

1005 BOSTON POST ROAD
MADISON, CT 06443



ENVIRONMENTAL
CONSULTING LABORATORIES, INC.

Phone 203-245-0568
Fax 203-318-0830
Connecticut Certification PH-0535
www.eclinonline.com

August 7, 2018

Town of Old Lyme WPCA
Attn: Richard Prendergast
Town Hall
82 Lyme Street
Old Lyme, Ct 06371

RE: Monitoring Well Test Results

Dear Mr Prendergast,

Enclosed is the report of test results for samples collected on July 30, 2018.

Please contact me should you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read 'David C. Barris', is written over the typed name and title.

David C. Barris
Laboratory Director

Enclosure

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REPORT OF TESTS

REPORT PREPARED FOR:

Town of Old Lyme WPCA
83 Lyme Street
Old Lyme, CT 06371

REPORT PREPARED BY:

A blue ink signature of David C. Barris, Laboratory Director. The signature is fluid and cursive, written in a professional style.

David C. Barris
Laboratory Director

ENVIRONMENTAL CONSULTING LABORATORIES, INC.
1005 Boston Post Road
Madison, CT 06443

REPORT DATE: August 7, 2018

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INTRODUCTION

ENVIRONMENTAL CONSULTING LABORATORIES, INC., is a State of Connecticut certified public health laboratory. Dedicated to servicing our clients, we offer comprehensive, cost-effective environmental consulting and testing services. Analytical capabilities include testing of industrial effluents, groundwater, hazardous wastes, sewage, sludge, sediment, soils. All sampling and analytical procedures are in accordance with Federal and State regulations.

Environmental Consulting Laboratories, Inc., maintains strict quality control and assurance procedures to ensure data that can be used with confidence. Strict adherence to EPA approved methods, blanks, standards, spikes, and duplicate sample analyses are routine lab practice. In addition, Environmental Consulting Laboratories, Inc., participates in EPA and Connecticut proficiency performance evaluations.

SAMPLE & SITE IDENTIFICATION

Ground water samples were collected by Environmental Consulting Laboratories, Inc., on July 30, 2018. Monitoring wells are identified as HN-1-98, HN-2-98, HN-3-98, HN-4N, HN-5N, HN-6, HN-7, HN-8, HN-9, HN-10 and HN-11. See Site Map in Appendix B

SAMPLING METHODOLOGY

Groundwater samples were taken in accordance with Town of Old Lyme Groundwater Monitoring Standard Operating Procedures. See document in Appendix D.

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Report of Analysis

Name: Old Lyme Town Hall
c/o WPCA
82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 119219
Sample Type: Groundwater
Sample Source: Sewer Avoidance Monitoring - Wells
Sampler: ECL - MB

Sample Date: 7/30/2018

Receipt Date: 7/30/2018

Report Date: 8/7/2018

Sample Site: HN-7

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	7/30/2018	JB
Coliform, Total	<10	MPN/100mL	Colilert-18	10	7/30/2018	JB
Enterococcus Bacteria	<10	MPN/100mL	Enterolert	10	7/30/2018	JB
Fecal Coliform Bacteria	<10	MPN/100mL	SM9222D	10	7/30/2018	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	7/30/2018	JB
Chemical						
Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	8/2/2018	KC
Chloride	164	mg/L	EPA300.0	0.5	7/31/2018	JB
Nitrate as N	0.86	mg/L	EPA300.0	0.1	7/31/2018	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	7/31/2018	JB
Phosphorous -Total as P	<0.04	mg/L	EPA 200.7	0.04	8/6/2018	JM
TKN as N	1.27	mg/L	4500NorgC	0.5	8/2/2018	KC
Total Nitrogen as N	2.13	mg/L	CALC	1	8/6/2018	KC
Physical						
Conductivity	629	umhos/cm	SM2510B	1	7/30/2018	JB
Turbidity	45	NTU	180.1	0.05	7/30/2018	JB


DAVID BARRIS - LABORATORY DIRECTOR

ND = Not Detected

Comments < = equals less than our method detection limit.

