

HOH Water Technology, Inc. (IL)
 500 South Vermont St.
 Palatine, Illinois 60067
 Attn: Ken Walker
 Project: **Univeristy of Michigan - Flint / Temp PO Tim Barden**
 Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 06/11/2019
 Date Received: 06/12/2019
 Date Analyzed: 06/21/2019
 Date Reported: 06/21/2019
 Project ID: 19024271
 Page 1 of 4

Legionella Summary Sheet

Client Sample #	Sample Location	Volume (mL)	MRL (CFU/mL)	Results	Legionella Isolated
1	CEP Tower	1	10	NLI	
2	UPAV Tower	1	10	10	Legionella species
3	White Tower	1	10	NLI	
4	Riverfront Tower	1	10	NLI	
5	University Tower Tower	1	10 10	680 60	Legionella species Legionella pneumophila Serogroup 1

NLI = No Legionella isolated



SunBun Bowling

SunBun Bowling
 Director of Quality Assurance

Suzanne S. Blevins

Suzanne Blevins
 Laboratory Director

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*)

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Client Sample #: 1
Sample Location: CEP Tower
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP
2.35/SOP 2.22
Results: **No Legionella isolated**

Lab Sample #: 19024271-001

Liquid Volume: **1 (mL)**
MRL: **10 CFU/mL**

Client Sample #: 2
Sample Location: UPAV Tower
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP
2.35/SOP 2.22
Results: **10 CFU/mL**

Lab Sample #: 19024271-002

Liquid Volume: **1 (mL)**

Organism(s) Isolated:	Raw Count	CFU/mL	% Total	MRL
Legionella species	1	10	100	10 CFU/mL
	1	10	~100%	

Client Sample #: 3
Sample Location: White Tower
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP
2.35/SOP 2.22
Results: **No Legionella isolated**

Lab Sample #: 19024271-003

Liquid Volume: **1 (mL)**
MRL: **10 CFU/mL**

Client Sample #: 4
Sample Location: Riverfront Tower
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP
2.35/SOP 2.22
Results: **No Legionella isolated**

Lab Sample #: 19024271-004

Liquid Volume: **1 (mL)**
MRL: **10 CFU/mL**

Client Sample #: 5
Sample Location: University Tower Tower
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP
2.35/SOP 2.22
Results: **740 CFU/mL**

Lab Sample #: 19024271-005

Liquid Volume: **1 (mL)**

Organism(s) Isolated:	Raw Count	CFU/mL	% Total	MRL
Legionella pneumophila Serogroup 1	6	60	8	10 CFU/mL
Legionella species	68	680	92	10 CFU/mL
	74	740	~100%	

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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.

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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



Suzanne S. Blevins

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 Laboratory Director

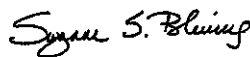
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2. Aerobiology Laboratory Associates Incorporated maintains accreditation and certification with local and state agencies where our laboratories are located.
3. Aerobiology Laboratory Associates Incorporated is certified by the state of Virginia as a Small, Woman and Minority (SWaM) business.
4. Aerobiology's New Jersey location has been approved by the New York Department of Health (ELAP) to analyze Legionella samples for POTABLE WATER and NON-POTABLE WATER.
5. Aerobiology Laboratory Associates Incorporated is a for-profit, privately held company, incorporated in the state of Virginia in 1997.
6. The results in this report are related to this project and these samples only.



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Date Collected: 07/02/2019
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Legionella Summary Sheet

Client Sample #	Sample Location	Volume (mL)	MRL (CFU/mL)	Results	Legionella Isolated
1	UPAV Tower	1	10	N L I	
2	University Tower	1	10	N L I	

N L I = No Legionella isolated



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2.35/SOP 2.22
Results: **No Legionella isolated**

Lab Sample #: 19028129-001

Liquid Volume: **1 (mL)**
MRL: **10 CFU/mL**

Client Sample #: 2
Sample Location: University Tower
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP
2.35/SOP 2.22
Results: **No Legionella isolated**

Lab Sample #: 19028129-002

Liquid Volume: **1 (mL)**
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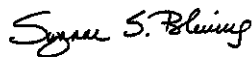
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