Aerobiology Laboratory Associates, Incorporated
Expertise Since 1997

43760 Trade Center Place
Suite 100
Sterling, Virginia 20166
(877) 648-9150
www.aerobiology.net

Certificate of Analysis
AIHA-LAP EMLAP# 102977

Aerobiology Sample Report
43760 Trade Center Place
Sterling, Virginia 20166
Attn: John Doe
Project: **Legionella Test**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 06/10/2018
Date Received: 06/11/2018
Date Analyzed: 06/21/2018
Date Reported: 06/22/2018
Project ID: 18021131

Client Sample #: 1
Lab Sample #: 18021131-001
Sample Location: Kitchen Sink - Potable Water
Test: 1015, WATER, Legionella Analysis, CDC Method: POTABLE SOP 2.35/SOP 2.22
Results: **2 CFU/mL**
Liquid Volume: **250 (mL)**

Organism(s) Isolated:	Raw Count	CFU/mL	% Total	MRL
Legionella pneumophila not Serogroup 1	4	2	67	0.4 CFU/mL
Legionella species	2	<1	33	0.4 CFU/mL
	6	2	~100%	

Client Sample #: 2
Lab Sample #: 18021131-002
Sample Location: Kitchen Sink - Potable Water
Test: 1015, WATER, Legionella Analysis, CDC Method: POTABLE SOP 2.35/SOP 2.22
Results: **1 CFU/mL**
Liquid Volume: **250 (mL)**

Organism(s) Isolated:	Raw Count	CFU/mL	% Total	MRL
Legionella pneumophila Serogroup 2-15	3	1	100	0.4 CFU/mL
	3	1	~100%	

Client Sample #: 3
Lab Sample #: 18021131-003
Sample Location: Boiler Room 1 - Non-Potable Water
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP 2.35/SOP 2.22
Results: **4 CFU/mL**
Liquid Volume: **250 (mL)**

Organism(s) Isolated:	Raw Count	CFU/mL	% Total	MRL
Legionella pneumophila not Serogroup 1	2	2	50	0.8 CFU/mL
Legionella species	3	2	50	0.8 CFU/mL
	5	4	~100%	

Client Sample #: 4
Lab Sample #: 18021131-004
Sample Location: Boiler Room 2 - Non-Potable Water
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP 2.35/SOP 2.22
Results: <**1 CFU/mL**
Liquid Volume: **250 (mL)**

Organism(s) Isolated:	Raw Count	CFU/mL	% Total	MRL
Legionella pneumophila Serogroup 2-15	1	<1	100	0.8 CFU/mL
	1	<1	~100%	

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Client Sample #: 5
Lab Sample #: 18021131-005
Sample Location: Cooling Tower 1
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP 2.35/SOP 2.22
Results: **40 CFU/mL**
Liquid Volume: **1 (mL)**

Organism(s) Isolated:	Raw Count	CFU/mL	% Total	MRL
Legionella pneumophila Serogroup 2-15	4	40	100	10.0 CFU/mL
	4	40	~100%	

Client Sample #: 6
Lab Sample #: 18021131-006
Sample Location: Cooling Tower 2
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP 2.35/SOP 2.22
Results: **40 CFU/mL**
Liquid Volume: **1 (mL)**

Organism(s) Isolated:	Raw Count	CFU/mL	% Total	MRL
Legionella pneumophila not Serogroup 1	1	10	25	10.0 CFU/mL
Legionella species	3	30	75	10.0 CFU/mL
	4	40	~100%	

Client Sample #: 7
Lab Sample #: 18021131-007
Sample Location: Cooling Tower 3
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP 2.35/SOP 2.22
Results: **No Legionella isolated**
Liquid Volume: **1 (mL)**

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Legionella Facts

1. TESTING METHODOLOGY: Culture remains the recommended method for Legionella monitoring. Standardized culture procedures include ISO 11731: *Detection and Enumeration of Legionella* and CDC: *Procedures for the Recovery of Legionella from the Environment*.
Ref: BSR / ASHRE Standard 188P

2. *Legionella* species recovered from culture method include *Legionella pneumophila and Legionella* species not pneumophila. All *Legionella pneumophila* isolates are run against Serogroup 1 reagent and Serogroup 2-15 reagent. *Legionella* species not pneumophila isolates are screened in *Legionella* species reagent. (This species reagent includes *micdadei, bozemanii, dumoffi, longbeachae, jordanis, gormanii, anisa* and *feelei*)

3. If the final quantitative result is corrected for contamination based on the blank, the blank correction is stated in the sample comments section of the report.

Action Criteria for *Legionella*

Legionella / ml	Cooling Towers and Evaporative Condensers	Suggested Remedial Action: Potable Water	Humidifier/Fogger
Detectable, but <1	1	2	3
1 - 9	2	3	4
10 - 99	3	4	5
100 - 999	4	5	5
≥ 1,000	5	5	5

Remedial Actions:

Level 1:
Review routine maintenance program recommended by the manufacturer of the equipment to ensure that the recommended program is being followed. The presence of barely detectable number of Legionella represents a low level of concern.
Level 2:
Implement action 1. Conduct follow-up analysis after a few weeks for evidence of further Legionella amplification. This level of *Legionella* represents little concern, but the number of organisms detected indicates that the system is a potential amplifier of *Legionella*.
Level 3:
Implement action 2. Conduct review of premises for the direct and indirect bioaerosols contact with occupants and health risk status of people who may come in contact with bioaerosols. Depending on the results of the review of the premises, action related to cleaning and/or biocide treatment of the equipment may be indicated. This level of *Legionella* represents a low but increased level of concern.
Level 4:
Implement action 3. Cleaning and/or biocide treatment of the equipment is indicated. This level of *Legionella* represents a moderately high level of concern, since it is approaching levels that may cause outbreaks. It is uncommon for samples to contain number of *Legionella* that fall in this category.
Level 5:
Immediate cleaning and/or biocide treatment of the equipment is definitely indicated. Conduct post treatment analysis to ensure effectiveness of the corrective action. The level of *Legionella* represents a high level of concern, since it poses the potential for causing an outbreak. It is very uncommon for samples to contain number of *Legionella* that fall in this category.

Ref: *Legionella*: Current Status and Emerging Perspectives: Barbaree, Breiman, Dufour: ASM

CDC's ELITE Program

Suzanne S. Blevins, B.S., SM (ASCP)
Laboratory Director