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Report of Analysis

Name: Old Lyme Town Hall
c/o WPCA
82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 119220
Sample Type: Groundwater
Sample Source: Sewer Avoidance Monitoring - Wells
Sampler: ECL - MB

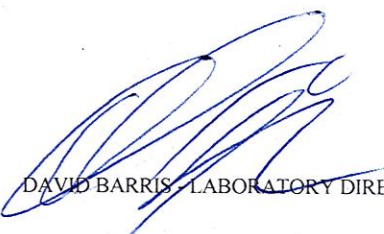
Sample Date: 7/30/2018

Receipt Date: 7/30/2018

Report Date: 8/7/2018

Sample Site: HN-6

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	7/30/2018	JB
Coliform, Total	473	MPN/100mL	Colilert-18	0	7/30/2018	JB
Enterococcus Bacteria	<10	MPN/100mL	Enterolert	10	7/30/2018	JB
Fecal Coliform Bacteria	<10	MPN/100mL	SM9222D	10	7/30/2018	JB
Fecal Strep Bacteria	20	col/100ml	SM9230	10	7/30/2018	JB
Chemical						
Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	8/2/2018	KC
Chloride	76.2	mg/L	EPA300.0	0.5	7/31/2018	JB
Nitrate as N	1.76	mg/L	EPA300.0	0.1	7/31/2018	JB
Nitrite as N	0.01	mg/L	EPA300.0	0.01	7/31/2018	JB
Phosphorous -Total as P	ND	mg/L	EPA 200.7	0.04	8/6/2018	JM
TKN as N	1.47	mg/L	4500NorgC	0.5	8/2/2018	KC
Total Nitrogen as N	3.24	mg/L	CALC	1	8/6/2018	KC
Physical						
Conductivity	335	umhos/cm	SM2510B	1	7/30/2018	JB
Turbidity	2.9	NTU	180.1	0.05	7/30/2018	JB


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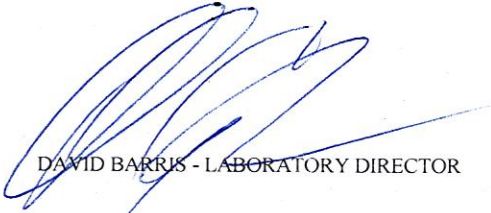
Report of Analysis

Name: Old Lyme Town Hall
c/o WPCA
82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 119221
Sample Type: Groundwater
Sample Source: Sewer Avoidance Monitoring - Wells
Sampler: ECL - MB

Sample Date: 7/30/2018
Receipt Date: 7/30/2018
Report Date: 8/7/2018
Sample Site: HN-1-98

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	7/30/2018	JB
Coliform, Total	10	MPN/100mL	Colilert-18	0	7/30/2018	JB
Enterococcus Bacteria	<10	MPN/100mL	Enterolert	10	7/30/2018	JB
Fecal Coliform Bacteria	<10	MPN/100mL	SM9222D	10	7/30/2018	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	7/30/2018	JB
Chemical						
Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	8/2/2018	KC
Chloride	22.2	mg/L	EPA300.0	0.5	7/31/2018	JB
Nitrate as N	8.02	mg/L	EPA300.0	0.1	7/31/2018	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	7/31/2018	JB
Phosphorous -Total as P	0.04	mg/L	EPA 200.7	0.04	8/6/2018	JM
TKN as N	0.98	mg/L	4500NorgC	0.5	8/2/2018	KC
Total Nitrogen as N	9.00	mg/L	CALC	1	8/6/2018	KC
Physical						
Conductivity	180	umhos/cm	SM2510B	1	7/30/2018	JB
Turbidity	8.0	NTU	180.1	0.05	7/30/2018	JB


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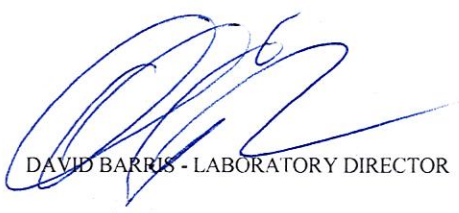
Report of Analysis

Name: Old Lyme Town Hall
c/o WPCA
82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 119222
Sample Type: Groundwater
Sample Source: Sewer Avoidance Monitoring - Wells
Sampler: ECL - MB

Sample Date: 7/30/2018
Receipt Date: 7/30/2018
Report Date: 8/7/2018
Sample Site: HN-8

