

June 26, 2020

Robert Csigi
West Orange School District
179 Eagle Rock Avenue
West Orange, NJ 07052

Email: resigi@westorangeschools.org

**RE: (WEST ORANGE HIGH SCHOOL – PVW BUILDING) POST REMEDIATION
LEGIONELLA WATER TESTING CONDUCTED THROUGHOUT
BUILDING 6/15/2020**
(Omega Project # 20-1019A)

Attachments:

- *Laboratory Analysis Report*
- *Chain of Custody*

Executive Summary:

Omega Environmental Services was retained to conduct representative potable water sampling for the detection of *Legionella* bacteria in West Orange High School (16 total samples collected 6/15/2020) after a hyper-chlorination treatment was conducted on 6/9 and 6/10/2020/

- *Legionella* bacteria were reported as “none detected” for thirteen (13) out of sixteen (16) samples collected.
- Trace levels of *Legionella* bacteria were reported for two (2) out of the sixteen (16) samples collected
- Elevated levels of *Legionella* bacteria were reported for one (1) out of the sixteen (16) samples collected
 - 2nd Floor Room 2316 Prep. Rom for Science

Sampling Locations:

Representative hot and cold-water outlet locations were sampled.

It is important to note that this sampling event represents a “snapshot in time” of the *Legionella* bacteria levels present in the domestic potable water system. Bacteria levels fluctuate a great deal as a result of distal point water usage, seasonal changes and public water supply quality.

Applicable Standards:

Related to the known pathogenicity of *Legionella*, the presence of this bacterium at any level in domestic potable (drinking) water or in occupied space mandates immediate corrective action. New Jersey Department of Health (NJDOH) recommends no detectable *Legionella* bacteria in domestic potable (drinking) water system.

The raw colony counts and the colony forming units (CFU) results are based on different sample collection volumes. The results reported below are normalized using consistent quantities. The laboratory reports the potable water results in CFU/liter units (CFU/1000 ml). For convenience, we

are reporting the results in CFU/ml, because it corresponds to most agency guidelines for recommended corrective action.

Laboratory Methodology:

Upon completion of the sampling, the samples were packed in coolers and transported to Prestige EnviroMicrobiology, CDC ELITE and AIHA certified lab for the isolation of *Legionella* in an environmental sample, for analysis. The analysis was performed using the CDC procedure “Recovery of *Legionella* bacteria from the Environment” for the recovery of *Legionella* from environmental samples. This method requires that the samples are incubated for a period of ten-fourteen days prior to reading the culture plates.

The raw test results are based on the water quantities; the results reported below are normalized using consistent quantities. The laboratory reports the potable water results in Colony Forming Units/liters (CFU/1000 ml). For convenience, Omega is reporting the results in CFU/ml, because it corresponds to the most applicable standards and guidelines.

Classification of laboratory results of samples collected.

Classification of Results	Definition of Classification	Color Code Assigned by Omega
“None Detected”	No raw colonies detected by lab analyst-calculation of results are reported as less than minimum limit of detection by the CDC Method.	<no color assigned>
Trace level	Less than 1 CFU/ml based on 1000ml sample	Light Yellow
Moderate level	1 CFU/ml and <10 CFU/ml based on 1000ml sample	Medium Yellow
Elevated level	10 or greater CFU/ml based on 1000ml sample	Orange
<i>Legionella</i> species may be broken down into serogroups (SG)		

Water Sampling Results (6/15/2020):

Collection Date/Sample ID	Description of Sampling Location			Concentration (CFU/ml)
	Wing/Area/Room	Outlet	Hot/Cold	
01	2 nd Floor Hose Bib	Supply	C/W	None Detected
02	2 nd Floor Hose Bib	Return	H/W	None Detected
03	2 nd Floor Tank Bottom	Hose Bib	H/W	None Detected
04	4 th Floor Room 4300	Sink	H/W	None Detected
05	4 th Floor Boys Toilet Middle Sink	Sink	H/W	None Detected
06	3 rd Floor Room 3316 Bath Sink	Sink	H/W	<i>Legionella pneumophila</i> ** 0.700
07	3 rd Floor Room 3309	Sink	H/W	None Detected
08	3 rd Floor Faculty Ladies Room Right Sink	Sink	H/W	None Detected
09	3 rd Floor Men’s Faculty Bathroom Right Sink	Sink	H/W	None Detected
10	2 nd Floor Room 2344 Boys Locker Room Left Shower #3	Shower	H/W	None Detected
11	2 nd Floor Room 2340 Girl’s Locker Room Shower	Shower	H/W	None Detected

