



Technical Memorandum

Potable Water Supply Well Installation and Water Quality Analysis

Connecticut Department of Transportation
Construction of New East Hampton Maintenance Facility
253 West High Street, East Hampton, CT
DOT Project 0041-0119; HRP# CTD4056.21

HRP Associates Inc. (HRP) oversaw the installation of a potable water supply well between July 12 and July 26, 2018 at the above-referenced site. Drilling was completed by Dufford Well Drilling and Pump Service of Portland, Connecticut (Dufford) under HRP supervision.

Dufford began installation activities on July 12, 2018 and continued through July 16, 2018 with a final well depth achieved at approximately 1,005 feet. Additional details pertaining to well construction and drilling methods used are provided in the attached well completion report. An estimated yield of 3 gallons-per-minute (gpm) was observed from the well following the initial drilling activities. Because CT DOT desired a yield of >5 gpm, LaFramboise Well Drilling Inc. of Thompson, Connecticut (LaFramboise) was subcontracted through Dufford to perform hydrofracturing on the well to try and increase the water yield.

Following completion of hydrofracturing, the well was purged of approximately 2,200 gallons on July 25, 2018 then a standard yield test was performed the following day (July 26, 2018). Results from the yield test indicated that the well yield increased to approximately 4.5 gpm. A copy of the yield test is attached to this technical memorandum.

At the conclusion of the yield test, a water sample set was collected for drinking water quality analysis. The sample set submitted to Phoenix Environmental Laboratories, Inc. of Manchester, Connecticut (Phoenix) for analysis of the following:

- pH
- Hardness
- Chloride
- Sodium
- Color and Odor
- Turbidity
- Nitrate and Nitrite
- Sulfate
- Iron and Manganese
- Coliform Organisms
- Arsenic (total and dissolved)
- Volatile Organic Compounds (VOCs);
- Radon

Laboratory results indicated that coliform bacteria was present, in exceedance of the National Primary Drinking Water Regulations (NPDWR) maximum containment level (MCL) of 0 mg/L. Additionally, iron, manganese, turbidity and color exceeded their respective national secondary drinking water regulation (NSDWR) standards. Note the NSDWR are non-enforceable guidelines for contaminants that may cause aesthetic (taste, odor, or color) or cosmetic (skin or tooth discoloration) effects, but States may choose to adopt them as enforceable standards. For the purposes of this project, the NSDWR standards are accepted goals. A copy of the laboratory analytical is attached to this technical memorandum.

The analytical results should be considered preliminary and additional water quality analysis should be performed when the well pumping system is installed to assess drinking water quality.



**STATE OF CONNECTICUT
DEPARTMENT OF CONSUMER PROTECTION
REAL ESTATE & PROFESSIONAL TRADES DIVISION
WELL DRILLING PERMIT**

450 Columbus Boulevard Suite 901, Hartford, Connecticut 06103

LOCATION OF WELL *E Hampton* (Town) *RT 66* (Street) (Lot Number) DATE *7/9/18*

OWNER OF WELL *State Do.t Facility*

INDIVIDUAL BUILDER OTHER (Specify)

