

HOH Water Technology, Inc. (IL)  
 500 South Vermont St.  
 Palatine, Illinois 60067  
 Attn: Ken Walker  
 Project: **BL 365290 University of Michigan - Flint**  
 Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 06/19/2018  
 Date Received: 06/20/2018  
 Date Analyzed: 07/02/2018  
 Date Reported: 07/02/2018  
 Project ID: 18020972  
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**Legionella Summary Sheet**

Client Sample #	Sample Location	Volume (mL)	MRL (CFU/mL)	Results	Legionella Isolated
1	University of Michigan - Flint CEP Tower	1	10	N L I	
2	Pavilion Tower	1	10	N L I	
3	William White Tower	1	10	N L I	
4	River Front Tower	1	10	N L I	
5	University Tower (Tower)	1	10	N L I	

N L I = 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*, *dunoffi*, *longbeachae*, *jordanis*, *gormanii*, *anisa* and *feeleyi*)

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

Lab Sample #: 18020972-001

Liquid Volume: **1 (mL)**

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

Lab Sample #: 18020972-002

Liquid Volume: **1 (mL)**

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

Lab Sample #: 18020972-003

Liquid Volume: **1 (mL)**

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

Lab Sample #: 18020972-004

Liquid Volume: **1 (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: **No Legionella isolated**

Lab Sample #: 18020972-005

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	Suggested Remedial Action:		
	Cooling Towers and Evaporative Condensers	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



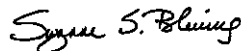
*Suzanne S. Blevins*  
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 Laboratory Director

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## Signature Page

1. Aerobiology Laboratory Associates Incorporated maintains accreditation with the American Industrial Hygiene Association Environmental Microbiology Laboratory Accreditation Program (EMLAP) in compliance with ISO 17025:2005.
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.



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