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	63	MPN/100mL	Colilert-18	0	7/30/2018	JB
Coliform, Total	>24196	MPN/100mL	Colilert-18	10	7/30/2018	JB
Enterococcus Bacteria	4352	MPN/100mL	Enterolert	10	7/30/2018	JB
Fecal Coliform Bacteria	52	MPN/100mL	SM9222D	10	7/30/2018	JB
Fecal Strep Bacteria	10	col/100ml	SM9230	10	7/30/2018	JB
Chemical						
Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	8/2/2018	KC
Chloride	84.3	mg/L	EPA300.0	0.5	7/31/2018	JB
Nitrate as N	1.57	mg/L	EPA300.0	0.1	7/31/2018	JB
Nitrite as N	0.02	mg/L	EPA300.0	0.01	7/31/2018	JB
Phosphorous -Total as P	1.10	mg/L	EPA 200.7	0.04	8/6/2018	JM
TKN as N	2.11	mg/L	4500NorgC	0.5	8/2/2018	KC
Total Nitrogen as N	3.70	mg/L	CALC	1	8/6/2018	KC
Physical						
Conductivity	355	umhos/cm	SM2510B	1	7/30/2018	JB
Turbidity	600	NTU	180.1	0.05	7/30/2018	JB


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Report of Analysis

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Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 119223
Sample Type: Groundwater
Sample Source: Sewer Avoidance Monitoring - Wells
Sampler: ECL - MB

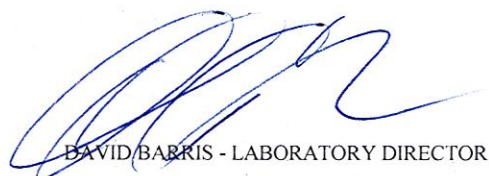
Sample Date: 7/30/2018

Receipt Date: 7/30/2018

Report Date: 8/7/2018

Sample Site: HN-5N

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	10	MPN/100mL	Colilert-18	0	7/30/2018	JB
Coliform, Total	>24196	MPN/100mL	Colilert-18	10	7/30/2018	JB
Enterococcus Bacteria	373	MPN/100mL	Enterolert	10	7/30/2018	JB
Fecal Coliform Bacteria	20	MPN/100mL	SM9222D	10	7/30/2018	JB
Fecal Strep Bacteria	20	col/100ml	SM9230	10	7/30/2018	JB
Chemical						
Ammonia as N	7.90	mg/L	ASTM D6919-03	0.05	8/2/2018	KC
Chloride	37.2	mg/L	EPA300.0	0.5	7/31/2018	JB
Nitrate as N	0.19	mg/L	EPA300.0	0.1	7/31/2018	JB
Nitrite as N	0.01	mg/L	EPA300.0	0.01	7/31/2018	JB
Phosphorous -Total as P	0.48	mg/L	EPA 200.7	0.04	8/6/2018	JM
TKN as N	9.85	mg/L	4500NorgC	0.5	8/2/2018	KC
Total Nitrogen as N	10.1	mg/L	CALC	1	8/6/2018	KC
Physical						
Conductivity	402	umhos/cm	SM2510B	1	7/30/2018	JB
Turbidity	700	NTU	180.1	0.05	7/30/2018	JB

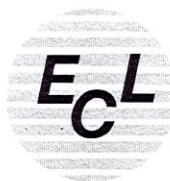


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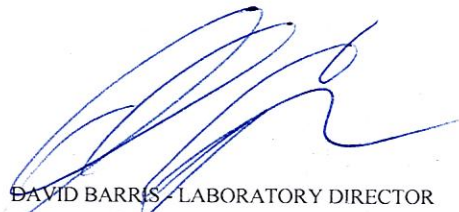
Report of Analysis

Name: Old Lyme Town Hall
c/o WPCA
82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 119224
Sample Type: Groundwater
Sample Source: Sewer Avoidance Monitoring - Wells
Sampler: ECL - MB

Sample Date: 7/30/2018
Receipt Date: 7/30/2018
Report Date: 8/7/2018
Sample Site: HN-3-98

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	20	MPN/100mL	Colilert-18	0	7/30/2018	JB
Coliform, Total	345	MPN/100mL	Colilert-18	0	7/30/2018	JB
Enterococcus Bacteria	104	MPN/100mL	Enterolert	10	7/30/2018	JB
Fecal Coliform Bacteria	31	MPN/100mL	SM9222D	10	7/30/2018	JB
Fecal Strep Bacteria	10	col/100ml	SM9230	10	7/30/2018	JB
Chemical						
Ammonia as N	0.05	mg/L	ASTM D6919-03	0.05	8/2/2018	KC
Chloride	18.4	mg/L	EPA300.0	0.5	7/31/2018	JB
Nitrate as N	11.8	mg/L	EPA300.0	0.1	7/31/2018	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	7/31/2018	JB
Phosphorous -Total as P	<0.04	mg/L	EPA 200.7	0.04	8/6/2018	JM
TKN as N	5.26	mg/L	4500NorgC	0.5	8/2/2018	KC
Total Nitrogen as N	17.1	mg/L	CALC	1	8/6/2018	KC
Physical						
Conductivity	418	umhos/cm	SM2510B	1	7/30/2018	JB
Turbidity	150	NTU	180.1	0.05	7/30/2018	JB


