effluent concentrations tested: 0%, 5.0%, 6.25%, 12.5%, 25%, 50%, 100%

Was effluent salinity adjusted? No ☑ Yes ☐ with Instant Ocean sea salts to _____ ppt

Dechlorination procedures: Chlorine is measured using 4500 CL-G DPD Colorimetric Method

- Dechlorination was not required

TRC results and further information about aeration of samples can be found attached in "sample receipt chemistry"

Reference Toxicant Data

Ceriodaphnia dubia

Date:	10/15/20
Toxicant:	Sodium chloride
Dilution Water:	NEB CTRMH
Organism Source:	NEB
Reproduction IC25:	0.94 g/L
Results within range	Yes ☑ No ☐

Ceriodaphnia dubia Test Results

Permittee name: Barnhardt Manufacturing Co. Permit number: MA0003697

Client sample ID: Effluent Test Dates: 10/5/20 - 10/11/20

Test Acceptability Criteria

Lab Control Survival:	100	%	Mean Lab Control Reproduction:	32.5	young per female
Diluent Control Survival:	100	%	Mean Diluent Control Reproduction:	26.2	young per female
Thiosulfate Control Survival:	N/A	%	Mean Thiosulfate Control Reproduction:	N/A	young per female

Presence of an asterisk (*) indicates EPA criteria was not met, see explanation in the "Results Discussion" section at the bottom of the following page.

Test Results

		Permit Limit	Test Result	Pass/Fail Status
Acute Data	48 hr LC50	≥ 100%	>100%	Pass
	48 hr NOEC		100%	
	TUa			
Chronic Data	Chronic LC50		>100%	
	Survival C-NOEC		100%	
	Survival C-LOEC		>100%	
	Reproduction C-NOEC		<5%	
	Reproduction C-LOEC		5%	
	Reproduction IC25		7%	
	Reproduction IC50		9.7%	
	Reportable C-NOEC	≥ 5.0%	<5%	Fail
	Reportable C-LOEC		5%	
	MATC		<5%	
	TUc			

Presence of an asterisk (*) indicates qualified data, see explanation in the "Results Discussion" section at the bottom of the following page.

Test Variability

Reproduction PMSD: 22.8% Upper & Lower EPA bounds: 13 - 47% ☐ Low ☑ Within bounds ☐ High

☐ 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)

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

☐ 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 bound.

- ☐ The RPD values for all concentrations fall below the lower bound. Any differences observed in this test are considered statistically insignificant.
- ☐ Some of the concentrations that were flagged as statistically significant have RPD values that fall below the lower bound. Any differences observed in these concentrations will not be considered statistically significantly decreased from the control.
- ☐ No statistically significant reductions were observed in this test.

Ceriodaphnia dubia Test Results

Permittee name: Barnhardt Manufacturing Co. Permit number: MA0003697

Client sample ID: Effluent Test Dates: 10/5/20 - 10/11/20

Concentration - Response Evaluation

Survival: #12 No significant effects at any test concentration with a flat concentration-response curve. Test concentrations performed very similarly to dilution control.

Reproduction: #9 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: #9 Significant effects at all test concentrations with a sloped concentration-response curve.

The concentration - response relationship was reviewed and the following determination was made:

Survival	Reproduction	
X	X	Results are reliable and reportable
		Results are anomalous (see explanation below)
		Results are inconclusive - retest (see explanation below)

Results Discussion (if applicable):

TEST METHODS

Ceriodaphnia dubia

Test type:	Modified Chronic Static Renewal Freshwater Test
Test Reference Manual:	EPA-821-R-02-013 "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms"
Test Method:	*Ceriodaphnia dubia* Survival and Reproduction Test - EPA 1002.0
Temperature:	25 ˚C ± 1˚C (Temperatures should not deviate by more than 3˚C during the test) (required)
Light Quality:	Ambient Laboratory Illumination (recommended)
Light Intensity:	10-20 µE/m2/s, or 50-100 ft-c (recommended)
Photoperiod:	16 hours light, 8 hours dark (recommended)
Test chamber size:	30 mL (recommended minimum)
Test solution volume:	15 mL (recommended minimum)
Renewal of Test Solutions:	Daily (required)
Age of Test Organisms:	Less than 24 hours; and all released within a 8-h period (required)
Number of Neonates Per Test Chamber:	1 Assigned using blocking by known parentage (required)
Number of Replicate Test Chambers Per Treatment:	10 (required minimum)
Number of Neonates Per Test Concentration:	10 (required minimum)
Feeding Regime:	Fed 0.1 mL each of YCT and algal suspension per exposure chamber daily. (recommended)
Cleaning:	Use new plastic cups daily (recommended)
Aeration:	None (recommended)
Test Duration:	Until 60% or more of control females have three broods (maximum test duration 8 days) (required)
Endpoints:	Survival and reproduction (required)
Test Acceptability:	80% or greater survival of all control organisms and an average of 15 or more young per surviving female in the control solutions. 60% of surviving control females must produce three broods. (required)
Sampling Requirements:	Minimum of three samples with a maximum holding time of 36 hours before first use. (required)
Sample volume required:	1 L/Day (recommended)

CERIODAPHNIA DUBIA
DATASHEETS & STATISTICAL ANALYSIS

NEW ENGLAND BIOASSAY TOXICITY DATA FORM
CHRONIC COVER SHEET

CLIENT:	Barnhardt Manufacturing Co.	*C.dubia* TEST ID #	20-1451
ADDRESS:	247 Main Road	CHAIN OF CUSTODY #	C40-3873/74
	Colrain, MA 01340	NEB PROJECT #	44654
PERMITTEE:	Barnhardt Manufacturing Co.	SAMPLE ID:	Effluent
PERMIT NUMBER:	MA0003697		
DILUTION WATER:	North River		

INVERTEBRATES

TEST SET-UP TECHNICIAN:	PD
TEST SPECIES:	*Ceriodaphnia dubia*
NEB LOT #	Cd20(RMH 224)
AGE:	< 24 hours
TEST SOLUTION VOLUME (mls):	15
ORGANISMS PER TEST CHAMBER:	1
ORGANISMS PER CONCENTRATION:	10

LABORATORY CONTROL WATER (CTRMH)

Lot Number	Hardness mg/L $CaCO_3$	Alkalinity mg/L $CaCO_3$
CTR20(MH011)	88	70

	DATE	TIME
TEST START:	10/5/20	1250
TEST END:	10/11/20	1250

COMMENTS:

REVIEWED BY: Kimberly Wills DATE: 10/29/20

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:	Barnhardt, 247 Main Rd, Colrain MA 01340							
NEB PROJECT NUMBER:	44654			TEST ORGANISM			*Ceriodaphnia dubia*	
DILUTION WATER SOURCE:	North River			START DATE:			10/5/20 TIME:	1250
NEB Lab Control	1	2	3	4	5	6	7	Remarks
Tech Initials Initial	CH	BT	PD	PD	CW	CMH		
Temp °C Initial	25.3	24.7	24.6	25.4	25.0	24.5		
D.O. mg/L Initial	8.2	8.3	8.3	8.0	8.3	8.3		
pH s.u. Initial	7.8	7.3	7.9	7.5	7.6	8.0		
Conductivity µS Initial	336	322	328	328	318	322		
Tech Intials Final	KF	PD	PD	CW	CW	CW		
Temp °C Final	24.6	24.5	24.8	24.1	24.4	24.6		
D.O. mg/L Final	8.2	8.0	8.2	8.3	8.2	8.3		
pH s.u. Final	7.8	7.1	7.6	8.3	8.1	7.8		
Conductivity µS Final	332	336	336	577	336	329		
North River Diluent	1	2	3	4	5	6	7	Remarks
Tech Initials Initial	CH	BT	PD	PD	CW	CMH		
Temp °C Initial	24.9	25.0	24.6	25.1	25.9	24.4		
D.O. mg/L Initial	9.9	8.7	8.7	8.5	8.5	8.7		
pH s.u. Initial	7.5	7.4	7.6	7.5	7.8	7.7		
Conductivity µS Initial	112	112	180	179	125	127		
Tech Intials Final	KF	PD	PD	CW	CW	CW		
Temp °C Final	24.7	24.4	24.8	24.1	24.4	24.6		
D.O. mg/L Final	8.2	8.0	8.1	8.1	8.0	8.2		
pH s.u. Final	7.8	7.1	7.6	8.2	8.1	7.9		
Conductivity µS Final	120	124	188	192	141	137		
5.0%	1	2	3	4	5	6	7	Remarks
Tech Initials Initial	CH	BT	PD	PD	CW	CMH		
Temp °C Initial	24.9	25.0	24.7	25.0	26.0	24.4		
D.O. mg/L Initial	9.8	8.9	8.8	8.7	9.0	8.8		
pH s.u. Initial	7.6	7.4	7.7	7.5	7.6	7.8		
Conductivity µS Initial	200	207	260	257	214	223		
Tech Intials Final	KF	PD	PD	CW	CW	CW		
Temp °C Final	24.9	24.3	24.8	24.0	24.2	24.6		
D.O. mg/L Final	8.1	8.0	8.1	8.2	8.0	8.1		
pH s.u. Final	7.8	7.3	7.7	8.5	8.1	8.0		
Conductivity µS Final	208	218	268	265	228	231		

