Dayton

October 5, 2020

Mr. Tim Gehring
Director of Facilities Management
Worthington City School District
250 East Wilson Bridge Road
Worthington, Ohio 43085

Re: Report of Findings for the Legionella Environmental Sampling

Facility: Worthington Liberty Elementary School Address: 8081 Saddle Run, Powell, OH 43065

Sample Date: September 21, 2020

L&A Project No: 20-0441

Dear Mr. Gehring,

Lawhon & Associates, Inc. (L&A) performed environmental sampling to document concentrations of *Legionella* in the building's domestic water system. This testing was performed as a proactive measure to ensure *Legionella* concentrations are at acceptable levels following a period of reduced occupancy. L&A's conclusions and recommendations relevant to the sampling performed are presented in this document.

METHODOLOGY

L&A performed environmental sampling for *Legionella* at the site on September 21, 2020. Field activities included a visual assessment of conditions, documentation of water temperatures and the collection of representative water samples for analysis to document *Legionella* concentrations. All activities were performed in accordance with recommendations published by OSHA, AIHA, CDC and current infection control literature. The samples were sent cold, by overnight mail, to U.S. Micro-Solutions, Inc, Greensburg, Pennsylvania for analysis by culture method. This lab is certified to perform *Legionella* analysis through the Centers for Disease Control (CDC) Environmental *Legionella* Isolation Techniques Evaluation (Elite) Certification Program. U.S. Micro-Solutions, Inc. is also accredited by the American Industrial Hygiene Association (AIHA) through the Environmental Microbiology Proficiency Analytical Testing (EMPAT) Program.

FINDINGS

L&A collected eleven (11) water samples from the domestic water system on this date. A summary of the analytical results is presented in Table 1. The comprehensive data set is presented in Appendix A. A copy of the laboratory report is included as Appendix B.

1441 King Avenue | Columbus, Ohio 43212 | P: 614.481.8600 | F: 614.481.8610 | www.lawhon-assoc.com

Table 1: Domestic Water Sampling Results

Location	Fixture	Water Source	Analytical Data (CFU/ml)
Mechanical Room	Hot Water Tank (L)	Hot	>3,400
Mechanical Room	Hot Water Tank (R)	Hot	>6,000
Mechanical Room	Municipal Water Supply	Cold	1
Cafeteria Corridor	Bottle Filing Station	Cold	30
Boys Restroom	Faucet	Hot	15
Classroom K-7	Faucet	Hot	65
Classroom 6	Faucet	Hot	70
Classroom 22	Faucet	Cold	ND
Classroom 14	Faucet	Hot	15
Kitchen	Faucet	Hot	5
Nurse Office Restroom	Faucet	Hot	5

- 1. ND. Legionella species were not present above detection limits for the analytical method used.
- 2. OSHA recommends Legionella concentrations be maintained below 10 CFU/ml at domestic water outlets.
- 3. Water main for this complex was accessible in the Transportation Compound Garage for this Site.

CONCLUSIONS

L&A conducted representative sampling of the domestic water system servicing the Worthington Liberty Elementary School. As illustrated in Table 1, analytical results indicate that *Legionella pneumophila* was detected in ten of the eleven locations sampled, seven of which exceeded the OSHA guideline for domestic water (10 CFU/ml). The percentage of samples collected from this building that tested positive for *Legionella* (91%) was also above the action limit prescribed by CDC (30%). L&A recommends that the domestic water system be hyperchlorinated and domestic outlets throughout the building be flushed for at least five minutes as part of this process.

CLOSURE

L&A has prepared this report for your use in accordance with generally accepted inspection and testing practices. The information obtained in this report is site and time specific and pertains to this project only. This inspection evaluated the conditions that were readily accessible at the time of the investigation of the subject property and does not warrant against hidden conditions or future alteration of conditions at the site, as well as subsequent changes in regulations. The opinions expressed in this report are based on L&A's experience, relevant literature and available information.

This report was prepared for the exclusive use of the Worthington City School District. No other party may rely on this report unless expressly designated by the Client in writing. The use of the report is subject to the limitations and exceptions set forth in this report, as well as the terms and conditions contained in the original contract documents. L&A will not distribute or publish this report without the Client's consent, except as required by law or court order.

Thank you for the opportunity to assist you in this important matter. If you have any questions concerning this report, please contact Karrie Bontrager at (614) 481-8600, extension 136.