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Report of Analysis

Name: Old Lyme Town Hall
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82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 119225
Sample Type: Groundwater
Sample Source: Sewer Avoidance Monitoring - Wells
Sampler: ECL - MB

Sample Date: 7/30/2018

Receipt Date: 7/30/2018

Report Date: 8/7/2018

Sample Site: HN-11

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	7/30/2018	JB
Coliform, Total	>24196	MPN/100mL	Colilert-18	10	7/30/2018	JB
Enterococcus Bacteria	84	MPN/100mL	Enterolert	10	7/30/2018	JB
Fecal Coliform Bacteria	<10	MPN/100mL	SM9222D	10	7/30/2018	JB
Fecal Strep Bacteria	560	col/100ml	SM9230	10	7/30/2018	JB
Chemical						
Ammonia as N	<0.05	mg/L	ASTM D6919-03	0.05	8/2/2018	KC
Chloride	2583	mg/L	EPA300.0	0.5	7/31/2018	JB
Nitrate as N	ND	mg/L	EPA300.0	0.1	7/31/2018	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	7/31/2018	JB
Phosphorous -Total as P	1.20	mg/L	EPA 200.7	0.04	8/6/2018	JM
TKN as N	7.48	mg/L	4500NorgC	0.5	8/2/2018	KC
Total Nitrogen as N	7.48	mg/L	CALC	1	8/6/2018	KC
Physical						
Conductivity	6260	umhos/cm	SM2510B	1	7/30/2018	JB
Turbidity	1500	NTU	180.1	0.05	7/30/2018	JB



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Report of Analysis

Name: Old Lyme Town Hall
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Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 119226
Sample Type: Groundwater
Sample Source: Sewer Avoidance Monitoring - Wells
Sampler: ECL - MB

Sample Date: 7/30/2018
Receipt Date: 7/30/2018
Report Date: 8/7/2018
Sample Site: HN-10

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	7/30/2018	JB
Coliform, Total	>24196	MPN/100mL	Colilert-18	10	7/30/2018	JB
Enterococcus Bacteria	135	MPN/100mL	Enterolert	10	7/30/2018	JB
Fecal Coliform Bacteria	<10	MPN/100mL	SM9222D	10	7/30/2018	JB
Fecal Strep Bacteria	70	col/100ml	SM9230	10	7/30/2018	JB
Chemical						
Ammonia as N	0.89	mg/L	ASTM D6919-03	0.05	8/2/2018	KC
Chloride	1587	mg/L	EPA300.0	0.5	7/31/2018	JB
Nitrate as N	0.47	mg/L	EPA300.0	0.1	7/31/2018	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	7/31/2018	JB
Phosphorous -Total as P	0.91	mg/L	EPA 200.7	0.04	8/6/2018	JM
TKN as N	5.46	mg/L	4500NorgC	0.5	8/2/2018	KC
Total Nitrogen as N	5.93	mg/L	CALC	1	8/6/2018	KC
Physical						
Conductivity	3530	umhos/cm	SM2510B	1	7/30/2018	JB
Turbidity	350	NTU	180.1	0.05	7/30/2018	JB



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Name: Old Lyme Town Hall
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82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 119227
Sample Type: Groundwater
Sample Source: Sewer Avoidance Monitoring - Wells
Sampler: ECL - MB

Sample Date: 7/30/2018
Receipt Date: 7/30/2018
Report Date: 8/7/2018
Sample Site: HN-9

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	7/30/2018	JB
Coliform, Total	41	MPN/100mL	Colilert-18	0	7/30/2018	JB
Enterococcus Bacteria	<10	MPN/100mL	Enterolert	10	7/30/2018	JB
Fecal Coliform Bacteria	<10	MPN/100mL	SM9222D	10	7/30/2018	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	7/30/2018	JB
Chemical						
Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	8/2/2018	KC
Chloride	3554	mg/L	EPA300.0	0.5	7/31/2018	JB
Nitrate as N	0.41	mg/L	EPA300.0	0.1	7/31/2018	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	7/31/2018	JB
Phosphorous -Total as P	0.92	mg/L	EPA 200.7	0.04	8/6/2018	JM
TKN as N	7.48	mg/L	4500NorgC	0.5	8/2/2018	KC
Total Nitrogen as N	7.89	mg/L	CALC	1	8/6/2018	KC
Physical						
Conductivity	8970	umhos/cm	SM2510B	1	7/30/2018	JB
Turbidity	1200	NTU	180.1	0.05	7/30/2018	JB