OWNER'S ADDRESS

PROPOSED USE OF WELL

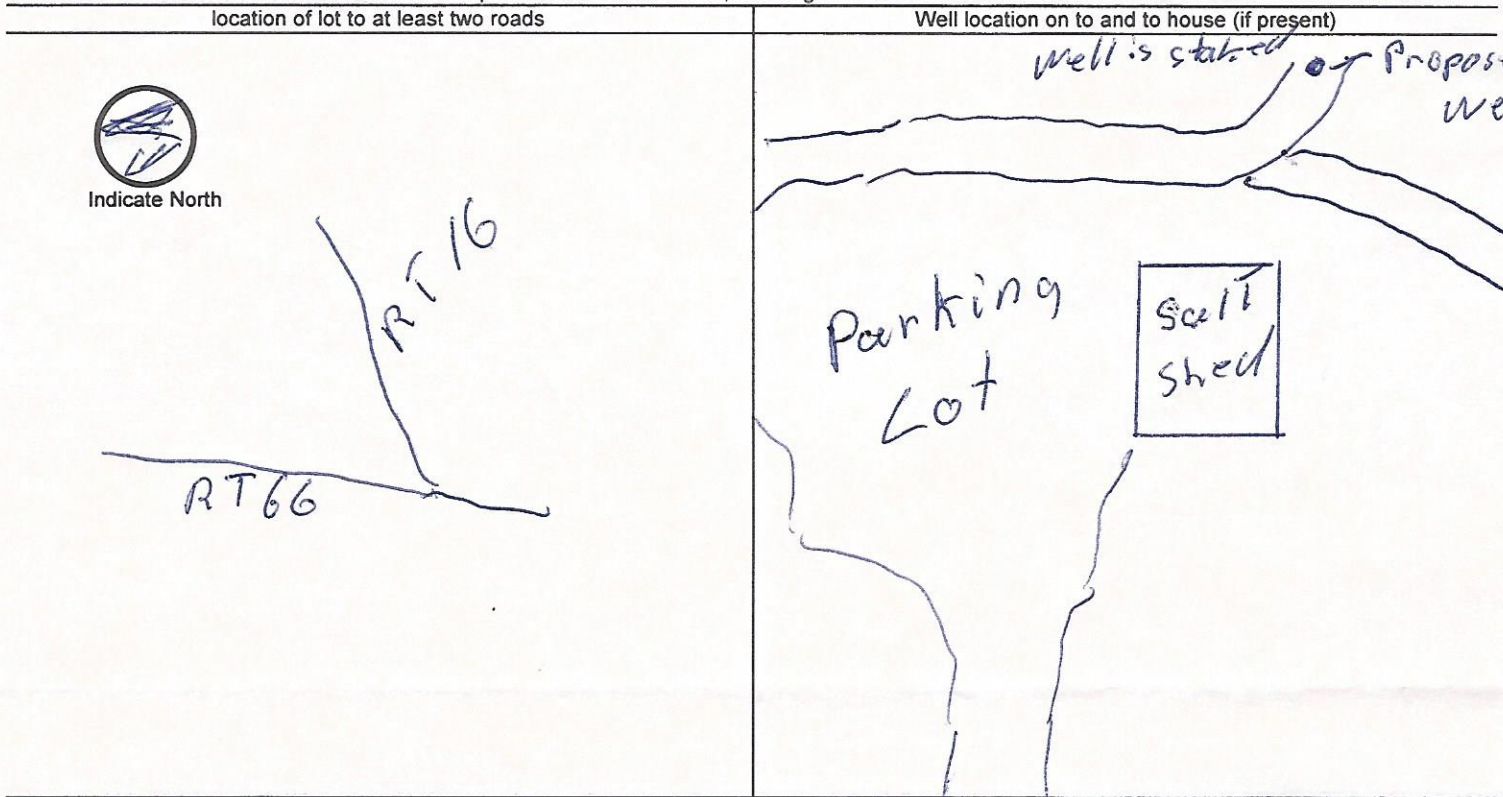
DOMESTIC BUSINESS ESTABLISHMENT FARM TEST WELL

PUBLIC SUPPLY INDUSTRIAL AIR CONDITIONING OTHER (Specify)

Est. No. of People being served.

SKETCH OF WELL LOCATION

Locate well with respect to at least two roads, showing distance from intersection and front of lot



Approximate number of feet from well to nearest source of possible contamination: *75 +*

The undersigned is aware that upon completion of the well, a "Well Completion Report" containing construction details and information required under Section 25-131 of the 1969 Supplement to the General Statutes must be sent to the owner, the Department of Consumer Protection and the Water Resources Commission on the form provided by the agency. This permit is not valid until all information is filled in and it has been counter-signed by the Director of Health or his agent.

APPLICANT (Signature) *[Signature]* APPLICANT'S ADDRESS *217 Pickering St unit 2 Pont.* REGISTRATION NO. *362*

APPROVED REJECTED BY (Town Health Officer or Agent) *[Signature] RS. #318* DATE *7/11/18*

REMARKS *4232-19-006 rec'd 7/9/18*
OK #2593 KA
\$110-



STATE OF CONNECTICUT
DEPARTMENT OF CONSUMER PROTECTION
REAL ESTATE & PROFESSIONAL TRADES DIVISION
WELL DRILLING COMPLETION REPORT
165 Capitol Avenue, Hartford, Connecticut 06106

Do NOT fill in
STATE WELL NO.
OTHER NO.

LOCATION OF WELL: Route 66, East Hampton
OWNER: CT DOT Facility
PROPOSED USE OF WELL: DOMESTIC
DRILLING EQUIPMENT: ROTARY, COMPRESSED AIR PERCUSSION
CASING DETAILS: LENGTH 20, DIAMETER 6", WEIGHT PER FOOT 17#, THREADED
YIELD TEST: BAILED, COMPRESSED AIR, HOURS 7, YIELD (GPM) 3
WATER LEVEL: 40, 1005, 1005
SCREEN DETAILS: MAKE, SLOT SIZE, DIAMETER, IF GRAVEL PACKED, Diameter of well including gravel pack, GRAVEL SIZE, FROM, TO
DEPTH FROM LAND TO SURFACE: 0-8, 8-1005
FORMATION DESCRIPTION: sand and gravel, soft ledge
Sketch exact location of well with distances, to at least two permanent landmarks: well, parking lot, Salt shed
DATE WELL COMPLETED: 07/17/2018
PERMIT NO.: 267010
REGISTRATION NO.: 362
DATE OF REPORT: 07/18/2018
WELL DRILLER (Signature): Uwe Roehrl

DUFFORD DRILLING CO.