Sincerely,

Karrie A. Bontrager, LEED AP Principal and Sr. Microbiologist

APPENDIX A

Comprehensive Data Set

Table A1: Summary of Water Sampling Data (September 21, 2020 Sampling Event)

		Sample Inform	ation				Analytical Results			
Location	Concentration (CFU/ml)	Species	Sample ID	Sample Type	Temperature (°F)	Concentration (CFU/ml)	Species			
Mechanical Room	Hot Water Tank (L)	Hot	W-LES-92120-1	First Draw		>3,400	Legionella pneumophila (Serogroup 1)			
Mechanical Room	Hot Water Tank (R)	Hot	W-LES-92120-10	First Draw		>6,000	Legionella pneumophila (Serogroup 1)			
Mechanical Room	Municipal Water Supply	Cold	W-LES-92120-2	First Draw		1	Legionella pneumophila (Serogroup 1)			
Cafeteria Corridor	Bottle Filing Station	Cold	W-LES-92120-3	Flush	69.2	30	Legionella pneumophila (Serogroup 1)			
Boys Restroom	Faucet	Hot	W-LES-92120-4	Flush	117.2	15	Legionella pneumophila (Serogroup 1)			
Classroom K-7	Faucet	Hot	W-LES-92120-5	Flush	102.7	65	Legionella pneumophila (Serogroup 1)			
Classroom 6	Faucet	Hot	W-LES-92120-6	Flush	66.2	70	Legionella pneumophila (Serogroup 1)			
Classroom 22	Faucet	Cold	W-LES-92120-7	Flush	66.2		None Detected			
Classroom 14	Faucet	Hot	W-LES-92120-8	First Draw	66.8	15	Legionella pneumophila (Serogroup 1)			
Kitchen	Faucet	Hot	W-LES-92120-9	Flush	120.0	5	Legionella pneumophila (Serogroup 1)			
Nurse office Restroom	Faucet	Hot	W-LES-92120-11	Flush	102.4	5	Legionella pneumophila (Serogroup 1)			

^{1.} Flush Samples. Sample was collected after the fixture had run for one minute.

^{2.} First Draw. Sample was collected immediately after the fixture was turned on.

^{3.} None detected. No Legionella species isolated at seven days of culture.

APPENDIX B

Laboratory Analytical Report



U.S. Micro-Solutions, Inc. * 302 Unity Plaza * Latrobe, PA 15650 Phone: (724) 853-4047 Fax: (724) 853-4049 AIHA-LAP, LLC EMLAP #103009 www.usmslab.com



Customer Name: Lawhon & Associates Sample Date: September 21, 2020 September 22, 2020 Customer Address: 1441 King Avenue Date Received: Columbus, OH 43201 Date of Report: **September 30, 2020**

Customer Phone: (614) 481-8600 (614) 481-8610 Fax:

PO Number:

Attention: Karrie Bontrager & Matt Geiger

September 22, 2020 Analysis Date:

Project Name/Number: 20-0441 Worthington CSD - Liberty Elementary School Sample Time: 0830 Analysis Time (hrs): 32.2

	Customer sa	mple numbers below are uniquely identified by prefixing La	boratory # 98019-20
	Water/Liquid Sample(s) for	Legionella Culture - Analytical Method MIC 06 MIC 07 (ISO	11731:2017)
Sample Number	Media	Sample Description	Results of Microbial Analysis
W-LES-92120-1	BCYE/GPCV	Mechanical Room - Hot Water Tank - Hot - First Draw	
AS = 5 CFU/mL (Volume examine	ed: 100 mL)	Positive - >3,400 CFU/mL	Legionella pneumophila Serogroup 1
W-LES-92120-2	BCYE/GPCV	Mechanical Room - Municipal Water Supply - Cold - First	Draw
AS = 0.5 CFU/mL (Volume exami	ined: 100 mL)	Positive - 1 CFU/mL	Legionella pneumophila Serogroup 1
W-LES-92120-3	BCYE/GPCV	Cafeteria Corridor - Bottle Filling Station - Cold - Flush	
AS = 5 CFU/mL (Volume examine	ed: 100 mL)	Positive - 30 CFU/mL	Legionella pneumophila Serogroup 1
W-LES-92120-4	BCYE/GPCV	Boys Restroom - Faucet - Hot - Flush	
AS = 5 CFU/mL (Volume examine	ed: 100 mL)	Positive - 15 CFU/mL	Legionella pneumophila Serogroup 1
W-LES-92120-5	BCYE/GPCV	Classroom K-7 - Faucet - Hot - Flush	
AS = 5 CFU/mL (Volume examine	ed: 100 mL)	Positive - 65 CFU/mL	Legionella pneumophila Serogroup 1
W-LES-92120-6	BCYE/GPCV	Classroom 6 - Faucet - Hot - Flush	
AS = 5 CFU/mL (Volume examine	ed: 100 mL)	Positive - 70 CFU/mL	Legionella pneumophila Serogroup 1

Ì	Notes:

CFU/mL = colony forming units per millilliter, AS = analytical sensitivity.
Results are reported as Positive or Not Detected.