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Report of Analysis

Name: Old Lyme Town Hall
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82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 119228
Sample Type: Groundwater
Sample Source: Sewer Avoidance Monitoring - Wells
Sampler: ECL - MB

Sample Date: 7/30/2018
Receipt Date: 7/30/2018
Report Date: 8/7/2018
Sample Site: HN-2-98

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	7/30/2018	JB
Coliform, Total	31	MPN/100mL	Colilert-18	0	7/30/2018	JB
Enterococcus Bacteria	<10	MPN/100mL	Enterolert	10	7/30/2018	JB
Fecal Coliform Bacteria	<10	MPN/100mL	SM9222D	10	7/30/2018	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	7/30/2018	JB
Chemical						
Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	8/2/2018	KC
Chloride	26.0	mg/L	EPA300.0	0.5	7/31/2018	JB
Nitrate as N	6.08	mg/L	EPA300.0	0.1	7/31/2018	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	7/31/2018	JB
Phosphorous -Total as P	<0.04	mg/L	EPA 200.7	0.04	8/6/2018	JM
TKN as N	1.37	mg/L	4500NorgC	0.5	8/2/2018	KC
Total Nitrogen as N	7.45	mg/L	CALC	1	8/6/2018	KC
Physical						
Conductivity	240	umhos/cm	SM2510B	1	7/30/2018	JB
Turbidity	4.1	NTU	180.1	0.05	7/30/2018	JB



DAVID BARRIS - LABORATORY DIRECTOR

ND = Not Detected

Comments < = equals less than our method detection limit.

1005 BOSTON POST ROAD
MADISON, CT 06443



ENVIRONMENTAL
CONSULTING LABORATORIES, INC.

Phone 203-245-0568
Fax 203-318-0830
Connecticut Certification PH-0535
www.eclinonline.com

Report of Analysis

Name: Old Lyme Town Hall
c/o WPCA
82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 119229
Sample Type: Groundwater
Sample Source: Sewer Avoidance Monitoring - Wells
Sampler: ECL - MB

Sample Date: 7/30/2018

Receipt Date: 7/30/2018

Report Date: 8/7/2018

Sample Site: HN-4N

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	20	MPN/100mL	Colilert-18	0	7/30/2018	JB
Coliform, Total	>24196	MPN/100mL	Colilert-18	10	7/30/2018	JB
Enterococcus Bacteria	262	MPN/100mL	Enterolert	10	7/30/2018	JB
Fecal Coliform Bacteria	<10	MPN/100mL	SM9222D	10	7/30/2018	JB
Fecal Strep Bacteria	40	col/100ml	SM9230	10	7/30/2018	JB
Chemical						
Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	8/2/2018	KC
Chloride	34.3	mg/L	EPA300.0	0.5	7/31/2018	JB
Nitrate as N	4.26	mg/L	EPA300.0	0.1	7/31/2018	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	7/31/2018	JB
Phosphorous -Total as P	0.93	mg/L	EPA 200.7	0.04	8/6/2018	JM
TKN as N	3.98	mg/L	4500NorgC	0.5	8/2/2018	KC
Total Nitrogen as N	8.24	mg/L	CALC	1	8/6/2018	KC
Physical						
Conductivity	226	umhos/cm	SM2510B	1	7/30/2018	JB
Turbidity	1600	NTU	180.1	0.05	7/30/2018	JB



DAVID BARRIS - LABORATORY DIRECTOR

ND = Not Detected

Comments > 24196 = Greater than test setup dilution setup range.

APPENDIX A

ENRONMENTAL

CONSULTING LABORATORIES, INC.