UWE ROEHL

Dufford Well Drilling and Pump Service

217 Pickering St Unit 2
Portland, CT 06480

Rotary Percussion Water Well Drilling
Well Pumps and Water Systems
Water Conditioning Systems

(860) 633-1020 phone
(860) 342-0733 fax
dufforddrilling@gmail.com

Yield Test
CT DOT FACILITY
East Hampton

Well is 1005 feet deep with 20 feet of 6" steel casing. Well produces 4.5 GPM.

Date	Time	Static Level in Feet	GPM	Meter Reading
7/26/2018	7:15 AM	15.2	8	16970
7/26/2018	7:25 AM	25.2	5	17000
7/26/2018	7:35 AM	29.5	5	17045
7/26/2018	7:45 AM	30.6	5	17065
7/26/2018	7:55 AM	31.7	5	17085
7/26/2018	8:05 AM	34.5	5	17100
7/26/2018	8:15 AM	45.2	5	17150
7/26/2018	8:25 AM	51	5	17200
7/26/2018	8:35 AM	56.2	5	17250
7/26/2018	8:45 AM	64.2	5	17300
7/26/2018	8:55 AM	71.6	5	17350
7/26/2018	9:05 AM	77.6	5	17400
7/26/2018	9:15 AM	87	5	17450
7/26/2018	9:25 AM	90	5	17500
7/26/2018	9:35 AM	100	5	17550
7/26/2018	9:45 AM	108	5	17600
7/26/2018	9:55 AM	114.6	5	17650
7/26/2018	10:05 AM	117.8	5	17700
7/26/2018	10:15 AM	124.6	5	17750
7/26/2018	10:25 AM	132.3	5	17800
7/26/2018	10:35 AM	135.8	5	17850
7/26/2018	10:45 AM	139.2	5	17900
7/26/2018	10:55 AM	143.5	5	17950
7/26/2018	11:05 AM	145	5	18000
7/26/2018	11:15 AM	152.3	5	18050
7/26/2018	11:25 AM	161.2	5	18100
7/26/2018	11:35 AM	165.5	5	18150
7/26/2018	11:45 AM	171.1	5	18200

7/26/2018	11:55 AM	180	5	18250
7/26/2018	12:05 PM	187.4	5	18300
7/26/2018	12:15 PM	193.1	5	18350
7/26/2018	12:25 PM	194.3	5	18400
7/26/2018	12:35 PM	200.2	5	18450
7/26/2018	12:45 PM	206	5	18500
7/26/2018	12:55 PM	210	5	18550
7/26/2018	1:05 PM	210	5	18600
7/26/2018	1:15 PM	210	5	18650
7/26/2018	1:25 PM	212	5	18700
7/26/2018	1:35 PM	218	5	18750
7/26/2018	1:45 PM	224	4	18800
7/26/2018	1:55 PM	220	4	18840
7/26/2018	2:05 PM	220	4	18880
7/26/2018	2:15 PM	220	4	18920
7/26/2018	2:25 PM	220	4	18967
7/26/2018	2:35 PM	220	4	19030
7/26/2018	2:45 PM	220	4	19090
7/26/2018	2:55 PM	220	4	19150
7/26/2018	3:05 PM	220	4	19210
7/26/2018	3:15 PM	220	4	19270



Wednesday, August 01, 2018

Attn: Walter Sepelak
HRP Associates Inc.
999 Oronoque Lane
Stratford CT 06614

Project ID: CTD4056FW
Sample ID#s: CA98561

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

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

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

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

Sincerely yours,

A handwritten signature in black ink that reads "Phyllis Shiller". The signature is written in a cursive style.