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:	Barnhardt, 247 Main Rd, Colrain MA 01340							
NEB PROJECT NUMBER:	44654			TEST ORGANISM			*Ceriodaphnia dubia*	
DILUTION WATER SOURCE:	North River			START DATE:			10/5/20 TIME:	1250
6.25%	1	2	3	4	5	6	7	Remarks
Tech Initials Initial	CH	BT	PD	PD	CW	CMH		
Temp °C Initial	24.8	25.0	24.8	24.7	26.0	24.3		
D.O. mg/L Initial	9.8	8.9	8.8	8.7	8.9	8.8		
pH s.u. Initial	7.6	7.6	7.9	7.8	7.7	7.9		
Conductivity µS Initial	224	232	295	291	259	251		
Tech Intials Final	KF	PD	PD	CW	CW	CW		
Temp °C Final	24.8	24.3	25.0	24.0	24.1	24.6		
D.O. mg/L Final	8.1	8.0	8.1	8.2	8.0	8.1		
pH s.u. Final	8.0	7.4	7.8	8.5	8.3	8.1		
Conductivity µS Final	231	244	302	298	275	260		
12.5%	1	2	3	4	5	6	7	Remarks
Tech Initials Initial	CH	BT	PD	PD	CW	CMH		
Temp °C Initial	24.8	25.1	24.7	24.6	26.0	24.4		
D.O. mg/L Initial	9.7	8.9	8.8	8.7	8.9	8.8		
pH s.u. Initial	7.9	8.0	8.2	8.1	8.0	8.2		
Conductivity µS Initial	352	366	408	404	375	374		
Tech Intials Final	KF	PD	PD	CW	CW	CW		
Temp °C Final	25.0	24.3	25.0	24.0	24.3	24.5		
D.O. mg/L Final	8.1	8.1	8.1	8.2	8.0	8.2		
pH s.u. Final	8.2	7.6	7.9	8.7	8.5	8.4		
Conductivity µS Final	358	379	415	409	391	380		
25%	1	2	3	4	5	6	7	Remarks
Tech Initials Initial	CH	BT	PD	PD	CW	CMH		
Temp °C Initial	24.8	25.0	24.7	24.6	26.0	24.3		
D.O. mg/L Initial	9.6	8.9	8.7	8.7	8.9	8.7		
pH s.u. Initial	8.4	8.3	8.6	8.5	8.4	8.6		
Conductivity µS Initial	601	621	663	655	653	658		
Tech Intials Final	KF	PD	PD	CW	CW	CW		
Temp °C Final	25.0	24.3	24.9	24.0	24.1	24.5		
D.O. mg/L Final	8.1	8.1	8.1	8.2	8.0	8.2		
pH s.u. Final	8.5	8.1	8.3	8.9	8.8	8.7		
Conductivity µS Final	609	638	671	682	676	674		

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS:	Barnhardt, 247 Main Rd, Colrain MA 01340							
NEB PROJECT NUMBER:	44654			TEST ORGANISM			*Ceriodaphnia dubia*	
DILUTION WATER SOURCE:	North River			START DATE:			10/5/20 TIME:	1250
50%	1	2	3	4	5	6	7	Remarks
Tech Initials Initial	CH	BT	PD	PD	CW	CMH		
Temp °C Initial	24.8	24.6	24.8	24.5	26.0	24.4		
D.O. mg/L Initial	9.3	8.9	8.6	8.7	8.8	8.6		
pH s.u. Initial	8.6	8.6	8.8	8.7	8.7	8.8		
Conductivity µS Initial	1,100	1,083	1,137	1,133	1,164	1,173		
Tech Intials Final	KF	PD	PD	CW	CW	CW		
Temp °C Final	25.1	24.2	24.8	24.0	24.1	24.5		
D.O. mg/L Final	8.0	8.0	8.0	8.2	8.0	8.2		
pH s.u. Final	8.9	8.6	8.7	9.2	9.0	9.0		
Conductivity µS Final	1,102	1,107	1,145	1,162	1,189	1,193		
100%	1	2	3	4	5	6	7	Remarks
Tech Initials Initial	CH	BT	PD	PD	CW	CMH		
Temp °C Initial	24.7	24.8	24.7	24.1	25.8	24.4		
D.O. mg/L Initial	8.9	8.8	8.5	8.7	8.2	8.5		
pH s.u. Initial	8.7	8.7	8.9	8.8	8.8	8.8		
Conductivity µS Initial	2,066	2,048	2,081	2,067	2,172	2,205		
Tech Intials Final	KF	PD	PD	CW	CW	CW		
Temp °C Final	25.1	24.3	25.2	24.1	24.3	24.6		
D.O. mg/L Final	8.0	7.9	8.0	8.2	8.0	8.2		
pH s.u. Final	9.1	9.0	9.0	9.3	9.2	9.2		
Conductivity µS Final	2,073	2,076	2,100	2,069	2,241	2,207		
	1	2	3	4	5	6	7	Remarks
Tech Initials Initial								
Temp °C Initial								
D.O. mg/L Initial								
pH s.u. Initial								
Conductivity µS Initial								
Tech Intials Final								
Temp °C Final								
D.O. mg/L Final								
pH s.u. Final								
Conductivity µS Final								

NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS:	Barnhardt, 247 Main Rd, Colrain MA 01340				
NEB PROJECT NUMBER:	44654	NEB TEST NUMBER:	20-1451	COC #	C40-3873/74
TEST ORGANISM:	*Ceriodaphnia dubia*	AGE:	<24 hours	Lot #	Cd20(RMH 224)
START DATE:	10/5/20	TIME: 1250	END DATE: 10/11/20	TIME:	1250

Effluent Concentration	Cup # / Day Number	A1	A3	A5	A6	A8	A9	A11	A13	B1	B2	Total Live Young	# Live Adults	Analyst-Transfer	Analyst-Counts
	Culture Lot#	Cd20(RMH 224)													
	Replicate	A	B	C	D	E	F	G	H	I	J				
NEB Lab Control	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10	PD	
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10	KO	
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10	PD	
	3	7	6	7	5	7	7	8	5	7	8	67	10	CH	CH
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10	BT/KO	BT/KO
	5	14	14	13	10	10	12	14	8	16	13	124	10	CH	CH
	6	13	12	12	11	17	14	8	12	17	18	134	10	CW	CW
	7														
	totals	34	32	32	26	34	33	30	25	40	39	325	10		MC
North River Diluent		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	5	7	5	6	7	5	4	✓	6	6	51	10		
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	5	13	10	14	11	11	11	9	✓	9	11	99	10		
	6	13	12	15	14	12	13	10	✓	11	12	112	10		
	7														
	totals	31	29	34	31	30	29	23	0	26	29	262	10		
5.0%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	6	2	6	6	6	7	7	5	5	4	54	10		
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	5	7	✓	8	9	6	✓	9	9	8	8	64	10		
	6	11	6	10	12	6	12	11	8	11	13	100	10		
	7														
	totals	24	8	24	27	18	19	27	22	24	25	218	10		

Notes: _____

NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS:	Barnhardt, 247 Main Rd, Colrain MA 01340		
NEB PROJECT NUMBER:	44654	ORGANISM: *Ceriodaphnia dubia*	START DATE: 10/5/20

Effluent Concentration	Day Number	Replicate A	B	C	D	E	F	G	H	I	J	Total Live Young	# Live Adults		
6.25%	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	6	6	6	6	6	5	5	6	6	6	58	10		
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	5	10	10	7	7	7	8	10	8	8	9	84	10		
	6	12	✓	2	10	8	10	4	12	6	10	74	10		
	7														
	totals	28	16	15	23	21	23	19	26	20	25	216	10		
12.5%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	2	6	1	5	6	✓	5	✓	1	✓	26	10		
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	5	2	✓	✓	1	✓	✓	✓	✓	✓	✓	3	10		
	6	5	7	✓	11	✓/x	✓	5	✓	4	✓	32	9		
	7														
	totals	9	13	1	17	6	0	10	0	5	0	61	9		
25%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	6	✓	✓	✓	✓	✓	✓	✓	✓	3	✓	3	10		
	7														
	totals	0	0	0	0	0	0	0	0	3	0	3	10		
50%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	7														
	totals	0	0	0	0	0	0	0	0	0	0	0	10		

NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS:	Barnhardt, 247 Main Rd, Colrain MA 01340		
NEB PROJECT NUMBER: 44654	ORGANISM: *Ceriodaphnia dubia*	START DATE:	10/5/20

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

Table of Random Permutations of 16 **C.dubia Test ID#** 20-1451

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
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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
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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 # Cd20(RMH 247) A

Brood mother source: RMH 239 A-3 Source's brood size: 23 (Qty.)

Bernhardt 10.5.20

Tech	AH	AH	AH	AH	AH		KF	AH								
Date	9.28	9.29	9.30	10.1	10.2		10.4	10.5								
Day acc.	0	1	2	3	4	5	6	7		8	9	10	11	12	13	14
Cup # 1	N	N	N	N	4		11	T1 Y19	1							
2	N	N	N	N	5		14	Y	2							
3	N	N	N	N	7		10	T2 Y17	3							
4	N	N	N	N	6		12	Y	4							
5	N	N	N	N	5		12	T3 Y19	5							
6	N	N	N	N	7		13	T4 Y18	6							
7	N	N	N	N	7		12	Y	7							
8	N	N	N	N	5		11	T5 Y17	8							
9	N	N	N	N	6		12	T6 Y21	9							
10	N	N	N	N	7		13	Y	10							
11	N	N	N	N	5		12	T7 Y20	11							
12	N	N	N	N	6		12	Y	12							
13	N	N	N	N	6		12	T8 Y19	13							

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
44654	T	Y	10.4.20/1630 → 10.4.20/1810	10.5.20/1200
	T			
	T			
	T			
	T			
	T			

Ceriodaphnia dubia **Culture Chart** Lot # Cd20 (RMH 244) B

Brood mother source: RMH 239 A. Source's brood size: 21 (Qty.) Bernhardt 10.5.20

Tech	AH	AH	AH	AH	AH		KE	AH								
Date	9.28	9.29	9.30	10.1	10.2		10.4	10.5								
Day acc.	0	1	2	3	4	5	6	7		8	9	10	11	12	13	14
Cup # 1	N	N	N	N	6		8	T9 Y19	1							
2	N	N	N	N	4		14	T10 Y18	2							
3	N	N	N	N	7		12	Y	3							
4	N	N	N	N	7		14	T1 Y21	4							
5	N	N	N	N	6		11	T2 Y18	5							
6	N	N	N	N	5		14	T3 Y20	6							
7	N	N	N	N	5		12	T4 Y18	7							
8	N	N	N	N	7		11	T5 Y18	8							
9	N	N	N	N	6		7	T6 Y20	9							
10	N	N	N	N	7		7	T7 Y17	10							
11	N	N	N	N	5		13	T8 Y21	11							
12	N	N	N	N	7		12	T9 Y18	12							
13	N	N	N	N	7		11	T10 Y17	13							

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
44654	T	Y	10.4.20/1630 → 10.4.20/1810	10.5.20/1200
46173	T	Y	10.4.20/1630 → 10.4.20/1810	10.5.20/1230
	T			
	T			
	T			
	T			

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

Analysis ID:	15-7971-8987	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.4
Analyzed:	14 Oct-20 10:26	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1
Edit Date:		**MD5 Hash:**		**Editor ID:**	

Batch ID:	02-5496-4477	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**			
Start Date:	05 Oct-20 12:50	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water		
Ending Date:	11 Oct-20 12:50	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable		
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:**	<24