1005 Boston Post Road
Madison, CT 06443

(203) 245-0568 Phone
(203) 318-0830 Fax

Client: Old Lyme Town Hall Contact: CIO WPCA Richard Prendergast Address: 52 Lyme St. Old Lyme, CT 06371 Phone: 203-641-1237 Email: chairWPCA@oldlyme-ct.gov				Project: Sewer Avoidance Program Monitoring Wells		Required Analysis Total Coliform + Ecoli Fecal Coliform Enterococci, Fecal Strep Phosphorus - Total Nitrate/Nitrite, TKN, TN Ammonia, Chloride Conductivity, pH Turbidity						ECL Sample I.D.#	
System Type:				Samplers Name: (Print) Michael Bond		Number of Containers 7							
Client I.D.	Sampling Location	Date	Time	Water	Sample Type		Grab						
	HN-7	7/30/18	8:17am	X			X						
	HN-6	7/30/18	8:54am	X			X						
	HN-1-98	7/30/18	9:28am	X			X						
	HN-8	7/30/18	9:40am	X			X						
	HN-5N	7/30/18	10:23am	X			X						
	HN-3-98	7/30/18	10:25am	X			X						
	HN-11	7/30/18	11:00am	X			X						
	HN-10	7/30/18	11:25am	X			X						
	HN-9	7/30/18	11:50am	X			X						
	HN-2-98	7/30/18	12:10pm	X			X						
	HN-4 N	7/30/18	12:30pm	X			X						
Relinquished by:				Date 7/30/18		Time 1:15pm		Received by:		Were Samples received within holding time? Y/N Were Samples chilled upon receipt? Y/N Were Samples in appropriate containers? Y/N If No Explain			
Relinquished by:				Date		Time		Received by:		Are containers broken/leaking? Y/N Did Samples need to be split upon receipt? Y/N Were Samples preserved properly? Y/N			

APPENDIX B

APPENDIX C

FIELD WATER QUALITY MEASUREMENTS FORM

[illegible]

FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name) - Old Lyme

Well Number

Date _____

Q

[illegible]

FIELD WATER QUALITY MEASUREMENTS FORM

[illegible]

FIELD WATER QUALITY MEASUREMENTS FORM

[illegible][illegible][illegible]

FIELD WATER QUALITY MEASUREMENTS FORM

Well Number H/W-5N Date 7/30

[illegible]

FIELD WATER QUALITY MEASUREMENTS FORM

[illegible]

[illegible]

FIELD WATER QUALITY MEASUREMENTS FORM

[illegible]

FIELD WATER QUALITY MEASUREMENTS FORM

Well Number 4N-9 Date 7/30

[illegible]

FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name) - Old Lyme

Well Number

Date _____

$$\frac{3.0}{7}$$
[illegible]

FIELD WATER QUALITY MEASUREMENTS FORM

Well Number HN-11 Date 7/30[illegible]

GROUND WATER SAMPLE LOG

1. Sample Location: COL
2. Well Number: HN-1-98
3. Sampled By: MB
4. Date: 7/30
5. Time: 9:20 am
6. Weather:

Cloudy	Cold	Snow
Sunny	Warm	Rain
Hot	Windy	
7. Sample Method: Bailer (Disposable)
8. Depth to bottom of well from measuring point: 20.1 Feet
9. Depth to Water: 12.10 Feet
10. #8 - #9 = LWC: 8 Feet (Length of water column)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
2" Diameter well = $0.163 \times \text{LWC} =$ 1.30 Gallons
4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 3.91 Gallons to purge

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HM-2-98
3. Sampled By: MB
4. Date: 7/30
5. Time: 12:10 pm
6. Weather: Cloudy Cold Snow
 ~~Sunny~~ Warm Rain
 ~~Hot~~ Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 15.6 Feet
9. Depth to Water: 7.7 Feet
10. #8 - #9 = LWC: 7.9 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
 2" Diameter well = $0.163 \times \text{LWC} =$ 1.29 Gallons
 4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
 6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 3.86 Gallons to purge

GROUND WATER SAMPLE LOG

1. Sample Location: CL
2. Well Number: HN-3-98
3. Sampled By: MB
4. Date: 7/30
5. Time: 10:25 AM
6. Weather: ~~Cloudy~~ ~~Cold~~ Snow
 ~~Sunny~~ ~~Warm~~ Rain
 Hot Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 13.0 Feet
9. Depth to Water: 5.9 Feet
10. #8 - #9 = LWC: 7.1 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
 2" Diameter well = $0.163 \times \text{LWC} =$ 1.16 Gallons
 4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
 6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 3.47 Gallons to purge

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HN-4N
3. Sampled By: MB
4. Date: 7/30
5. Time: 12:30pm
6. Weather:
 ~~Cloudy~~ Cold Snow
 ~~Sunny~~ Warm Rain
 ~~Hot~~ Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 16.3 Feet
9. Depth to Water: 10.3 Feet
10. #8 - #9 = LWC: 6 Feet (**Length of water column**)
11. Diameter of inner casings: (2") 4" 6"
12. Volume of water in well:
 (2") Diameter well = $0.163 \times \text{LWC} =$.978 Gallons
 4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
 6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 2.93 Gallons to purge