A negative culture for Legionella spp. from a sample does not necessarily rule out its presence. Results relate only to the samples tested. Results are reported as calculated. For biological data, the first and/or second digit should be considered significant.

When providing duplicates of this report, the document should be provided in total and not in section in accordance with AIHA-LAP, LLC. Any unauthorized or improper disclosure, copying, distribution, use, or falsification of these results is prohibited. USMS shall have no liability to the Customer or the Customer for opinions stated, recommendations made, actions taken, or conduct implemented based on the test results reported





U.S. Micro-Solutions, Inc. * 302 Unity Plaza * Latrobe, PA 15650 Phone: (724) 853-4047 Fax: (724) 853-4049 AIHA-LAP, LLC EMLAP #103009 <u>www.usmslab.com</u>



Customer Name: Lawhon & Associates Sample Date: September 21, 2020
Customer Address: 1441 King Avenue Date Received: September 22, 2020
Columbus, OH 43201 Date of Report: September 30, 2020

Customer Phone: (614) 481-8600 Fax: (614) 481-8610

PO Number:

Attention: Karrie Bontrager & Matt Geiger

Analysis Date: September 22, 2020

Project Name/Number: 20-0441 Worthington CSD - Liberty Elementary School

Sample Time: 0830
Analysis Time (hrs): 32.2

,	Water/Liquid Sample(s) for	Legionella Culture - Analytical Method MIC 06 MIC 07 ((ISO 11731:2017)
Sample Number	Media	Sample Description	Results of Microbial Analysis
W-LES-92120-7	BCYE/GPCV	Classroom 22 - Faucet - Cold - Flush	
AS = 0.5 CFU/mL (Volume exami	ned: 100 mL)		Not Detected
W-LES-92120-8	BCYE/GPCV	Classroom 14 - Faucet - Hot - First Draw	
AS = 5 CFU/mL (Volume examine	d: 100 mL)	Positive - 15 CFU	/mL Legionella pneumophila Serogroup 1
W-LES-92120-9	BCYE/GPCV	Kitchen - Faucet - Hot - Flush	
AS = 5 CFU/mL (Volume examine	d: 100 mL)	Positive - 5 CFU	/mL Legionella pneumophila Serogroup 1
W-LES-92120-10	BCYE/GPCV	Mechanical Room - Hot Water Tank (R) - Hot - First	Draw
AS = 5 CFU/mL (Volume examine	d: 100 mL)	Positive - >6,000 CFU	/mL Legionella pneumophila Serogroup 1
W-LES-92120-11	BCYE/GPCV	Nurse Office Restroom - Faucet - Hot - Flush	
AS =5 CFU/mL (Volume examine	d: 400 ml)	Positive - 5 CFU	/mL Legionella pneumophila Serogroup 1

Notes:			

CFU/mL = colony forming units per milliliter, AS = analytical sensitivity.
Results are reported as Positive or Not Detected.

A negative culture for Legionella spp. from a sample does not necessarily rule out its presence.

Results relate only to the samples tested. Results are reported as calculated. For biological data, the first and/or second digit should be considered significant.

When providing duplicates of this report, the document should be provided in total and not in section in accordance with AIHA-LAP, LLC. Any unauthorized or improper disclosure, copying, distribution, use, or falsification of these results is prohibited. USMS shall have no liability to the Customer or the Customer for opinions stated, recommendations made, actions taken, or conduct implemented based on the test results reported.