Sample ID:	16-3852-8075	**Code:**	61A9F44B	**Project:**	
Sample Date:	05 Oct-20 07:00	**Material:**	WWTF Effluent	**Source:**	Barnhardt (BBA Fiberweb)
Receipt Date:	05 Oct-20 09:04	**CAS (PC):**		**Station:**	
Sample Age:	6h	**Client:**	Barnhardt		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	MSDu	PMSD
Untransformed	C > T	<5	5	---	>20	5.983	22.84%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water		5*	73	76	0	18	Asymp	0.0265	Significant Effect
		6.25*	70.5	76	2	18	Asymp	0.0160	Significant Effect
		12.5*	63.5	76	1	18	Asymp	0.0032	Significant Effect
		25*	60.5	76	1	18	Asymp	0.0015	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	26.2	15	>>	Yes	Passes Criteria
PMSD	0.2284	0.13	0.47	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5103.4	1275.85	4	35.21	<1.0E-05	Significant Effect
Error	1630.6	36.2356	45			
Total	6734		49			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	30.68	13.28	<1.0E-05	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8412	0.9367	<1.0E-05	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	26.2	19.28	33.12	29	0	34	3.058	36.91%	0.00%
5		10	21.8	17.73	25.87	24	8	27	1.8	26.11%	16.79%
6.25		10	21.6	18.58	24.62	22	15	28	1.335	19.54%	17.56%
12.5		10	6.1	1.776	10.42	5.5	0	17	1.912	99.10%	76.72%
25		10	0.3	-0.3786	0.9786	0	0	3	0.3	316.23%	98.85%
50		10	0	0	0	0	0	0	0	---	100.00%
100		10	0	0	0	0	0	0	0	---	100.00%

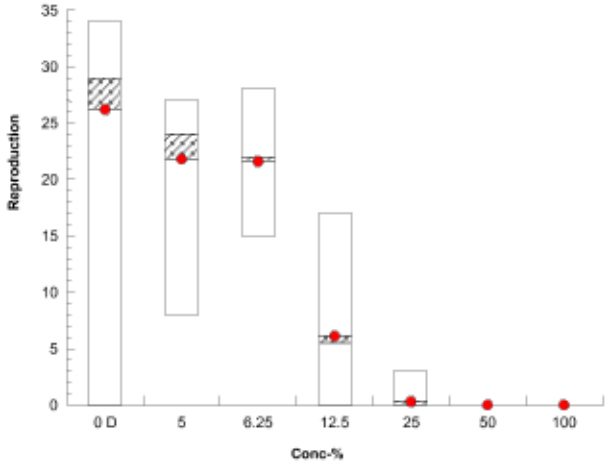
Ceriodaphnia 7-d Survival and Reproduction Test **New England Bioassay**

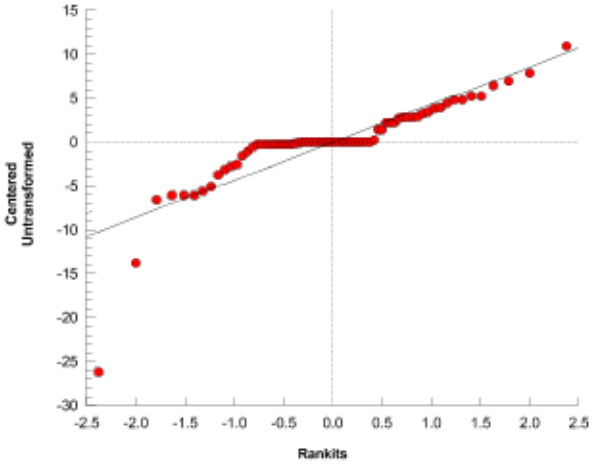
Analysis ID:	15-7971-8987	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.4
Analyzed:	14 Oct-20 10:26	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1
Edit Date:		**MD5 Hash:**		**Editor ID:**	

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

Analysis ID:	15-7971-8987	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.4
Analyzed:	14 Oct-20 10:26	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1
Edit Date:		**MD5 Hash:**		**Editor ID:**	

Graphics





Batch ID:	02-5496-4477	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**			
Start Date:	05 Oct-20 12:50	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water		
Ending Date:	11 Oct-20 12:50	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable		
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:**	<24

Sample ID:	16-3852-8075	**Code:**	61A9F44B	**Project:**	
Sample Date:	05 Oct-20 07:00	**Material:**	WWTF Effluent	**Source:**	Barnhardt (BBA Fiberweb)
Receipt Date:	05 Oct-20 09:04	**CAS (PC):**		**Station:**	
Sample Age:	6h	**Client:**	Barnhardt		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	786942	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	---	---	<1	---	---

2d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**A/B**	**Mean**	**%Effect**
0	D	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%

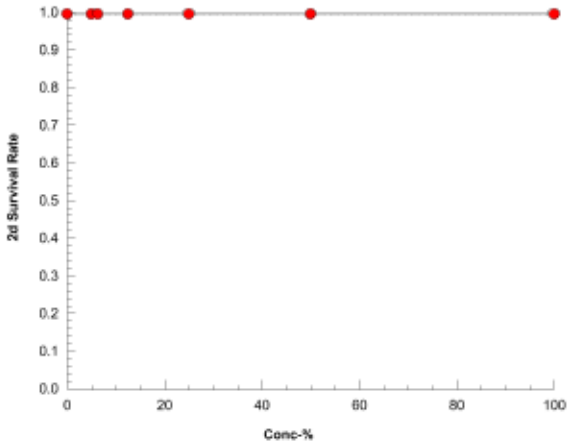
2d Survival Rate Detail

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

Graphics


2d Survival Rate
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
20
40
60
80
100
Conc-%

Batch ID:	02-5496-4477	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**			
Start Date:	05 Oct-20 12:50	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water		
Ending Date:	11 Oct-20 12:50	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable		
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:**	<24

Sample ID:	16-3852-8075	**Code:**	61A9F44B	**Project:**	
Sample Date:	05 Oct-20 07:00	**Material:**	WWTF Effluent	**Source:**	Barnhardt (BBA Fiberweb)
Receipt Date:	05 Oct-20 09:04	**CAS (PC):**		**Station:**	
Sample Age:	6h	**Client:**	Barnhardt		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	1720394	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	---	---	<1	---	---

6d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**A/B**	**Mean**	**%Effect**
0	D	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	0.9000	1.0000	0.0000	1.0000	35.14%	10.00%	9/10	0.9667	3.33%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	0.9667	3.33%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	0.9667	3.33%
100		10	0.9000	1.0000	0.0000	1.0000	35.14%	10.00%	9/10	0.9000	10.00%

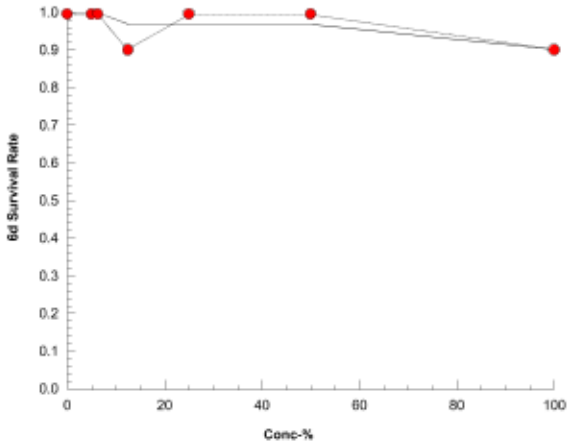
6d Survival Rate Detail

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
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	0.0000	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	0.0000	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
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	0/1	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	0/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics


6d Survival Rate
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
20
40
60
80
100
Conc-%

Batch ID:	02-5496-4477	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**			
Start Date:	05 Oct-20 12:50	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water		
Ending Date:	11 Oct-20 12:50	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable		
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:**	<24

Sample ID:	16-3852-8075	**Code:**	61A9F44B	**Project:**	
Sample Date:	05 Oct-20 07:00	**Material:**	WWTF Effluent	**Source:**	Barnhardt (BBA Fiberweb)
Receipt Date:	05 Oct-20 09:04	**CAS (PC):**		**Station:**	
Sample Age:	6h	**Client:**	Barnhardt		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	489597	200	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	26.2	15	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	7.036	4.087	8.406	14.21	11.9	24.47
IC50	9.677	8.469	11.29	10.33	8.858	11.81

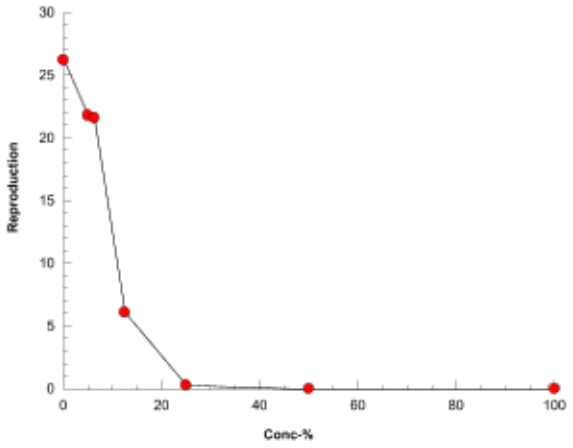
Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**Mean**	**%Effect**
0	D	10	26.2	29	0	34	36.91%	0.00%	26.2	0.00%
5		10	21.8	24	8	27	26.11%	16.79%	21.8	16.79%
6.25		10	21.6	22	15	28	19.54%	17.56%	21.6	17.56%
12.5		10	6.1	5.5	0	17	99.10%	76.72%	6.1	76.72%
25		10	0.3	0	0	3	316.23%	98.85%	0.3	98.85%
50		10	0	0	0	0	---	100.00%	0	100.00%
100		10	0	0	0	0	---	100.00%	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	31	29	34	31	30	29	23	0	26	29
5		24	8	24	27	18	19	27	22	24	25
6.25		28	16	15	23	21	23	19	26	20	25
12.5		9	13	1	17	6	0	10	0	5	0
25		0	0	0	0	0	0	0	0	3	0
50		0	0	0	0	0	0	0	0	0	0
100		0	0	0	0	0	0	0	0	0	0

Graphics



Batch ID:	02-5496-4477	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**			
Start Date:	05 Oct-20 12:50	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water		
Ending Date:	11 Oct-20 12:50	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable		
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:**	<24

Sample ID:	16-3852-8075	**Code:**	61A9F44B	**Project:**	
Sample Date:	05 Oct-20 07:00	**Material:**	WWTF Effluent	**Source:**	Barnhardt (BBA Fiberweb)
Receipt Date:	05 Oct-20 09:04	**CAS (PC):**		**Station:**	
Sample Age:	6h	**Client:**	Barnhardt		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	>100	---	1