Collection Date/Sample ID	Description of Sampling Location			Concentration (CFU/ml)
	Wing/Area/Room	Outlet	Hot/Cold	
12	2 nd Floor Room 2316 Prep Room for Science	Sink	H/W	<i>Legionella</i> (b-m) spp.** 3.100 <i>Legionella pneumophila</i> ** 18.000
13	2 nd Floor Girl's Room Next to Rom 2301 Far Left Sink	Sink	H/W	<i>Legionella pneumophila</i> ** 0.410
14	2 nd Floor Freshman Cafeteria Fountain Bottle Filler	Fountain	C/W	None Detected
15	1 st Floor Room 1313 Trainer Room Therapy Tub	Tub	H/W	None Detected
16	1 st Floor Left Fountain Next to Room 1312	Fountain	C/W	None Detected

Conclusion:

The samples collected on 6/15/2020 indicated the following results:

- *Legionella* bacteria were reported as “none detected” for thirteen (13) out of sixteen (16) samples collected.
- Trace levels of *Legionella* bacteria were reported for two (2) out of the sixteen (16) samples collected
- Elevated levels of *Legionella* bacteria were report for one (1) out of the sixteen (16) samples collected

Recommendations:

The post-remediation data indicates that the remediation was overall effective with one spot outlier location (2nd floor – room 2316). The fixture on this room should be further evaluated for possible replacement or additional spot treatment. Another option for this location is installation of a point-of-use (POU) *Legionella* filter pending successful re-test. The outlet should not be utilized by student/staff without corrective action in-place.

Follow-up sampling according to NJDOH recommendations should continue to monitor bacteria levels.

If you have any questions, please feel free to call us at 201.489.8700.

Sincerely,



Larry Zaccherio, Jr
Program Manager

Prestige EnviroMicrobiology, Inc.



Analytical Test Report

Client: Omega Environmental Services, Inc., 280 Huyler Street, South Hackensack, NJ 07606

Client Project/Name: 20-1019A/West Orange Schools WOHS & PVW Building

Sample date: 6-15-2020

Submittal date: 6-15-2020

Samples submitted by: Larry Zaccherio

Date analysis completed: June 25, 2020

Prestige report number: 200616-01

Culture Method (P031): Analysis of Water Samples for *Legionella* bacteria

Prestige # Client sample ID Location	<i>Legionella</i> Identification	Conc. (CFU/ liter)	Percentage
200616-01-001 01 2 nd – C/W Supply, Hose Bib CW	Not detected	ND	NA
200616-01-002 02 2 nd – H/W Return, Hose Bib HW	Not detected	ND	NA
200616-01-003 03 2 nd – H/W Tank Bottom, Hose Bib HW	Not detected	ND	NA
200616-01-004 04 4 th – Rm 4300, Sink HW	Not detected	ND	NA
200616-01-005 05 4 th – Boys Toilet Middle Sink, Sink HW	Not detected	ND	NA
200616-01-006 06 3 rd – Rm 3316 Bath, Sink HW	<i>Legionella pneumophila</i> **	700	100%
200616-01-007 07 3 rd – Rm 3309, Sink HW	Not detected	ND	NA
200616-01-008 08 3 rd – Faculty Ladies Rm Right, Sink HW	Not detected	ND	NA
200616-01-009 09 3 rd – Men's Faculty Bathroom Right, Sink HW	Not detected	ND	NA