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HN-SN
3. Sampled By: MB
4. Date: 7/30
5. Time: 10:03am
6. Weather: ~~Cloudy~~ ~~Cold~~ Snow
 ~~Sunny~~ ~~Warm~~ Rain
 Hot Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 12.9 Feet
9. Depth to Water: 5.80 Feet
10. #8 - #9 = LWC: 7.1 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
 2"Diameter well = $0.163 \times \text{LWC} =$ 1.12 Gallons
 4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
 6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 3.48 Gallons to purge

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: H1N6
3. Sampled By: MB
4. Date: 7-30
5. Time: 8:54a
6. Weather: Cloudy Cold Snow
 ~~Sunny~~ ~~Warm~~ Rain
 Hot Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 13.0 Feet
9. Depth to Water: 11.30 Feet
10. #8 - #9 = LWC: 1.7 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
 2" Diameter well = $0.163 \times \text{LWC} =$.278 Gallons
 4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
 6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$.83 - Gallons to purge

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HN-7
3. Sampled By: MB
4. Date: 7/30
5. Time: 8:17am
6. Weather: Cloudy Cold Snow
 Sunny Warm Rain
 Hot Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 16.80 Feet
9. Depth to Water: 10.80 Feet
10. #8 - #9 = LWC: 6 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
2" Diameter well = $0.163 \times \text{LWC} =$ 978 Gallons
4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 2.9 Gallons to purge

GROUND WATER SAMPLE LOG

1. Sample Location: CL
2. Well Number: HN-8
3. Sampled By: MB
4. Date: 7-30
5. Time: 9:40 AM
6. Weather: Cloudy Cold Snow
 ~~Sunny~~ ~~Warm~~ Rain
 Hot Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 11.90 Feet
9. Depth to Water: 7.04 Feet
10. #8 - #9 = LWC: 4.86 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
 2" Diameter well = $0.163 \times \text{LWC} =$ 0.79 Gallons
 4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
 6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 2.38 Gallons to purge

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HW-9
3. Sampled By: MB
4. Date: 7/30
5. Time: 11:50 AM
6. Weather: Cloudy Cold Snow
 Sunny Warm Rain
 Hot Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 11.4 Feet
9. Depth to Water: 3.40 Feet
10. #8 - #9 = LWC: 8.0 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
 2" Diameter well = $0.163 \times \text{LWC} =$ 1.3 Gallons
 4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
 6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 3.91 Gallons to purge

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: H11-10
3. Sampled By: mjb
4. Date: 7/30
5. Time: 11:25a
6. Weather: Cloudy Cold Snow
 ~~Sunny~~ Warm Rain
 Hot Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 11.5 Feet
9. Depth to Water: 4.00 Feet
10. #8 - #9 = LWC: 7.50 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
 2" Diameter well = $0.163 \times \text{LWC} =$ 1.22 Gallons
 4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
 6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 3.67 Gallons to purge

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: 1-N-11
3. Sampled By: MB
4. Date: 7/30
5. Time: 11:00 AM
6. Weather:

Cloudy	Cold	Snow
<u>Sunny</u>	Warm	Rain
Hot	Windy	
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 11.4 Feet
9. Depth to Water: 4.6 Feet
10. #8 - #9 = LWC: 6.8 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
2" Diameter well = $0.163 \times \text{LWC} =$ 1.1 Gallons
4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 3.33 Gallons to purge

APPENDIX D

Town of Old Lyme Ground Water Monitoring

SAMPLING SOP Rev 4 - Environmental Consulting Lab

Groundwater Monitoring Wells

Bailer Purge Technique

Overview:

Stagnant water must be removed from the monitoring well in order to obtain an accurate sample of groundwater for laboratory analysis.

This SOP will address the bailing and sampling procedures to be taken.

Safety:

Prior to sampling, field personnel should conduct a preliminary assessment of the area to determine any safety hazards.

Placement of traffic cones, safety vests and truck hazard lights should be used.

Minimize monitoring well water contact with potential personal protective equipment i.e. safety glasses & nitrile gloves.

Procedure:

Prior to purging the well, observe for any physical problems with monitoring well, ie: lock present, well cap broken or missing, condition of casing, etc.

Measure groundwater to the nearest hundredth of inch record on field sheet with time of measurement. Calculate the volume of standing water to purge a minimum of three volumes using prior readings of depth to bottom, to avoid agitating fines that may have accumulated on the bottom of the well.