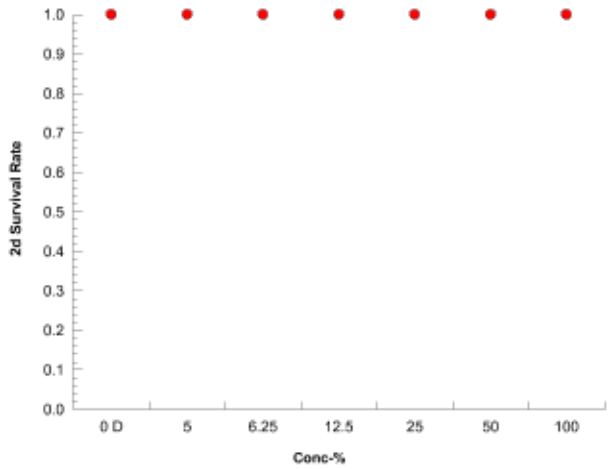
Fisher Exact/Bonferroni-Holm Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Dilution Water		5	1.0000	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	1.0000	Exact	1.0000	Non-Significant Effect
		100	1.0000	Exact	1.0000	Non-Significant Effect

2d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
5		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

Graphics



Batch ID:	02-5496-4477	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**			
Start Date:	05 Oct-20 12:50	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water		
Ending Date:	11 Oct-20 12:50	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable		
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:**	<24

Sample ID:	16-3852-8075	**Code:**	61A9F44B	**Project:**	
Sample Date:	05 Oct-20 07:00	**Material:**	WWTF Effluent	**Source:**	Barnhardt (BBA Fiberweb)
Receipt Date:	05 Oct-20 09:04	**CAS (PC):**		**Station:**	
Sample Age:	6h	**Client:**	Barnhardt		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	>100	---	1

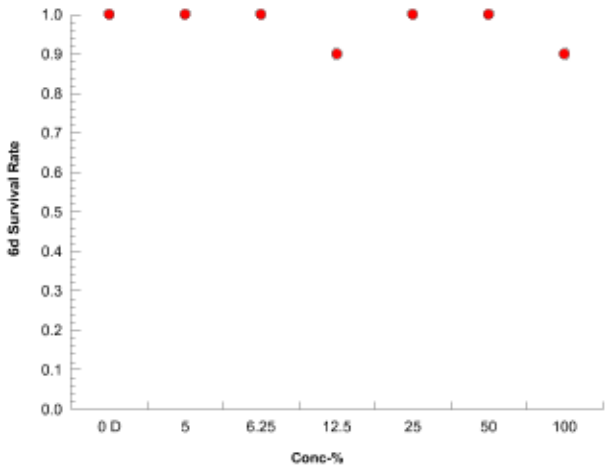
Fisher Exact/Bonferroni-Holm Test

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

6d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
5		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		10	0.9000	0.6738	1.0000	1.0000	0.0000	1.0000	0.1000	35.14%	10.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	0.9000	0.6738	1.0000	1.0000	0.0000	1.0000	0.1000	35.14%	10.00%

Graphics



CHEMICAL ANALYSIS

Please note the subcontract laboratory has its own QAQC and data review processes, and therefore New England Bioassay does not review the analytical results we receive.

PHOENIX
Environmental Laboratories, Inc.

Monday, October 12, 2020

Attn: Ms. Kim Wills
New England Bioassay
77 Batson Drive
Manchester, CT 06040

Project ID: BARNHARDT MFG
SDG ID: GCG90800
Sample ID#s: CG90800 - CG90802

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 are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
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
UT Lab Registration #CT00007
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

Sample Id Cross Reference

October 12, 2020

SDG I.D.: GCG90800

Project ID: BARNHARDT MFG

Client Id	Lab Id	Matrix
EFF #1 C40-3873	CG90800	WASTE WATER
NORTH RIVER #1 C40-3874	CG90801	WATER
EFF GRAB #1	CG90802	WASTE WATER

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

October 12, 2020

FOR: Attn: Ms. Kim Wills
New England Bioassay
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WASTE WATER	Collected by:		10/05/20	7:00
Location Code:	NEB	Received by:	SW	10/05/20	16:02
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	22821				

Laboratory Data

SDG ID: GCG90800
Phoenix ID: CG90800

Project ID: BARNHARDT MFG
Client ID: EFF #1 C40-3873

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	0.031	0.010	mg/L	1	10/08/20	TH	E200.7
Cadmium	0.0003	0.0001	mg/L	1	10/06/20	RS	SM3113B
Copper	0.0286	0.0010	mg/L	1	10/08/20	TH	E200.7
Hardness (CaCO3)	79.1	0.1	mg/L	1	10/09/20		SM2340B
Nickel	0.003	0.001	mg/L	1	10/08/20	EK	E200.7
Lead	0.0005	0.0003	mg/L	1	10/06/20	RS	SM3113B
Zinc	0.045	0.002	mg/L	1	10/08/20	TH	E200.7
Alkalinity-CaCO3	996	50.0	mg/L	10	10/05/20	AP	SM2320B-11
Conductivity	2050	500	umhos/cm	1	10/05/20	AP	SM2510B-11
Ammonia as Nitrogen	0.52	0.25	mg/L	5	10/12/20	ARG	E350.1
Tot. Diss. Solids	1400	20	mg/L	2	10/06/20	QH	SM2540C-11
Tot. Org. Carbon	58.3	5.0	mg/L	10	10/06/20	ARG	SM5310B-11
Total Solids	1500	100	mg/L	10	10/06/20	AG/EP	SM2540B-11
Total Metals Digestion	Completed				10/07/20	AG	

Project ID: BARNHARDT MFG
Client ID: EFF #1 C40-3873

Phoenix I.D.: CG90800

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By

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

Comments:

TOC Analysis:
This sample was received with a pH>2. The EPA requires preservation at time of sampling to a pH of <2. A sample bias can not be ruled out.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 12, 2020
Reviewed and Released by: Helen Geoghegan, 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

October 12, 2020

FOR: Attn: Ms. Kim Wills
New England Bioassay
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		10/05/20	6:30
Location Code:	NEB	Received by:	SW	10/05/20	16:02
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	22821				

Laboratory Data

SDG ID: GCG90800
Phoenix ID: CG90801

Project ID: BARNHARDT MFG
Client ID: NORTH RIVER #1 C40-3874

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	0.047	0.010	mg/L	1	10/08/20	TH	SW6010D/E200.7
Cadmium	< 0.0001	0.0001	mg/L	1	10/06/20	RS	SM3113B/SW7010-10
Copper	0.0084	0.0010	mg/L	1	10/08/20	TH	SW6010D/E200.7
Hardness (CaCO3)	36.9	0.1	mg/L	1	10/09/20		E200.7
Nickel	< 0.001	0.001	mg/L	1	10/08/20	EK	SW6010D/E200.7
Lead	< 0.0003	0.0003	mg/L	1	10/06/20	RS	SM3113B/SW7010
Zinc	0.005	0.002	mg/L	1	10/08/20	TH	SW6010D/E200.7
Alkalinity-CaCO3	31.9	5.00	mg/L	1	10/05/20	AP	SM2320B-11
Conductivity	106	5	umhos/cm	1	10/05/20	AP	SM2510B-11
Ammonia as Nitrogen	< 0.05	0.05	mg/L	1	10/10/20	KDB	E350.1
pH	7.35	1.00	pH Units	1	10/05/20 20:56	AP	SM4500-H B-11
Tot. Org. Carbon	3.06	0.50	mg/L	1	10/06/20	ARG	SM5310B-11
Total Metals Digestion	Completed				10/07/20	AG	

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 you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 12, 2020
Reviewed and Released by: Helen Geoghegan, 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

October 12, 2020

FOR: Attn: Ms. Kim Wills
New England Bioassay
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WASTE WATER	Collected by:		10/05/20	7:00
Location Code:	NEB	Received by:	SW	10/05/20	16:02
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	22821				

Laboratory Data

SDG ID: GCG90800
Phoenix ID: CG90802

Project ID: BARNHARDT MFG
Client ID: EFF GRAB #1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Chlorine Residual	0.25	0.02	mg/L	1	10/05/20 20:06	MW	SM4500CLG-97
pH	8.71	1.00	pH Units	1	10/05/20 20:58	AP	SM4500-H B-11

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

Comments:

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

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

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 12, 2020
Reviewed and Released by: Helen Geoghegan, 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

October 12, 2020

QA/QC Data

SDG I.D.: GCG90800

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 548202 (mg/L), QC Sample No: CG90796 (CG90800, CG90801)														
Cadmium - Water	BRL	0.0001	<0.0001	<0.0001	NC	111			107			75 - 125	20	
QA/QC Batch 548202 (mg/L), QC Sample No: CG90796 (CG90800, CG90801)														
Lead (Furnace) - Water	BRL	0.001	<0.0003	<0.001	NC	107			103			75 - 125	30	
QA/QC Batch 548507 (mg/L), QC Sample No: CG92120 (CG90800, CG90801)														
ICP Metals - Aqueous														
Aluminum	BRL	0.010	0.040	0.039	NC	96.9	98.8	1.9	102			80 - 120	20	
Copper	BRL	0.0025	0.014	0.0125	NC	97.8	101	3.2	102			80 - 120	20	
Nickel	BRL	0.0005	0.005	0.0034	38.1	107	101	5.8	101			80 - 120	20	r
Zinc	BRL	0.0020	0.044	0.0420	4.70	105	98.7	6.2	102			80 - 120	20	

Comment:

Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.

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

October 12, 2020

QA/QC Data

SDG I.D.: GCG90800

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 548179 (umhos/cm), QC Sample No: CG90398 (CG90800, CG90801)														
Conductivity	BRL	5	674	667	1.00	99.0						85 - 115	20	
Comment:														
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.														
QA/QC Batch 548406 (mg/L), QC Sample No: CG90399 (CG90800, CG90801)														
Total Organic Carbon	BRL	1.0	3.0	3.1	NC	92.0			100			85 - 115	20	
Comment:														
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.														
QA/QC Batch 548315 (mg/L), QC Sample No: CG90399 (CG90800)														
Total Solids	BRL	10	78	79	1.30	98.0						85 - 115	20	
Comment:														
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.														
QA/QC Batch 548279 (mg/L), QC Sample No: CG90739 (CG90800)														
Tot. Diss. Solids	BRL	10	280	280	0	99.0						85 - 115	20	
Comment:														
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.														
QA/QC Batch 548240 (mg/L), QC Sample No: CG90797 (CG90800, CG90801)														
Alkalinity-CaCO3	BRL	5.00	59.3	59.4	0.20	98.4						85 - 115	20	
Comment:														
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.														
QA/QC Batch 548238 (pH), QC Sample No: CG90797 (CG90800, CG90801, CG90802)														
pH			7.29	7.30	0.10	98.7						85 - 115	20	
Comment:														
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.														
QA/QC Batch 548814 (mg/L), QC Sample No: CG90745 (CG90801)														
Ammonia as Nitrogen	BRL	0.05	<0.05	<0.05	NC	94.4			94.5			90 - 110	20	
QA/QC Batch 549000 (mg/L), QC Sample No: CG91962 (CG90800)														
Ammonia as Nitrogen	BRL	0.05	0.83	0.81	2.40	97.6			82.2			90 - 110	20	m
Comment:														
TKN is reported as Organic Nitrogen in the Blank, LCS, DUP and MS.														
QA/QC Batch 548216 (mg/L), QC Sample No: CG90977 (CG90802)														
Chlorine Residual	BRL	0.02	<0.02	<0.02	NC	97.0								

m = This parameter is outside laboratory MS/MSD specified recovery limits.