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



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

Analysis Report

August 01, 2018

FOR: Attn: Walter Sepelak
 HRP Associates Inc.
 999 Oronoque Lane
 Stratford CT 06614

Sample Information

Matrix: DRINKING WATER
 Location Code: HRPSTRAT
 Rush Request: 48 Hour
 P.O.#:

Custody Information

Collected by:
 Received by: CP
 Analyzed by: see "By" below

Date

07/26/18
 07/26/18

Time

13:24
 14:14

Laboratory Data

SDG ID: GCA98561
 Phoenix ID: CA98561

Project ID: CTD4056FW
 Client ID: SUPPLY WELL

Parameter	Result	RL/ PQL	DIL	Units	AL	MCL	MCLG	Date/Time	By	Reference
Arsenic	0.0024	0.0005	1	mg/L		0.01		07/27/18	RS	E200.9/SM3113B-2.2/-9
Arsenic, Dissolved	0.0020	0.0011	1	mg/L		0.01		07/27/18	RS	E200.9-2.2
Iron	3.14	0.010	1	mg/L			0.3	07/27/18	EK	E200.7
*** Iron exceeds Secondary Goal of 0.3 ***										
Hardness (CaCO3)	77.2	0.1	1	mg/L				07/27/18		E200.7
Manganese	0.151	0.001	1	mg/L			0.05	07/27/18	EK	E200.7
*** Manganese exceeds Secondary Goal of 0.05 ***										
Sodium	7.15	0.10	1	mg/L			28	07/27/18	EK	E200.7
Escherichia Coli	Absent	0	1	/100 mls		0		07/26/18 16:15	AJ/RVM	SM9223B-97
Total Coliforms	Present	0	1	/100 mls		0		07/26/18 16:15	AJ/RVM	SM9223B-04
*** Total Coliforms exceeds POTABILITY level of 0 ***										
Chloride	3.8	3.0	1	mg/L		250		07/27/18	B/E/G	E300.0
Color, Apparent	50.0	5.00	5	Color Units			15	07/26/18 18:40	O	SM2120B-11
*** Color, Apparent exceeds Secondary Goal of 15 ***										
Nitrite as Nitrogen	< 0.004	0.004	1	mg/L		1		07/27/18 02:46	B/E/G	E300.0
Nitrate as Nitrogen	< 0.01	0.01	1	mg/L		10		07/27/18 02:46	B/E/G	E300.0
Odor at Room Temperature	< 1	1	1	T.O.N.			3	07/26/18 18:41	O	SM2150B-97
pH	7.71	1.00	1	pH Units			6.5-8.5	07/26/18 22:16	RR/EG	SM4500-H B-11
Sulfate	24.5	3.0	1	mg/L			250	07/27/18	B/E/G	E300.0-2.1
Turbidity	38.2	0.200	1	NTU			5	07/26/18 22:16	RR/EG	SM2130B-11
*** Turbidity exceeds Secondary Goal of 5 ***										
Filtration	Completed							07/26/18	AG	0.45um Filter
Total Metal Digestion	Completed							07/26/18	T	E200.9
Dissolved Metals Preparation	Completed							07/26/18	AG	SW3005A
Total Metal Digestion	Completed							07/26/18	T	E200.5/E200.7
Radon Test	2803	51		pCi/l			5000	07/27/18	*	SM7500-Rn-07

Volatiles

1,1,1,2-Tetrachloroethane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
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Parameter	Result	RL/ PQL	DIL	Units	AL	MCL	MCLG	Date/Time	By	Reference
1,1,1-Trichloroethane	ND	0.50	1	ug/L		200		07/26/18	JLI	E524.2
1,1,2,2-Tetrachloroethane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
1,1,2-Trichloroethane	ND	0.50	1	ug/L		5		07/26/18	JLI	E524.2
1,1,2-Trichlorotrifluoroethane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
1,1-Dichloroethane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
1,1-Dichloroethene	ND	0.50	1	ug/L		7		07/26/18	JLI	E524.2
1,1-Dichloropropene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
1,2,3-Trichlorobenzene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
1,2,3-Trichloropropane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
1,2,4-Trichlorobenzene	ND	0.50	1	ug/L		70		07/26/18	JLI	E524.2
1,2,4-Trimethylbenzene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
1,2-Dichlorobenzene	ND	0.50	1	ug/L		600		07/26/18	JLI	E524.2
1,2-Dichloroethane	ND	0.50	1	ug/L		5		07/26/18	JLI	E524.2
1,2-Dichloropropane	ND	0.50	1	ug/L		5		07/26/18	JLI	E524.2
1,3,5-Trimethylbenzene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
1,3-Dichlorobenzene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
1,3-Dichloropropane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
1,4-Dichlorobenzene	ND	0.50	1	ug/L		75		07/26/18	JLI	E524.2
2,2-Dichloropropane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
2-Chlorotoluene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
4-Chlorotoluene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Benzene	ND	0.50	1	ug/L		5		07/26/18	JLI	E524.2
Bromobenzene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Bromochloromethane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Bromodichloromethane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Bromoform	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Bromomethane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Carbon tetrachloride	ND	0.50	1	ug/L		5		07/26/18	JLI	E524.2
Chlorobenzene	ND	0.50	1	ug/L		100		07/26/18	JLI	E524.2
Chloroethane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Chloroform	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Chloromethane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
cis-1,2-Dichloroethene	ND	0.50	1	ug/L		70		07/26/18	JLI	E524.2
cis-1,3-Dichloropropene	ND	0.40	1	ug/L				07/26/18	JLI	E524.2
Dibromochloromethane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Dibromomethane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Dichlorodifluoromethane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Ethylbenzene	ND	0.50	1	ug/L		700		07/26/18	JLI	E524.2
Hexachlorobutadiene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Isopropylbenzene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
m&p-Xylene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Methyl t-butyl ether (MTBE)	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Methylene chloride	ND	0.50	1	ug/L		5		07/26/18	JLI	E524.2
Naphthalene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
n-Butylbenzene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
n-Propylbenzene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
o-Xylene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
p-Isopropyltoluene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
sec-Butylbenzene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2