A separate new bailer will be used for each well to minimize the potential for cross contamination of sampling equipment.

Lower bailer into monitoring well in a manner as to create minimum water disturbance. Repeat this process until three well volumes have been purged.

Following purging of three well volumes, measure pH and Temperature of the groundwater and record on field worksheet.

Sample Collection:

1. Do not rinse or empty bottles. Several bottles contain a preservative that must remain in the bottle.
2. If there is an overflow while filling a sample bottle that contains preservatives, restart the procedure using a new sample bottle.
3. If one bottle is to be used for several different tests, be sure there are no conflicts with preservation requirements.

Field Logs:

Use the Ground Water Sample Log (attached) to record all field information. Include Well ID, Date and Time, Weather, readings, observations and calculations for purge volume

Complete the Chain of Custody form (attached). Include sample ID/location, date and time.

The following pages contain specific sampling instructions and procedures that are dependent on analyte type.

GROUP:
Inorganics

SUBGROUP:

Chloride,Nitrate,Nitrite

BOTTLE: 500-mL

Preservative: Chill to 4 degrees C.

Holding Time: 48 Hrs

Test Method: EPA 300.1 Ion Chromatography

PROCEDURE

1. Using waterproof ink, fill out and attach label. At a minimum, include the Well ID number, sampling point and date.
2. Remove the sampling container cap. Be careful not to touch the inside of the sampling container or cap with your fingers. When possible, hold the sampling container in one hand and the cap in the other or set the cap on a clean surface. Quickly position the sampling container under the water flow.
3. Fill to the shoulder of the container. Do not over fill.
4. Quickly remove the sampling container from the water flow.
5. Replace cap and tighten.
6. Completely fill out the chain of custody form.
7. Sample must be placed in coolers for laboratory submittal.

GROUP:
Bacteria

Total/ Fecal
Coliforms,
Enterococci, Fecal
Strep

BOTTLE: (4) 120 mL sterile plastic bottle

Preservative: Chill to 4 degrees C.

Holding Time: 8 Hrs.

Test Methods: Colilert-18, Enterolert, SM9230

PROCEDURE

1. Using waterproof ink, fill out and attach label. At a minimum, include the Well ID number, sampling point and date.
2. Remove the sampling container cap. Be careful not to touch the inside of the sampling container or cap with your fingers. When possible, hold the sampling container in one hand and the cap in the other or set the cap on a clean surface. Quickly position the sampling container under the water flow.
3. Fill to at least the 100 mL mark. Leave some air space.
4. Quickly remove the sampling container from the waterflow.
5. Replace cap and tighten.
6. Completely fill out the chain of custody form.
7. Sample must be placed in coolers for laboratory submittal.

GROUP:
Inorganic

SUBGROUP:

Phosphorus-Total

BOTTLE: One 125 ml

Preservative: PH<2 1:1 Nitric Acid

Test Method: EPA 200.7 ICP

PROCEDURE:

1. Using waterproof ink, fill out and attach label. At a minimum, include the Well ID number, sampling point and date.
2. Remove the sampling container cap. Be careful not to touch the inside of the sampling container or cap with your fingers. When possible, hold the sampling container in one hand and the cap in the other or set the cap on a clean surface. Quickly position the sampling container under the water flow.
3. Fill to the shoulder of the container. Do not over fill.
4. Quickly remove the sampling container from the water flow.
5. Bottle contains Nitric Acid Preservative.
6. Replace cap and tighten.
7. Completely fill out the chain of custody form.
8. Sample must be placed in coolers for laboratory submittal.

GROUP:
Inorganic

SUBGROUP:
Ammonia, TKN

BOTTLE: 125-mL

Preservative: PH <2 with 1:1 Sulfuric Acid

Holding time: 28 Days

Test Method: ASTM D6919-03, SM 4500-Norg C

PROCEDURE

1. Using waterproof ink, fill out and attach label. At a minimum, include the Well ID number, sampling point and date.
2. Remove the sampling container cap. Be careful not to touch the inside of the sampling container or cap with your fingers. When possible, hold the sampling container in one hand and the cap in the other or set the cap on a clean surface. Quickly position the sampling container under the water flow.
3. Fill to the shoulder of the container. Do not over fill.
4. Quickly remove the sampling container from the water flow.
5. Bottle contains Sulfuric Acid Preservative.
6. Replace cap and tighten.
7. Completely fill out the chain of custody form.
8. Sample must be placed in coolers for laboratory submittal