QA/QC Data

SDG I.D.: GCG90800

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD 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
October 12, 2020

Monday, October 12, 2020

Criteria: None

State: MA

Sample Criteria Exceedances Report

GCG90800 - 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 exceedance 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

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ACCREDITED IN ACCORDANCE WITH nelac
NY # 11301

Analysis Comments

October 12, 2020 SDG I.D.: GCG90800

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report: None.

Chronic Sample Set #1

Cooler: Yes [X] No [ ]
Coolant: IPK [X] ICE [ ] No [ ]

PHOENIX Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

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

Temp 1.1 °C Pg of

Data Delivery/Contact Options:
[ ] Fax:
[ ] Phone
[X] Email: Kimberly.wills@nebio.com

Customer: NEB
Address: 77 Batson Drive
Manchester, CT 06042

Project: Bernhardt Mfg
Report to: Kim Wills
Invoice to: Kim Wills
QUOTE #

Project P.O.: 22821

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature _____ Date: _____

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe OIL=Oil
B=Bulk L=Liquid X = _____(Other)

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Hardness	alkalinity	Specific conductance	Total solids	Total dissolved solids	Ammonia	Total organic carbon	Ca(AA), Pb(AA), Cu, Ni, Zn, Al	Total residual chlorine	pH	MS/MSD*	GL Amber 8 oz w/H3PO4	Soil VOA Vials [ ] methanol [ ] H2O	GL Soil container [ ] 1 oz	GL Soil container [ ] 1 oz	40 ml VOA Vial [ ] As is [ ] HCL	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is [ ] 250ml [ ] 500ml [ ] 1000ml	PL H2SO4 [ ] 250ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle w/thio	Bacteria Bottle as is
90800	Eff #1 C40-3873	WW	10/4-10/5 2020	0700-0700	X	X	X	X	X	X	X					1						1	1	1			
90801	North River #1 C40-3874	DW	10/5/20	0630	X	X			X	X	X		X			1						1	1	1			
90802	Eff grab #1	WW	10/5/20	0700								X	X									1					

Relinquished by:	Accepted by:	Date:	Time:
Krystal Frederick	[signature]	10-5	1540
[signature]	[signature]	10-5	1602

Comments, Special Requirements or Regulations:
Cd - 0.0005 mg/L Cu - 0.005 mg/L
Pb - 0.0005 mg/L Ni - 0.005 mg/L
Zn - 0.005 mg/L Al - 0.02 mg/L

*MS/MSD are considered site samples and will be billed as such in accordance with the prices quoted.

Turnaround Time:
[ ] 1 Day*
[ ] 2 Days*
[ ] 3 Days*
[X] Standard
[ ] Other
* SURCHARGE APPLIES

RI
[ ] (Residential) Direct Exposure
[ ] (Comm/Industrial) Direct Exposure
[ ] GA Leachability
[ ] GB Leachability
[ ] GA-GW Objectives
[ ] GB-GW Objectives

CT
[ ] RCP Cert
[ ] GW Protection
[ ] SW Protection
[ ] GA Mobility
[ ] GB Mobility
[ ] Residential DEC
[ ] I/C DEC
[ ] Other

MA
[ ] MCP Certification
[ ] GW-1 [ ] MWRA eSMART
[ ] GW-2 [ ] S-1 10% CALC
[ ] GW-3
[ ] S-1 GW-1 [ ] S-1 GW-2 [ ] S-1-GW-3
[ ] S-2 GW-1 [ ] S-2 GW-2 [ ] S-2 GW-3
[ ] S-3 GW-1 [ ] S-3 GW-2 [ ] S-3 GW-3
[ ] SW Protection

State where samples were collected: MA

Data Format
[ ] Excel
[ ] PDF
[ ] GIS/Key
[ ] EQuIS
[ ] Other

Data Package
[ ] Tier II Checklist
[ ] Full Data Package*
[ ] Phoenix Std Report
[ ] Other
* SURCHARGE APPLIES

PEL-126 REV. 05/20

PHOENIX
Environmental Laboratories, Inc.

Tuesday, October 13, 2020

Attn: Ms. Kim Wills
New England Bioassay
77 Batson Drive
Manchester, CT 06040

Project ID: BARNHARDT MFG
SDG ID: GCG92880
Sample ID#s: CG92880 - CG92882

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 are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
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
UT Lab Registration #CT00007
VT Lab Registration #VT11301

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
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PHOENIX

Environmental Laboratories, Inc.
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Tel. (860) 645-1102 Fax (860) 645-0823

Sample Id Cross Reference

October 13, 2020

SDG I.D.: GCG92880

Project ID: BARNHARDT MFG

Client Id	Lab Id	Matrix
EFF #2 C40-3902	CG92880	WASTE WATER
NORTH RIVER #2 C40-3903	CG92881	WATER
EFF GRAB #2	CG92882	WASTE WATER

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

October 13, 2020

FOR: Attn: Ms. Kim Wills
New England Bioassay
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WASTE WATER	Collected by:		10/07/20	7:00
Location Code:	NEB	Received by:	B	10/07/20	17:46
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	22821				

Laboratory Data

SDG ID: GCG92880
Phoenix ID: CG92880

Project ID: BARNHARDT MFG
Client ID: EFF #2 C40-3902

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	0.040	0.010	mg/L	1	10/10/20	EK	E200.7
Cadmium	0.0003	0.0001	mg/L	1	10/09/20	RS	SM3113B
Copper	0.0253	0.0010	mg/L	1	10/10/20	EK	E200.7
Hardness (CaCO3)	77.7	0.1	mg/L	1	10/12/20		SM2340B
Nickel	0.005	0.001	mg/L	1	10/10/20	EK	E200.7
Lead	0.0004	0.0003	mg/L	1	10/09/20	RS	SM3113B
Zinc	0.042	0.002	mg/L	1	10/10/20	EK	E200.7
Alkalinity-CaCO3	991	50.0	mg/L	10	10/08/20	AP/KDB	SM2320B-11
Conductivity	2080	500	umhos/cm	1	10/07/20	AP	SM2510B-11
Ammonia as Nitrogen	< 1.00	1.00	mg/L	20	10/13/20	KDB	E350.1
Tot. Diss. Solids	1400	20	mg/L	2	10/09/20	QH	SM2540C-11
Tot. Org. Carbon	72.4	5.0	mg/L	10	10/09/20	ARG	SM5310B-11
Total Solids	1500	20	mg/L	2	10/08/20	QH	SM2540B-11
Total Metals Digestion	Completed				10/08/20	AG	

Project ID: BARNHARDT MFG
Client ID: EFF #2 C40-3902

Phoenix I.D.: CG92880

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By

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

Comments:

TOC Analysis:
This sample was received with a pH>2. The EPA requires preservation at time of sampling to a pH of <2. A sample bias can not be ruled out.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 13, 2020
Reviewed and Released by: Helen Geoghegan, 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

October 13, 2020

FOR: Attn: Ms. Kim Wills
New England Bioassay
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		10/07/20	6:30
Location Code:	NEB	Received by:	B	10/07/20	17:46
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	22821				

Laboratory Data

SDG ID: GCG92880
Phoenix ID: CG92881

Project ID: BARNHARDT MFG
Client ID: NORTH RIVER #2 C40-3903

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	0.021	0.020	mg/L	1	10/08/20	TH	SW6010D/E200.7
Cadmium	< 0.0001	0.0001	mg/L	1	10/09/20	RS	SM3113B/SW7010-10
Copper	0.0023	0.0020	mg/L	1	10/08/20	TH	SW6010D/E200.7
Hardness (CaCO3)	40.2	0.1	mg/L	1	10/08/20		E200.7
Nickel	< 0.001	0.001	mg/L	1	10/08/20	TH	SW6010D/E200.7
Lead	< 0.0003	0.0003	mg/L	1	10/09/20	RS	SM3113B/SW7010
Zinc	< 0.004	0.004	mg/L	1	10/08/20	TH	SW6010D/E200.7
Alkalinity-CaCO3	62.8	5.00	mg/L	1	10/08/20	AP/KDB	SM2320B-11
Conductivity	174	5	umhos/cm	1	10/07/20	AP	SM2510B-11
Ammonia as Nitrogen	< 0.10	0.10	mg/L	2	10/13/20	KDB	E350.1
pH	7.72	1.00	pH Units	1	10/08/20 03:48	AP/KDB	SM4500-H B-11
Tot. Org. Carbon	4.69	0.50	mg/L	1	10/09/20	ARG	SM5310B-11
Total Metals Digestion	Completed				10/07/20	AG/BF	

Project ID: BARNHARDT MFG

Client ID: NORTH RIVER #2 C40-3903

Phoenix I.D.: CG92881

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By

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

Comments:

TOC Analysis:
This sample was received with a pH>2. The EPA requires preservation at time of sampling to a pH of <2. A sample bias can not be ruled out.