Parameter	Result	RL/ PQL	DIL	Units	AL	MCL	MCLG	Date/Time	By	Reference
Styrene	ND	0.50	1	ug/L		100		07/26/18	JLI	E524.2
tert-Butylbenzene	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Tetrachloroethene	ND	0.50	1	ug/L		5		07/26/18	JLI	E524.2
Toluene	11	0.50	1	ug/L		1000		07/26/18	JLI	E524.2
Total Trihalomethanes	ND	0.50	1	ug/L		80		07/26/18	JLI	E524.2
Total Xylenes	ND	0.50	1	ug/L		10000		07/26/18	JLI	E524.2
trans-1,2-Dichloroethene	ND	0.50	1	ug/L		100		07/26/18	JLI	E524.2
trans-1,3-Dichloropropene	ND	0.40	1	ug/L				07/26/18	JLI	E524.2
Trichloroethene	ND	0.50	1	ug/L		5		07/26/18	JLI	E524.2
Trichlorofluoromethane	ND	0.50	1	ug/L				07/26/18	JLI	E524.2
Vinyl chloride	ND	0.50	1	ug/L		2		07/26/18	JLI	E524.2
QA/QC Surrogates										
% 1,2-dichlorobenzene-d4	93		1	%	NA	NA	NA	07/26/18	JLI	70 - 130 %
% Bromofluorobenzene	99		1	%	NA	NA	NA	07/26/18	JLI	70 - 130 %
Volatile Library Search	Completed							07/27/18	JLI	

C = This parameter is subcontracted.

RL/PQL=Reporting/Practical Quantitation Level DIL=Dilution (analysis required diluting to evaluate) ND=Not Detected
 BRL=Below Reporting Level (less than the reporting level, the lowest amount the laboratory can detect and report.)

AL = Action Level MCL = Maximum Contaminant Level MCLG = Maximum Contaminant Level Goal

QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Maximum Contaminant Level (MCL) (Lower of): 40 CFR Part 141; CT Public Health Code 19-13-B102. The highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards.

Action Level (AL): 40 CFR Part 141.80.

Secondary DW Maximum Contaminant Level Goal (MCLG): (Lower of): 40 CFR Part 141; 40 CFR Part 143; CT Public Health Code 19-13-B102. The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are non-enforceable public health goals.

For public water systems, chloride has a maximum contaminant level (MCL) of 250 mg/L.

MCLs are established for total recoverable metals, and are not intended to be compared to the dissolved metal concentrations reported on this sample.

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

Radon Test (SM7500-Rn-07) was analyzed by CT certified lab #PH-0466.

Bacteria Analysis Comment: This sample was treated for chlorine at time of sample collection with sodium thiosulfate.

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

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

August 01, 2018

Reviewed and Released by: Rashmi Makol, Project Manager



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

August 01, 2018

QA/QC Data

SDG I.D.: GCA98561

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 440602A (mg/L), QC Sample No: CA97424 (CA98561)													
<u>ICP Metals - Aqueous</u>													
Iron	BRL	0.010				103			99.3			85 - 115	20
Manganese	BRL	0.0010				104			100			85 - 115	20
Sodium	BRL	0.10				101			NC			85 - 115	20
Comment: This batch does not include a duplicate.													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 440600A (mg/L), QC Sample No: CA98069 (CA98561)													
Arsenic	BRL	0.001				106			105			85 - 115	20
Comment: This batch does not include a duplicate.													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 440626 (mg/L), QC Sample No: CA98561 (CA98561)													
Arsenic (Dissolved)	BRL	0.004	0.0020	<0.004	NC	109			112				