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200616-01-010 10 2 nd – Rm 2344 Boys Locker Room Left Shower #3 Shower, Shower HW	Not detected	ND	NA
200616-01-011 11 2 nd – Rm 2340 Girl's Locker Room, Shower HW	Not detected	ND	NA
200616-01-012 12 2 nd – Rm 2316 Prep Room for Science, Sink HW	<i>Legionella</i> (b-m) spp.* <i>Legionella pneumophila</i> **	3,100 18,000 Total 21,000	15% 85%
200616-01-013 13 2 nd – Girl's Rm Next to Rm 2301 Far Left, Sink HW	<i>Legionella pneumophila</i> **	410	100%
200616-01-014 14 2 nd – Freshman Cafeteria Fountain Bottle Filler, CW	Not detected	ND	NA
200616-01-015 15 1 st – Rm 1313 Trainer Rm Therapy Tub, Hose Bib HW	Not detected	ND	NA
200616-01-016 16 1 st – Left Fountain Next to Rm 1312, CW	Not detected	ND	NA

* The isolates were positive for *Legionella* spp., in the group including *L. jordanis*, *L. oakridgensis*, *L. wadsworthii*, *L. feeleii*, *L. saintheleni*, *L. anisa*, *L. santacrucis*, *L. spiritensis*, *L. hackeliae*, *L. maceachernii*, *L. bozemanii*, *L. dumoffii*, *L. gormanii*, *L. micdadei*, and *L. longbeachae*.

** The isolates were positive for *Legionella pneumophila* serogroups 1-14, but negative for serogroups 1-6.

Report approved: Theresa Lehman
Theresa Lehman, MPH, Lab Director

Technical Manager: Chin S Yang
Chin S Yang, Ph.D.

Analyst: Theresa Lehman / Ching-Yi Tsai, Ph.D.

1. The samples in this report were received in good, acceptable conditions. Prestige EnviroMicrobiology has not performed sample collection for the sample items listed in this report. Results relate only to the items tested.
2. Percentage is for each species or serotype of *Legionella* in total population.
3. Concentrations and percentages are rounded. Total percentage may not add up to 100% due to rounding.

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4. Sample analysis is based on the "Procedures for the Recovery of *Legionella* from the Environment" published by the Centers for Disease Control and Prevention in 2005.
5. SG = Serogroup; NA = not applicable; ND = not detected.
6. Prestige EnviroMicrobiology, Inc., is an Approved Environmental Laboratory for *Legionella* testing by the State of Connecticut, Department of Public Health (CT Registration number: PH-0608); by the State of New York Department of Health (NY Lab ID no: 12057); and a successful participant of CDC's Environmental *Legionella* Isolation Techniques Evaluation (ELITE) program since 2009.
7. NYSDOH ELAP certification does not include serogroup identifications.
8. For technical information on result interpretation, please visit www.Prestige-EM.com.

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 Prestige Proj.#: 200616-01

Chain-of-Custody for Legionella Analysis

Client Name: Omega Environmental Services
 Address: 280 Huyler Street
South Hackensack, NJ 07606
 Tel: 516-770-7800/201-489-8700
 E-mail 1: lab@omega-env.com
 E-mail 2: larryz@omega-env.com
 Omega Job #: 20-1019A Date sampled: 6/15/2020
 Omega Client: West Chester School
 Project Site: 100HS St PWS & Bldg

Samp. ID	Bldg./ Floor	Location or Source	Time	Outlet type			Cooling Tower			Biocide used:			CL (ppm)	Temp F/D
				Sink	Shower	Hose Bib	HW	CW	Pot NP	Grab	Comp	Swab		
01	800	Chlor Supply		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
02		H/W Return		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial: .07 Final: Δ sec:
03		H/W Tank Bottom		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04	4TH	Rm 4500		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
05		Boys Toilet Middle Sink		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
06	3rd	Rm 3316 Bath		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
07		Rm 3509		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
08		Faculty Ladies Rm Right		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Contact name: Larry Zaecherho
 Received by: (sign & print) Victor Vivianou
 (For lab use only) Processed by: Victor Vivianou
 Temp. on Arrival: _____ Date: 6/15/2020
 Sample type: _____ Date & time received: 6/15/2020 11:30 AM
 Delivered by: Fedex, UPS, USPS, in person
 Date: _____ Time: _____

*** Omega Environmental Services, Inc. Tel: 856-767-8300 Fax: 856-767-8305
 242 Terrace Boulevard, Suite B-1, Voorhees, New Jersey 08043

www.Prestige-EM.com Prestige Proj #: 200616-01

Chain-of-Custody for Legionella Analysis

Client Name: Omega Environmental Services
 Address: 280 Huyler Street
South Hackensack, NJ 07606
 Tel: 516-770-7800/201-489-8700
 E-mail 1: lab@omega-env.com
 E-mail 2: larryz@omega-env.com