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

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

October 13, 2020

Reviewed and Released by: Helen Geoghegan, 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

October 13, 2020

FOR: Attn: Ms. Kim Wills
New England Bioassay
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WASTE WATER	Collected by:		10/07/20	7:00
Location Code:	NEB	Received by:	B	10/07/20	17:46
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	22821				

Laboratory Data

SDG ID: GCG92880
Phoenix ID: CG92882

Project ID: BARNHARDT MFG
Client ID: EFF GRAB #2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Chlorine Residual	0.23	0.05	mg/L	2.5	10/07/20 20:24	MW	SM4500CLG-97
pH	8.85	1.00	pH Units	1	10/08/20 04:16	AP/KDB	SM4500-H B-11

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

Comments:

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

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

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 13, 2020
Reviewed and Released by: Helen Geoghegan, 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

October 13, 2020

QA/QC Data

SDG I.D.: GCG92880

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 548714 (mg/L), QC Sample No: CG92357 (CG92880, CG92881)													
Cadmium - Water	BRL	0.0001	<0.0001	<0.0001	NC	108			110			75 - 125	20
QA/QC Batch 548714 (mg/L), QC Sample No: CG92357 (CG92880, CG92881)													
Lead (Furnace) - Water	BRL	0.001	<0.0003	<0.001	NC	107			112			75 - 125	30
QA/QC Batch 548554 (mg/L), QC Sample No: CG92425 (CG92881)													
ICP Metals - Aqueous													
Aluminum	BRL	0.020	0.390	0.394	1.00	99.5	98.6	0.9	96.9			80 - 120	20
Copper	BRL	0.005	<0.005	<0.005	NC	102	101	1.0	98.9			80 - 120	20
Nickel	BRL	0.001	<0.001	<0.001	NC	101	102	1.0	101			80 - 120	20
Zinc	BRL	0.004	<0.004	<0.004	NC	101	103	2.0	101			80 - 120	20
Comment:													
Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.													
QA/QC Batch 548716 (mg/L), QC Sample No: CG92883 (CG92880)													
ICP Metals - Aqueous													
Aluminum	BRL	0.010	0.054	0.053	1.90	99.6	96.8	2.9	102			80 - 120	20
Copper	BRL	0.0025	0.0022	<0.0025	NC	103	98.9	4.1	105			80 - 120	20
Nickel	BRL	0.0005	0.002	0.0013	NC	105	95.9	9.1	98.3			80 - 120	20
Zinc	BRL	0.0020	0.004	0.0041	NC	101	92.3	9.0	96.5			80 - 120	20
Comment:													
Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.													

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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

October 13, 2020

QA/QC Data

SDG I.D.: GCG92880

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 548508 (umhos/cm), QC Sample No: CG91953 (CG92880, CG92881)													
Conductivity	BRL	5	537	534	0.60	102						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 548895 (mg/L), QC Sample No: CG92425 (CG92880)													
Tot. Diss. Solids	BRL	5.0	74	79	6.50	96.0						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 548671 (mg/L), QC Sample No: CG92880 (CG92880)													
Total Solids	BRL	10	1500	1500	0	97.0						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 548669 (mg/L), QC Sample No: CG92881 (CG92880, CG92881)													
Alkalinity-CaCO3	BRL	5.00	62.8	61.7	1.80	101						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 548664 (pH), QC Sample No: CG92889 (CG92881, CG92882)													
pH			7.97	8.12	1.90	98.6						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 548988 (mg/L), QC Sample No: CG94130 (CG92880, CG92881)													
Total Organic Carbon	BRL	1.0	1.6	1.6	NC	93.0			98.0			85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 549124 (mg/L), QC Sample No: CG92643 (CG92880, CG92881)													
Ammonia as Nitrogen	BRL	0.05	0.54	0.55	1.80	95.1			99.3			90 - 110	20
QA/QC Batch 548551 (mg/L), QC Sample No: CG92625 (CG92882)													
Chlorine Residual	BRL	0.02	<0.02	0.02	NC	94.5							

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
October 13, 2020

Tuesday, October 13, 2020

Criteria: None

State: MA

Sample Criteria Exceedances Report

GCG92880 - 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 exceedance 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.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac
NY # 11301

Analysis Comments

October 13, 2020 SDG I.D.: GCG92880

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report: None.

Chronic Sample Set #2

Cooler: Yes ☑ No ☐
Coolant: IPK ☑ ICE ☐ No ☐

PHOENIX Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

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

Temp 1.5 °C Pg of

Data Delivery/Contact Options:
☐ Fax
☐ Phone:
☒ Email: Kimberly.wills@neb.com

Customer: NEB
Address: 77 Batson Drive
Manchester, CT 06042

Project: Bernhardt Mfg
Report to: Kim Wills
Invoice to: Kim Wills
QUOTE #

Project P.O.: 22821

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature _____ Date: _____

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe OIL=Oil
B=Bulk L=Liquid X = _____(Other)

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Hardness, alkalinity	Specific Conductance	Total solids	Total dissolved solids	Ammonia	Total organic carbon	Cd (AA), Pb (AA), Cu, Ni, Zn, Al	Total residual chlorine	pH	MS/MSD*	GL Amber 8 oz. w/H3PO4	Soil VOA Vials [ ] methanol [ ] H2O	GL Soil container [ ] 1 oz	GL Soil container [ ] 1 oz	40 ml VOA Vial [ ] As is [ ] HCL	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is [ ] 250ml [ ] 500ml [ ] 1000ml	PL H2SO4 [ ] 250ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle w/tiso	Bacteria Bottle as is
C40-3902 92880	Eff #2	WW	10/6-7/20	0700-0700	X	X	X	X	X	X	X															
C40-3903 92881	North River #2	O	10/7/20	0630	X	X			X	X	X		X													
92882	Effluent #2	WW	10/7/20	0700								X	X													

Relinquished by:	Accepted by:	Date:	Time:
[signature]	[signature]	10-7-20	1715
[signature]	[signature]	10-7-20	1746

Comments, Special Requirements or Regulations:
Cd - 0.0005 mg/L Cu - 0.003 mg/L
Pb - 0.0005 mg/L Ni - 0.005 mg/L
Zn - 0.005 mg/L Al - 0.03 mg/L

*MS/MSD are considered site samples and will be billed as such in accordance with the prices quoted.

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

RI
☐ (Residential) Direct Exposure
☐ (Comm/Industrial) Direct Exposure
☐ GA Leachability
☐ GB Leachability
☐ GA-GW Objectives
☐ GB-GW Objectives

CT
☐ RCP Cert
☐ GW Protection
☐ SW Protection
☐ GA Mobility
☐ GB Mobility
☐ Residential DEC
☐ I/C DEC
☐ Other

MA
☐ MCP Certification
☐ GW-1 ☐ MWRA eSMART
☐ GW-2 ☐ S-1 10% CALC
☐ GW-3
☐ S-1 GW-1 ☐ S-1 GW-2 ☐ S-1 GW-3
☐ S-2 GW-1 ☐ S-2 GW-2 ☐ S-2 GW-3
☐ S-3 GW-1 ☐ S-3 GW-2 ☐ S-3 GW-3
☐ SW Protection

Data Format
☐ Excel
☐ PDF
☐ GIS/Key
☐ EQuIS
☐ Other

Data Package
☐ Tier II Checklist
☐ Full Data Package*
☐ Phoenix Std Report
☐ Other
* SURCHARGE APPLIES

State where samples were collected: MA

PEL-126 REV. 06/20

PHOENIX
Environmental Laboratories, Inc.

Friday, October 16, 2020

Attn: Ms. Kim Wills
New England Bioassay
77 Batson Drive
Manchester, CT 06040

Project ID: BARNHARDT MFG
SDG ID: GCG94476
Sample ID#s: CG94476 - CG94478

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 are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
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
UT Lab Registration #CT00007
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

Sample Id Cross Reference

October 16, 2020

SDG I.D.: GCG94476

Project ID: BARNHARDT MFG

Client Id	Lab Id	Matrix
EFF #3 C40-3932	CG94476	WASTE WATER
NORTH RIVER #3 C4-3933	CG94477	WATER
EFF GRAB #3	CG94478	WASTE WATER

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

October 16, 2020

FOR: Attn: Ms. Kim Wills
New England Bioassay
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WASTE WATER	Collected by:		10/09/20	7:00
Location Code:	NEB	Received by:	B	10/09/20	14:52
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	22821				

Laboratory Data

SDG ID: GCG94476
Phoenix ID: CG94476

Project ID: BARNHARDT MFG
Client ID: EFF #3 C40-3932

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	0.033	0.010	mg/L	1	10/14/20	EK	E200.7
Cadmium	0.0003	0.0001	mg/L	1	10/13/20	RS	SM3113B
Copper	0.0256	0.0010	mg/L	1	10/14/20	EK	E200.7
Hardness (CaCO3)	73.2	0.1	mg/L	1	10/16/20		SM2340B
Nickel	0.004	0.001	mg/L	1	10/14/20	EK	E200.7
Lead	< 0.0003	0.0003	mg/L	1	10/12/20	RS	SM3113B
Zinc	0.040	0.002	mg/L	1	10/14/20	EK	E200.7
Alkalinity-CaCO3	1130	50.0	mg/L	10	10/09/20	AP/KDB	SM2320B-11
Conductivity	2210	500	umhos/cm	1	10/09/20	AP	SM2510B-11
Ammonia as Nitrogen	< 1.00	1.00	mg/L	20	10/14/20	KDB	E350.1
Tot. Diss. Solids	1300	25	mg/L	2.5	10/14/20	EP/QH	SM2540C-11
Tot. Org. Carbon	69.2	5.0	mg/L	10	10/13/20	ARG	SM5310B-11
Total Solids	1500	20	mg/L	2	10/11/20	QH	SM2540B-11
Total Metals Digestion	Completed				10/13/20	AG	

Project ID: BARNHARDT MFG
Client ID: EFF #3 C40-3932

Phoenix I.D.: CG94476

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By

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

Comments:

TOC Analysis:
This sample was received with a pH>2. The EPA requires preservation at time of sampling to a pH of <2. A sample bias can not be ruled out.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 16, 2020
Reviewed and Released by: Helen Geoghegan, 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

October 16, 2020

FOR: Attn: Ms. Kim Wills
New England Bioassay
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		10/09/20	6:30
Location Code:	NEB	Received by:	B	10/09/20	14:52
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	22821				

Laboratory Data

SDG ID: GCG94476
Phoenix ID: CG94477

Project ID: BARNHARDT MFG
Client ID: NORTH RIVER #3 C4-3933

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	< 0.020	0.020	mg/L	1	10/10/20	EK	SW6010D/E200.7
Cadmium	< 0.0001	0.0001	mg/L	1	10/13/20	RS	SM3113B/SW7010-10
Copper	< 0.0020	0.0020	mg/L	1	10/10/20	EK	SW6010D/E200.7
Hardness (CaCO3)	36.3	0.1	mg/L	1	10/16/20		E200.7
Nickel	< 0.001	0.001	mg/L	1	10/15/20	EK	SW6010D/E200.7
Lead	< 0.0003	0.0003	mg/L	1	10/12/20	RS	SM3113B/SW7010
Zinc	< 0.004	0.004	mg/L	1	10/10/20	EK	SW6010D/E200.7
Alkalinity-CaCO3	37.5	5.00	mg/L	1	10/09/20	AP/KDB	SM2320B-11
Conductivity	121	5	umhos/cm	1	10/09/20	AP	SM2510B-11
Ammonia as Nitrogen	< 0.10	0.10	mg/L	2	10/14/20	KDB	E350.1
pH	7.30	1.00	pH Units	1	10/09/20 21:00	AP/KDB	SM4500-H B-11
Tot. Org. Carbon	2.39	0.50	mg/L	1	10/13/20	ARG	SM5310B-11
Total Metals Digestion	Completed				10/09/20	AG	