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

August 01, 2018

QA/QC Data

SDG I.D.: GCA98561

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 440657 (pH), QC Sample No: CA98363 (CA98561)													
pH			7.00	6.84	2.30	98.8						85 - 115	20
QA/QC Batch 440667 (NTU), QC Sample No: CA98363 (CA98561)													
Turbidity	BRL	0.200	4.15	3.87	7.00	97.8						85 - 115	20
QA/QC Batch 440751 (mg/L), QC Sample No: CA98561 (CA98561)													
Chloride	BRL	3.0	3.8	3.7	NC	105			106			90 - 110	20
Nitrate as Nitrogen	BRL	0.05	<0.01	<0.05	NC	101			101			90 - 110	20
Nitrite as Nitrogen	BRL	0.004	<0.004	<0.004	NC	101			99.4			90 - 110	20
Sulfate	BRL	3.0	24.5	24.1	1.60	101			109			90 - 110	20
QA/QC Batch 440752 (mg/L), QC Sample No: CA98846 (CA98561)													
Chloride	BRL	3.0	6.1	5.8	NC	105			105			90 - 110	20
Nitrate as Nitrogen	BRL	0.05	<0.05	<0.05	NC	101			93.8			90 - 110	20
Nitrite as Nitrogen	BRL	0.01	<0.01	<0.01	NC	96.1			90.9			90 - 110	20
Sulfate	BRL	3.0	5.1	4.9	NC	102			103			90 - 110	20



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

August 01, 2018

QA/QC Data

SDG I.D.: GCA98561

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 440703 (ug/L), QC Sample No: CA98802 (CA98561)										
<u>Volatiles - Drinking Water</u>										
1,1,1,2-Tetrachloroethane	ND	0.50	105	108	2.8				70 - 130	30
1,1,1-Trichloroethane	ND	0.50	103	106	2.9				70 - 130	30
1,1,2,2-Tetrachloroethane	ND	0.50	107	109	1.9				70 - 130	30
1,1,2-Trichloroethane	ND	0.50	103	105	1.9				70 - 130	30
1,1-Dichloroethane	ND	0.50	103	106	2.9				70 - 130	30
1,1-Dichloroethene	ND	0.50	104	108	3.8				70 - 130	30
1,1-Dichloropropene	ND	0.40	105	108	2.8				70 - 130	30
1,2,3-Trichlorobenzene	ND	0.50	102	105	2.9				70 - 130	30
1,2,3-Trichloropropane	ND	0.50	100	104	3.9				70 - 130	30
1,2,4-Trichlorobenzene	ND	0.50	101	104	2.9				70 - 130	30
1,2,4-Trimethylbenzene	ND	0.50	101	103	2.0				70 - 130	30
1,2-Dichlorobenzene	ND	0.50	100	103	3.0				70 - 130	30
1,2-Dichloroethane	ND	0.50	103	105	1.9				70 - 130	30
1,2-Dichloropropane	ND	0.50	104	107	2.8				70 - 130	30
1,3,5-Trimethylbenzene	ND	0.50	102	104	1.9				70 - 130	30
1,3-Dichlorobenzene	ND	0.50	100	102	2.0				70 - 130	30
1,3-Dichloropropane	ND	0.50	104	106	1.9				70 - 130	30
1,4-Dichlorobenzene	ND	0.50	97	104	7.0				70 - 130	30
2,2-Dichloropropane	ND	0.50	102	104	1.9				70 - 130	30
2-Chlorotoluene	ND	0.50	101	104	2.9				70 - 130	30
4-Chlorotoluene	ND	0.50	100	104	3.9				70 - 130	30
Benzene	ND	0.50	103	105	1.9				70 - 130	30
Bromobenzene	ND	0.50	103	105	1.9				70 - 130	30
Bromochloromethane	ND	0.50	103	104	1.0				70 - 130	30
Bromodichloromethane	ND	0.50	106	109	2.8				70 - 130	30
Bromoform	ND	0.50	103	106	2.9				70 - 130	30
Bromomethane	ND	0.50	98	103	5.0				70 - 130	30
Carbon tetrachloride	ND	0.50	105	110	4.7				70 - 130	30
Chlorobenzene	ND	0.50	101	104	2.9				70 - 130	30
Chloroethane	ND	0.50	102	104	1.9				70 - 130	30
Chloroform	ND	0.50	102	103	1.0				70 - 130	30
Chloromethane	ND	0.50	90	93	3.3				70 - 130	30
cis-1,2-Dichloroethene	ND	0.50	102	107	4.8				70 - 130	30
cis-1,3-Dichloropropene	ND	0.40	104	105	1.0				70 - 130	30
Dibromochloromethane	ND	0.50	110	114	3.6				70 - 130	30
Dibromomethane	ND	0.50	102	104	1.9				70 - 130	30
Dichlorodifluoromethane	ND	0.50	93	96	3.2				70 - 130	30
Ethylbenzene	ND	0.50	104	106	1.9				70 - 130	30
Hexachlorobutadiene	ND	0.40	102	106	3.8				70 - 130	30
Isopropylbenzene	ND	0.50	102	104	1.9				70 - 130	30
m&p-Xylene	ND	0.50	101	105	3.9				70 - 130	30