Omega Job #: 20-1019A Date sampled: 6/10/20
 Omega Client: West Orange School
 Project Site: 100HS - P1W Building

Samp. ID	Bldg./ Floor	Location or Source	Time	Outlet type		Cooling Tower		Biocide used:		Analysis Method	CL (ppm)	Temp. F/D
				<input type="checkbox"/> Sink	<input type="checkbox"/> Shower	<input type="checkbox"/> Pot	<input type="checkbox"/> NP	<input type="checkbox"/> Grab	<input type="checkbox"/> Comp			
09	3rd	Mens Restrooms - Bottom Right		<input checked="" type="checkbox"/> Sink	<input type="checkbox"/> Shower	<input checked="" type="checkbox"/> Pot	<input type="checkbox"/> NP	<input checked="" type="checkbox"/> Grab	<input type="checkbox"/> Comp	<input checked="" type="checkbox"/> P031		Initial: Final: Δ sec:
10	3rd	Rm 3344 Boy's Locker Room Left		<input checked="" type="checkbox"/> Sink	<input type="checkbox"/> Shower	<input checked="" type="checkbox"/> Pot	<input type="checkbox"/> NP	<input checked="" type="checkbox"/> Grab	<input type="checkbox"/> Comp	<input checked="" type="checkbox"/> P031		Initial: Final: Δ sec:
11		Rm 3340 Girl's Locker Room		<input checked="" type="checkbox"/> Sink	<input type="checkbox"/> Shower	<input checked="" type="checkbox"/> Pot	<input type="checkbox"/> NP	<input checked="" type="checkbox"/> Grab	<input type="checkbox"/> Comp	<input checked="" type="checkbox"/> P031		Initial: Final: Δ sec:
12		Rm 3316 Prep Room for Science		<input checked="" type="checkbox"/> Sink	<input type="checkbox"/> Shower	<input checked="" type="checkbox"/> Pot	<input type="checkbox"/> NP	<input checked="" type="checkbox"/> Grab	<input type="checkbox"/> Comp	<input checked="" type="checkbox"/> P031		Initial: Final: Δ sec:
13		Girls Rm next to Rm 3301		<input checked="" type="checkbox"/> Sink	<input type="checkbox"/> Shower	<input checked="" type="checkbox"/> Pot	<input type="checkbox"/> NP	<input checked="" type="checkbox"/> Grab	<input type="checkbox"/> Comp	<input checked="" type="checkbox"/> P031		Initial: Final: Δ sec:
14		Trachman Capetain - Trachman Dr. Hill Fillin		<input checked="" type="checkbox"/> Sink	<input type="checkbox"/> Shower	<input checked="" type="checkbox"/> Pot	<input type="checkbox"/> NP	<input checked="" type="checkbox"/> Grab	<input type="checkbox"/> Comp	<input checked="" type="checkbox"/> P031		Initial: Final: Δ sec:
15	1st	Gu 1313 Trainer's Rm Therapy Trk		<input checked="" type="checkbox"/> Sink	<input type="checkbox"/> Shower	<input checked="" type="checkbox"/> Pot	<input type="checkbox"/> NP	<input checked="" type="checkbox"/> Grab	<input type="checkbox"/> Comp	<input checked="" type="checkbox"/> P031		Initial: Final: Δ sec:
16	1st	Key-Furniture next to Rm 1319		<input checked="" type="checkbox"/> Sink	<input type="checkbox"/> Shower	<input checked="" type="checkbox"/> Pot	<input type="checkbox"/> NP	<input checked="" type="checkbox"/> Grab	<input type="checkbox"/> Comp	<input checked="" type="checkbox"/> P031		Initial: Final: Δ sec:

Contact name: Larry Zaechter/Victor Vivandou Submitted by: (sign & print) [Signature]
 Received by: (sign & print) [Signature] Date & time received: 6/10/20 11:13 am
 (For lab use only) Processed by: _____ Sample type: _____ Date: _____ Time: _____
 Delivered by: Fedex, UPS, USPS, ip/person Date submitted: 6/10/20 20