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 you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 16, 2020
Reviewed and Released by: Helen Geoghegan, 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

October 16, 2020

FOR: Attn: Ms. Kim Wills
New England Bioassay
77 Batson Drive
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WASTE WATER	Collected by:		10/09/20	7:00
Location Code:	NEB	Received by:	B	10/09/20	14:52
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	22821				

Laboratory Data

SDG ID: GCG94476
Phoenix ID: CG94478

Project ID: BARNHARDT MFG
Client ID: EFF GRAB #3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Chlorine Residual	< 0.10	0.10	mg/L	5	10/09/20 16:29	MW	SM4500CLG-97
pH	8.70	1.00	pH Units	1	10/09/20 21:03	AP/KDB	SM4500-H B-11

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

Comments:

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

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

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 16, 2020
Reviewed and Released by: Helen Geoghegan, 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

October 16, 2020

QA/QC Data

SDG I.D.: GCG94476

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 548714 (mg/L), QC Sample No: CG92357 (CG94476, CG94477)													
Cadmium - Water	BRL	0.0001	<0.0001	<0.0001	NC	108			110			75 - 125	20
QA/QC Batch 548908 (mg/L), QC Sample No: CG93647 (CG94476, CG94477)													
Lead (Furnace) - Water	BRL	0.001	<0.0003	<0.001	NC	107			116			75 - 125	30
QA/QC Batch 548928 (mg/L), QC Sample No: CG94552 (CG94477)													
ICP Metals - Aqueous													
Aluminum	BRL	0.020	<0.020	<0.020	NC	91.0	96.2	5.6	93.3			80 - 120	20
Copper	BRL	0.005	0.007	0.005	NC	93.9	100	6.3	96.5			80 - 120	20
Nickel	BRL	0.001	0.019	<0.001	NC	98.9	101	2.1	94.2			80 - 120	20
Zinc	BRL	0.004	<0.004	<0.004	NC	97.8	101	3.2	94.7			80 - 120	20
Comment:													
Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.													
QA/QC Batch 549284 (mg/L), QC Sample No: CG94784 (CG94476)													
ICP Metals - Aqueous													
Aluminum	BRL	0.010	0.048	0.052	NC	103	93.5	9.7	107			80 - 120	20
Copper	BRL	0.0025	<0.003	<0.0025	NC	102	94.9	7.2	105			80 - 120	20
Nickel	BRL	0.0005	<0.001	0.0006	NC	95.5	88.0	8.2	97.2			80 - 120	20
Zinc	BRL	0.0020	<0.002	<0.0020	NC	93.9	86.6	8.1	97.1			80 - 120	20
Comment:													
Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.													

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

October 16, 2020

QA/QC Data

SDG I.D.: GCG94476

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 548909 (umhos/cm), QC Sample No: CG93648 (CG94476, CG94477)													
Conductivity	BRL	5	48500	48600	0.20	102						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 548993 (mg/L), QC Sample No: CG94346 (CG94476, CG94477)													
Alkalinity-CaCO3	BRL	5.00	30	30	NC	98.9						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 548990 (pH), QC Sample No: CG94346 (CG94477, CG94478)													
pH			6.89	6.82	1.00	98.8						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 549023 (mg/L), QC Sample No: CG94476 (CG94476)													
Total Solids	BRL	10	1500	1600	6.50	97.0						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 549380 (mg/L), QC Sample No: CG94734 (CG94476)													
Tot. Diss. Solids	BRL	10	440	440	0	92.0						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 549367 (mg/L), QC Sample No: CG94888 (CG94476, CG94477)													
Total Organic Carbon	BRL	1.0	<1.0	<1.0	NC	93.0			94.0			85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 549266 (mg/L), QC Sample No: CG94097 (CG94476, CG94477)													
Ammonia as Nitrogen	BRL	0.05	<0.10	<0.10	NC	91.3			99.0			90 - 110	20
QA/QC Batch 548917 (mg/L), QC Sample No: CG94348 (CG94478)													
Chlorine Residual	BRL	0.02	<0.02	<0.02	NC	98.2							

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
October 16, 2020

Friday, October 16, 2020

Criteria: None

State: MA

Sample Criteria Exceedances Report

GCG94476 - 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 exceedance 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.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac
NY # 11301

Analysis Comments

October 16, 2020 SDG I.D.: GCG94476

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report: None.

Chronic Sample Set #3

Cooler: Yes [X] No [ ]
Coolant: IPK [X] ICE [ ] No [ ]

PHOENIX
Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

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

Temp 2.9 Pg of

Data Delivery/Contact Options:
[ ] Fax:
[ ] Phone:
[X] Email: Kimberly.wills@nebis.com

Customer: NEB
Address: 77 Batson Drive
Manchester, CT 06042

Project: Burkhardt Mfg
Report to: Kim Wills
Invoice to: Kim Wills
QUOTE #

Project P.O.: 22821

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature _____ Date: _____

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe OIL=Oil
B=Bulk L=Liquid X = _____(Other)

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Hardness, alkalinity	Specific conductance	Total solids	Total dissolved solids	Ammonia	Total organic carbon	Cd (BA), Pb (BA), Cu, Ni, Zn, Al	Total residual chlorine	pH	MS/MSD*	GL Amber 8 oz. w/H3PO4	Soil VOA Vials [ ] methanol [ ] H2O	GL Soil container ( ) oz	GL Soil container ( ) oz	40 ml VOA Vial [ ] As is [ ] HCL	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is (~~[ ] 250ml~~)	PL H2SO4 (~~[ ] 500ml~~)	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle with	Bacteria Bottle as is
C40-3932 944476	Eff #3	WW	10/8-9/20 0800-0800		X	X	X	X	X	X	X				1						1	1	1			
C40-3933 944477	North Run #3	O	10/9/20 0630		X	X			X	X	X		X		1						1	1	1			
944478	Eff grab #3	WW	10/9/20 0700									X	X								1					

Relinquished by:	Accepted by:	Date:	Time:
[signature]	[signature]	9-10-20	1430
	[signature]	9-10-20	1452

Comments, Special Requirements or Regulations:
Cd - 0.0005 mg/L Cu - 0.003 mg/L
Pb - 0.0005 mg/L Ni - 0.005 mg/L
Zn - 0.005 mg/L Al - 0.02 mg/L

*MS/MSD are considered site samples and will be billed as such in accordance with the prices quoted.

Turnaround Time:
[ ] 1 Day*
[ ] 2 Days*
[ ] 3 Days*
[X] Standard
[ ] Other
* SURCHARGE APPLIES

RI
[ ] (Residential) Direct Exposure
[ ] (Comm/Industrial) Direct Exposure
[ ] GA Leachability
[ ] GB Leachability
[ ] GA-GW Objectives
[ ] GB-GW Objectives

CT
[ ] RCP Cert
[ ] GW Protection
[ ] SW Protection
[ ] GA Mobility
[ ] GB Mobility
[ ] Residential DEC
[ ] I/C DEC
[ ] Other

MA
[ ] MCP Certification
[ ] GW-1 [ ] MWRA eSMART
[ ] GW-2 [ ] S 1 10% CALC
[ ] GW-3
[ ] S-1 GW-1 [ ] S-1 GW-2 [ ] S-1 GW-3
[ ] S-2 GW-1 [ ] S-2 GW-2 [ ] S-2 GW-3
[ ] S-3 GW-1 [ ] S-3 GW-2 [ ] S-3 GW-3
[ ] SW Protection

State where samples were collected: MA

Data Format
[ ] Excel
[ ] PDF
[ ] GIS/Key
[ ] EQuIS
[ ] Other

Data Package
[ ] Tier II Checklist
[ ] Full Data Package*
[ ] Phoenix Std Report
[ ] Other
* SURCHARGE APPLIES

PEL-126 REV. 06/20

SAMPLE RECEIPT CHEMISTRY
&
CHAIN OF CUSTODY DOCUMENTS

NEW ENGLAND BIOASSAY - CHAIN-OF-CUSTODY

Sample Set #1

EFFLUENT

Sampler: Keith Cummell
Title: WWTP operator
Facility: Barnhardt Manufacturing

Sampling Method: X **Composite**
Sample ID:
Start Date: 10-4-20 Time: 10-5-20 7am
End Date: 10-5-20 Time: 7am

Sampling Method: X **Grab** (for pH and TRC only X)
Date Collected: 10-5-20
Time Collected: 7am

Sample Type:
____ Prechlorinated
____ Dechlorinated
____ Unchlorinated
____ Chlorinated

RECEIVING WATER

Sampler: Keith Cummell
Title: WWTP operator
Facility: Barnhardt Manufacturing

Sampling Method: X Grab
Sample ID: North River
Date Collected: 10-5-20
Time Collected: 6:30

Due to COVID-19 safety precautions Samples were received in NEB refrigerator

Effluent Sampling Location and Procedures: Composite sample from outfall

Receiving Water Sampling Location and Procedures: Grab sample from North river above outfall

Requested Analysis: X Chronic and modified acute

Sample Shipment

Method of Shipment: NEB Courier

Relinquished By:	[signature]	Date: 10-5-20	Time: 0700
Received By:	[signature]	Date: 10-5-20	Time: 0700
Relinquished By:	[signature]	Date: 10-5-20	Time: 0904
Received By:	Krystal Fund	Date: 10/5/20	Time: 0904

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
Effluent COC# C40-3873

Temperature of Receiving Water Upon Receipt at Lab: 4.1 °C
Receiving Water COC# C40-3874

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: WWTP operator
Facility: Barnhardt Manufacturing

Sampling Method: X **Composite**
Sample ID:
Start Date: 10-6-20 Time: 7am
End Date: 10-7-20 Time: 7am

Sampling Method: X **Grab** (for pH and TRC only X)
Date Collected: 10-7-20
Time Collected: 7am

Sample Type:
____ Prechlorinated
____ Dechlorinated
____ Unchlorinated
____ Chlorinated