QA/QC Data

SDG I.D.: GCA98561

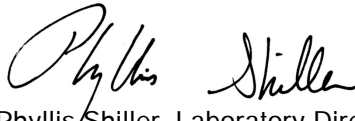
Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Methyl t-butyl ether (MTBE)	ND	0.50	100	103	3.0				70 - 130	30
Methylene chloride	ND	0.50	101	104	2.9				70 - 130	30
Naphthalene	ND	0.50	103	106	2.9				70 - 130	30
n-Butylbenzene	ND	0.50	105	108	2.8				70 - 130	30
n-Propylbenzene	ND	0.50	102	104	1.9				70 - 130	30
o-Xylene	ND	0.50	102	104	1.9				70 - 130	30
p-Isopropyltoluene	ND	0.50	103	105	1.9				70 - 130	30
sec-Butylbenzene	ND	0.50	107	110	2.8				70 - 130	30
Styrene	ND	0.50	104	106	1.9				70 - 130	30
tert-Butylbenzene	ND	0.50	102	105	2.9				70 - 130	30
Tetrachloroethene	ND	0.50	102	107	4.8				70 - 130	30
Toluene	ND	0.50	103	106	2.9				70 - 130	30
trans-1,2-Dichloroethene	ND	0.50	105	107	1.9				70 - 130	30
trans-1,3-Dichloropropene	ND	0.40	100	102	2.0				70 - 130	30
Trichloroethene	ND	0.50	104	107	2.8				70 - 130	30
Trichlorofluoromethane	ND	0.50	96	98	2.1				70 - 130	30
Trichlorotrifluoroethane	ND	0.50	101	103	2.0				70 - 130	30
Vinyl chloride	ND	0.50	99	100	1.0				70 - 130	30
% 1,2-dichlorobenzene-d4	93	%	103	104	1.0				70 - 130	30
% Bromofluorobenzene	100	%	102	103	1.0				70 - 130	30

Comment:

This batch consists of a blank, LCS and LCSD.

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
 August 01, 2018

Wednesday, August 01, 2018

Criteria: CT: DW, GWP, SWP

State: CT

Sample Criteria Exceedances Report

GCA98561 - HRPSTRAT

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CA98561	COLOR	Color, Apparent	EPA / 40 CFR 141 DW / 143.3 Secondary Goals	50.0	5.00	15	15	Color Units
CA98561	FE-DW	Iron	EPA / 40 CFR 141 DW / 143.3 Secondary Goals	3.14	0.010	0.3	0.06	mg/L
CA98561	MN-DW	Manganese	EPA / 40 CFR 141 DW / 143.3 Secondary Goals	0.151	0.001	0.05	0.01	mg/L
CA98561	T-COLIDW	Total Coliforms	EPA / 40 CFR 141 DW / 141.63 Biologicals MCLs	Present	0	0		/100 mls
CA98561	T-COLIDW	Total Coliforms	EPA / 40 CFR 141 DW / 141.63 Biologicals MCLs	Present	0	0		/100 mls
CA98561	TURB-WM6	Turbidity	EPA / 40 CFR 141 DW / 141.63 Biologicals MCLs	38.2	0.200	5	5	NTU

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.



REASONABLE CONFIDENCE PROTOCOL LABORATORY ANALYSIS QA/QC CERTIFICATION FORM

Laboratory Name: Phoenix Environmental Labs, Inc.

Client: HRP Associates Inc.