Contact: Sharon Danko, Technical Manager: 724-853-4047

									Į.			•	Rev 11-27-18
				LABORATORY NUMBER 98019-20) 	DRY NI	ORATO	LABO	00 122/20 1415			LAB USE ON	RECEIVED BY - L
Analyst Initials	Analysi		ر ا	020 @ 4:00pm	D 4:	1ME 20 (6	AND 1 /20	DATE AND 9/21/20		ST.8IGN)	CUSTOMER (MUST, SIGN)		RELINQUISHED BY
						✓		<	Faucet - Hot - Flush	Kitchen - F	8:30-9:00am	9/21/2020	W-LES-92120-9
				<		<		<	Faucet - Hot - First Draw	Classroom 14 -	8:30-9:00am	9/21/2020	W-LES-92120-8
				<		<		<	- Faucet - Cold - Flush	Classroom 22	8:30-9:00am	9/21/2020	W-LES-92120-7
						<		<	- Faucet - Hot - Flush	Classroom 6	8:30-9:00am	9/21/2020	W-LES-92120-6
				<		<		<	7 - Faucet - Hot - Flush	Classroom K-7	8:30-9:00am	9/21/2020	W-LES-92120-5
				<		<		<	Boys Restroom - Faucet - Hot - Flush	Boys Restroom	8:30-9:00am	9/21/2020	W-LES-92120-4
				<		<		<	Cafeteria Corridor - Bottle Filling Station - Cold - Flush	Cafeteria Corridor - B	8:30-9:00am	9/21/2020	W-LES-92120-3
				<		<		<	Mechanical Room - Municipal Water Supply - Cold - First Draw	Mechanical Room - Muni	8:30-9:00am	9/21/2020	W-LES-92120-2
				1		<		<	Mechanical Room - Hot Water Tank - Hot - First Draw	Mechanical Room - H	8:30-9:00am	9/21/2020	W-LES-92120-1
				LEGIC	1	Y	sv	WA	SAMPLE LOCATION AND DESCRIPTION	SAMPLE LOC	PLE	SAMPLE DATE / TIME	SAMPLE NUMBER
erature °C)	orine pm)		trophic Count	NELLA	10	ES	VAB	TER	York state?	Samples collected in New York state?	Sar		#SAMPLES: 11
									Liberty Elementary School PO#		441 Worth	MBER: 20-0	PROJECT NAME/NUMBER: 20-0441 Worthington CSD
LAB USE ONLY	LAB US	m	TEST TYPE	31	ER	POTABLE WATER	PLE	SAMPLE	RESULTS: FAX EMAIL		Geiger	BY: Matt	SAMPLE OBTAINED BY: Matt Geiger
mgeiger@	ζo	ontrager@lawhon-assoc.com	า-asso	awhor	er@l	ntrag	L: kbc	E-MAIL: kb		Matt Geiger	Bontrager &	rrie Bont	ATTENTION TO: Karrie
		3201	ZIP: 43201	lio	STATE: Ohio	STA			CITY: Columbus		nue	ing Ave	ADDRESS: 1441 King Avenue
		8610	-481-	FAX #: 614-481-8610	FAX			300	PHONE #: 614-481-8600	iates	& Assoc	awhon	CUSTOMER NAME: Lawhon & Associates
V	82			grain		din	β	JSTO	LEGIONELLA / WATER TEST REQUEST - CHAIN OF CUSTODY	3,	(ab 10 a 10300		
NY ELAP #12055 The New York Environmental Laboratory Approval Program	NY ELAI: The New York Laboratory Ap			m .					302 Unity Plaza Latrobe, PA 15650 P: 724-853-4047 F: 724-853-4049 supplies@usmslab.com	The state of the s	According to the second	i de la companya de	
•						ital I		.,	U.S. Micro-Solutions, Inc.				•







LEGIONELLA / WATER TEST REQUEST - CHAIN OF CUSTODY
Additional Samples U.S. Micro-Solutions, Inc.
302 Unity Plaza
Latrobe, PA 15650
P: 724-853-4047: 724-853-4049
supplies@usmslab.com

RECEIVED BY - LAB AUS									D.	W-LES-92120-11 9/21/2020	W-LES-92120-10	SAMPLE NUMBER	PROJECT NAME/NUI	CUSTOMER NAME:
AB USE ONLY										9/21/2020	9/21/2020	SAMPLE DATE / TIME	MBER: 20-	Lawh
7						1				8:30-9:00am	8:30-9:00am	TIME	0441 W	on &
09/22/20 14/5										Nurse Office Restroom - Faucet - Hot - Flush	W-LES-92120-10 9/21/2020 8:30-9:00am Mechanical Room - Hot Water Tank (R) - Hot - First Draw	SAMPLE LOCATION AND DESCRIPTION	PROJECT NAME/NUMBER: 20-0441 Worthington CSD - Liberty Elementary School	customer NAME: Lawhon & Associates
LABORATOR]		1	✓	WA	TER	SAMPLE TYPE
RATOF	Ш	L			L							sv	VAB	щË.
S N N][✓	<	Y	ES	POTABLE WATER
MBER:												N	10	ER E
98019-20][<	<	LEGIC	NELLA	=
Ó][]					trophic Count	TEST TYPE
][Ë
Analyst Initials													orine pm)	LAB U
Initials												Temp	erature °C)	LAB USE ONLY