RECEIVING WATER

Sampler: Keith Gammell
Title: WWTP operator
Facility: Barnhardt Manufacturing

Sampling Method: X Grab
Sample ID: North River
Date Collected: 10-7-20
Time Collected: 6:30

Effluent Sampling Location and Procedures: Composite sample from outfall

Receiving Water Sampling Location and Procedures: Grab sample from North river above outfall

Requested Analysis: X Chronic and modified acute

Sample Shipment

Method of Shipment: NEB Courier

Relinquished By:	[illegible]	Date: 10-7-20	Time: 7:00
Received By:	[illegible]	Date: 10/7/20	Time: 7:00
Relinquished By:	[illegible]	Date: 10/7/20	Time: 8:45
Received By:	[illegible]	Date: 10/7/20	Time: 0851

Optional Information

Purchase Order # to reference on invoice:

Due to COVID-19 safety precautions Samples were received in NEB refrigerator

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: 5.8 °C
Temperature of Receiving Water Upon Receipt at Lab: 3.0 °C

Effluent COC# C40-3902
Receiving Water COC# C40-3903

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: WWTP operator
Facility: Barnhardt Manufacturing

Sampling Method: X **Composite**
Sample ID:
Start Date: 10-8-20 Time: 7Am
End Date: 10-9-20 Time: 7Am

RECEIVING WATER

Sampler: Keith Gammell
Title: WWTP operator
Facility: Barnhardt Manufacturing

Sampling Method: X Grab
Sample ID: North River
Date Collected: 10-9-20
Time Collected: 6:30 am

Sampling Method: X **Grab** (for pH and TRC only X)
Date Collected: 10-9-20
Time Collected: 7am

Received
ON IC

Sample Type:
____ Prechlorinated
____ Dechlorinated
____ Unchlorinated
____ Chlorinated

Effluent Sampling Location and Procedures: Composite sample from outfall

Receiving Water Sampling Location and Procedures: Grab sample from North river above outfall

Requested Analysis: X Chronic and modified acute

Sample Shipment

Method of Shipment: NEB Courier

Relinquished By:	KC	Date:	10-9-20	Time:	7:15
Received By:	[illegible]	Date:	10-9-20	Time:	7:15
Relinquished By:	[illegible]	Date:	10-9-20	Time:	8:36
Received By:	[illegible]	Date:	10-9-20	Time:	0840

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: 7.9 °C
Effluent COC# C40-3932

Temperature of Receiving Water Upon Receipt at Lab: 4.8 °C
Receiving Water COC# C40-3933

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 - INITIAL CHEMISTRY DATA

PERMITTEE: Barnhardt Manufacturing Co.

NEB JOB # 44654

DATE RECEIVED	10/5/20		10/7/20		10/9/20	
SAMPLE TYPE:	EFF #1	RIVER #1	EFF #2	RIVER #2	EFF #3	RIVER #3
COC #	C40-3873	C40-3874	C40-3902	C40-3903	C40-3932	C40-3933
pH (SU)	8.5	7.2	8.8	7.6	8.5	7.4
Temperature (^{o}C)	5.0	4.1	3.8	3.0	7.9	4.8
Dissolved Oxygen (mg/L)	11.5	12.3	8.3	8.8	8.5	9.5
Conductivity (µmhos)	1,969	108	2,097	174	2,252	128
Salinity (ppt)	1	<1	1	<1	1	<1
TRC - DPD (mg/L)	<0.001	0.003	<0.001	0.012	<0.001	0.007
TRC - Amperometric (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A
Hardness (mg/L as $CaCO_3$)	72	36	72	38	74	38
Alkalinity (mg/l as $CaCO_3$)	1,000	30	990	60	1,110	40
Tech Initials	KF	KF	KO/BT	KO/BT	PD	PD

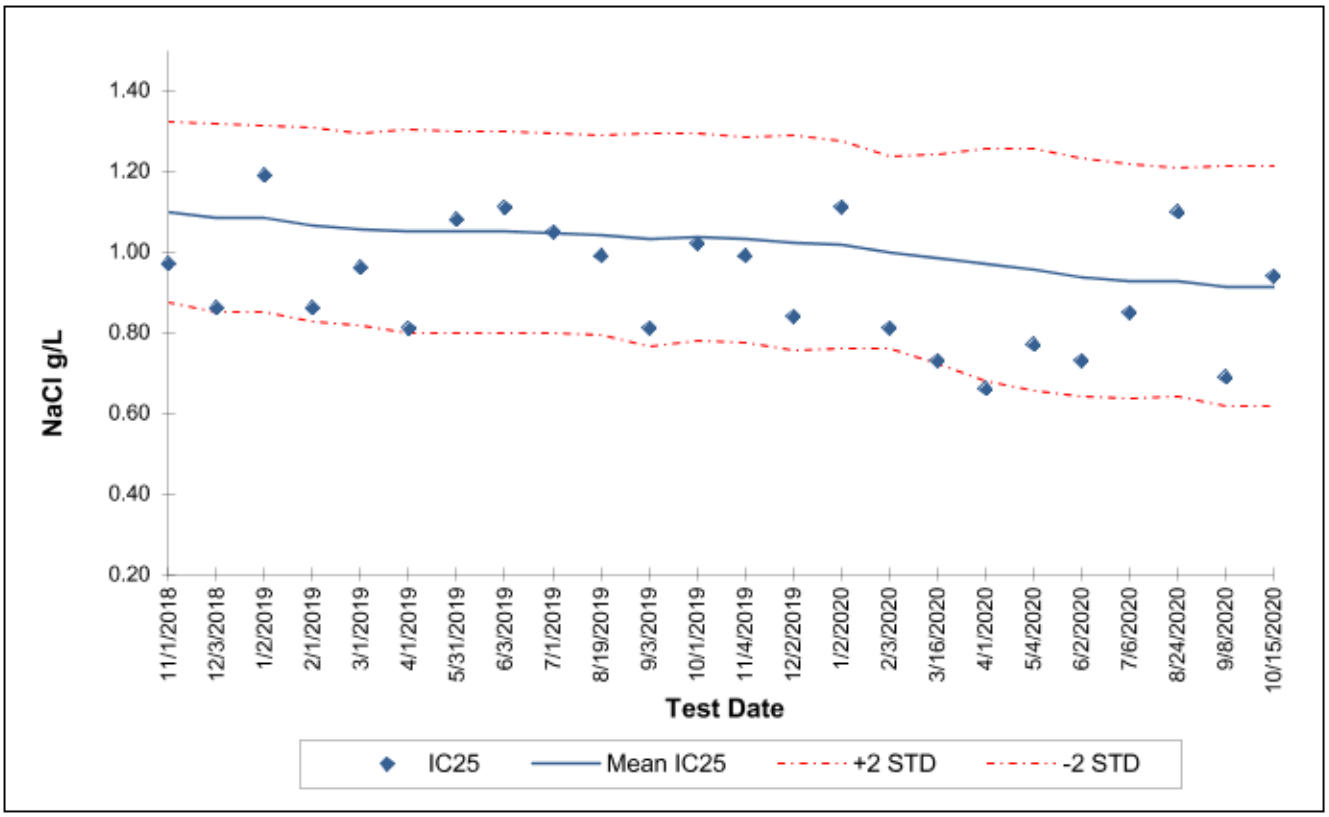
NOTE: NA = NOT APPLICABLE

Data Reviewed By: Kimberly Wills Date Reviewed: 10/29/20

REFERENCE TOXICANT CHARTS

New England Bioassay

Reference Toxicant Data: Sodium chloride (NaCl) *Ceriodaphnia dubia* Chronic Reproduction IC_{25}



Test ID	Date	IC_{25}	Mean IC_{25}	STD	-2STD	+2STD	Avg. CV	Repro PMSD (%)	Avg. PMSD (%)
18-1625	11/1/2018	0.97	1.10	0.11	0.88	1.32	0.10	31.57	21.34
18-1756	12/3/2018	0.86	1.08	0.12	0.85	1.32	0.11	15.77	21.00
19-8	1/2/2019	1.19	1.08	0.12	0.85	1.31	0.11	40.72	21.30
19-177	2/1/2019	0.86	1.07	0.12	0.82	1.31	0.11	18.71	21.63
19-265	3/1/2019	0.96	1.06	0.12	0.82	1.29	0.11	19.84	22.13
19-403	4/1/2019	0.81	1.05	0.13	0.80	1.30	0.12	10.09	21.85
19-674	5/31/2019	1.08	1.05	0.12	0.80	1.30	0.12	15.59	21.93
19-688	6/3/2019	1.11	1.05	0.12	0.80	1.30	0.12	15.24	22.23
19-926	7/1/2019	1.05	1.04	0.12	0.80	1.29	0.12	12.60	22.23
19-1154	8/19/2019	0.99	1.04	0.12	0.79	1.29	0.12	24.17	22.24
19-1226	9/3/2019	0.81	1.03	0.13	0.77	1.29	0.13	19.49	21.64
19-1396	10/1/2019	1.02	1.04	0.13	0.78	1.29	0.12	18.01	21.38
19-1560	11/4/2019	0.99	1.03	0.13	0.77	1.28	0.12	14.03	21.13
19-1696	12/2/2019	0.84	1.02	0.13	0.76	1.29	0.13	25.84	21.59
20-2	1/2/2020	1.11	1.02	0.13	0.76	1.27	0.13	24.34	22.16
20-132	2/3/2020	0.81	1.00	0.12	0.76	1.24	0.12	22.80	22.15
20-366	3/16/2020	0.73	0.98	0.13	0.72	1.24	0.13	10.30	21.85
20-428	4/1/2020	0.66	0.97	0.14	0.68	1.26	0.15	17.88	20.99
20-587	5/4/2020	0.77	0.96	0.15	0.66	1.26	0.16	30.12	21.22
20-711	6/2/2020	0.73	0.94	0.15	0.64	1.23	0.16	12.08	19.76
20-932	7/6/2020	0.85	0.93	0.14	0.64	1.22	0.16	24.70	20.32
20-1198	8/24/2020	1.10	0.93	0.14	0.64	1.21	0.15	39.42	21.24
20-1286	9/8/2020	0.69	0.91	0.15	0.62	1.21	0.16	29.35	21.54
20-1516	10/15/2020	0.94	0.91	0.15	0.61	1.21	0.16	12.44	21.05

National 75th Percentile and 90th Percentile CV Averages for Ceriodaphnia Reproduction IC25 (EPA 833-R-00-003): 0.45 - 0.62
PMSD Upper and Lower Bounds for Ceriodaphnia Reproduction (EPA-821-R-02-013): 13% - 47%