Project Location: CTD4056FW

Project Number:

Laboratory Sample ID(s): CA98561

Sampling Date(s): 7/26/2018

List RCP Methods Used (e.g., 8260, 8270, et cetera) None

1	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the CT DEP method-specific Reasonable Confidence Protocol documents?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1A	Were the method specified preservation and holding time requirements met?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1B	<u><i>VPH and EPH methods only:</i></u> Was the VPH or EPH method conducted without significant modifications (see section 11.3 of respective RCP methods)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
2	Were all samples received by the laboratory in a condition consistent with that described on the associated Chain-of-Custody document(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
3	Were samples received at an appropriate temperature (< 6 Degrees C)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
4	Were all QA/QC performance criteria specified in the CTDEP Reasonable Confidence Protocol documents achieved?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
5	a) Were reporting limits specified or referenced on the chain-of-custody? b) Were these reporting limits met?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
6	For each analytical method referenced in this laboratory report package, were results reported for all constituents identified in the method-specific analyte lists presented in the Reasonable Confidence Protocol documents?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
7	Are project-specific matrix spikes and laboratory duplicates included in the data set?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Notes: For all questions to which the response was "No" (with the exception of question #7), additional information must be provided in an attached narrative. If the answer to question #1, #1A or 1B is "No", the data package does not meet the requirements for "Reasonable Confidence". This form may not be altered and all questions must be answered.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete.

Authorized Signature: Rashmi Makol **Position:** Project Manager

Printed Name: Rashmi Makol **Date:** Wednesday, August 01, 2018

Name of Laboratory Phoenix Environmental Labs, Inc.

This certification form is to be used for RCP methods only.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
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RCP Certification Report

August 01, 2018

SDG I.D.: GCA98561

SDG Comments

Metals Analysis:

The client requested a site specific non RCP list of elements.

Volatiles Analysis:

The client requested volatiles by 524.2. This method has a shorter list of compounds than the RCP volatile list. The following compounds from the RCP Volatile analyte list were not reported: 2- Butanone (MEK), 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acetone, Acrylonitrile, Carbon Disulfide, 1,2-Dibromoethane, Dibromochloropropane, Tetrahydrofuran (THF), trans-1,4-dichloro-2-butene, Trichlorotrifluoroethane.

AA Metals (AS) Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

PE600-2 07/27/18 09:46

Rick Schweitzer, Chemist 07/27/18

CA98561

The initial calibration met criteria.

The continuing calibration standards met criteria for all the elements reported. The linear range is defined daily by the calibration range.

The continuing calibration blanks were less than the reporting level for the elements reported.

The CRDL met criteria.

The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.

The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

The following samples did not meet analytical spike criteria: None.

AA Metals (AS-DW) Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

PE600-2 07/27/18 09:46

Rick Schweitzer, Chemist 07/27/18

CA98561

Any sample below with an analytical spike recovery outside of 85-115% was re-analyzed at a dilution with a passing analytical spike recovery.

The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.

The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

The following samples did not meet analytical spike criteria: None.

QC (Batch Specific):

Batch 40600A (CA98069)

CA98561

All LCS recoveries were within 85 - 115 with the following exceptions: None.

This batch does not include a duplicate.

Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.

IC

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.



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RCP Certification Report

August 01, 2018

SDG I.D.: GCA98561

IC

Instrument:

IC 07/26/18-3 Tara Banning, Chemist 07/26/18

CA98561

The initial calibration met all criteria including a standard run at the reporting level.
All method verification standards and blanks met criteria.

QC (Batch Specific):

Batch 440752 (CA98846)

CA98561

All LCS recoveries were within 90 - 110 with the following exceptions: None.

QC (Site Specific):

Batch 440751 (CA98561)

CA98561

All LCS recoveries were within 90 - 110 with the following exceptions: None.
All MS recoveries were within 90 - 110 with the following exceptions: None.

ICP DW Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

BLUE 07/27/18 09:57 Emily Kolominskaya, Chemist 07/27/18

CA98561

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 40602A (CA97424)

CA98561

All LCS recoveries were within 85 - 115 with the following exceptions: None.
This batch does not include a duplicate.
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.

VOA-524

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument:

CHEM21 07/26/18-2 Jane Li, Chemist 07/26/18

CA98561



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RCP Certification Report

August 01, 2018

SDG I.D.: GCA98561

VOA-524

Initial Calibration Verification (CHEM21/524_0723):

100% of target compounds met criteria.

The following compounds had %RSDs >20%: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet a minimum response factors: None.

524 Method Continuing Calibration Verification (CHEM21/0726_15-524_0723):

Internal standard areas were within 70-130% of the initial calibration with the following exceptions: None.

100% of the target compounds met criteria. The following compounds did not meet minimum % deviations: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 440703 (CA98802)

CA98561

All LCS recoveries were within 70 - 130 with the following exceptions: None.

All LCSD recoveries were within 70 - 130 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

This batch consists of a blank, LCS and LCSD.

Temperature Narration

The samples were received at 4.6C with cooling initiated.

(Note acceptance criteria for relevant matrices is above freezing up to 6°C)

