

February 22, 2023

Project 3114.2000

Ms. Cheryl Stith, ASP, CHMM, CIT
Department of General Services, Facilities Management Division
707 3rd Street, 3rd Floor
West Sacramento, CA 95605

Submitted via email: cheryl.stith@dgs.ca.gov

Re: Statewide *Legionella* Testing, Southern California Region, Building 850

Dear Ms. Stith:

Millennium Consulting Associates (Millennium) is pleased to provide the California Department of General Services, Facilities Management Division (DGS/FMD) with this letter report documenting the *Legionella* screening sampling performed at the California State (Building 850) located at 7575 Metropolitan Drive, San Diego Drive. This site was selected for testing as part of the *Statewide Legionella Testing* contract between DGS, FMD and Millennium.

Sample Collection

On February 2, 2023, Mr. Rick Shuckly of Aurora Industrial Hygiene of the Millennium team arrived at the Facility to review the facility and DGS/FMD personnel discussed and reviewed the sampling plan and purpose for the initial screening of the potable water system. For this sampling event and at the direction of DGS/FMD, only the cold water at the selected potable water outlets were sampled. These included water outlets described as follows:

- Janitor’s Closet Sinks
- Men’s and Women’s Restroom Sinks
- Kitchen and/or Breakrooms Sinks
- Drinking Fountains

Aurora Industrial Hygiene did not measure water temperature, pH, or residual free chlorine levels in accordance with the contract requirements. In total, twelve (12) potable water samples were collected. The bulk water samples were placed in coolers with the temperature maintained (39°F) using sealed ice packs. The samples were transported to LA Testing (Laboratory) of Huntington Beach, California under chain-of-custody. The Laboratory is accredited by A2LA, AIHA-LAP, LLC, and CDPH ELAP. In addition, the Laboratory is accredited under the CDC’s Environmental *Legionella* Isolation Techniques Evaluation (ELITE) program.

***Legionella* Monitoring Results**

The laboratory analyzed the samples through the *Legionella* Detection Culture Method. *Legionella* species (spp.) were detected in the bulk water samples collected at the facility. Eight (8) of the twelve (12) samples did not detect *Legionella*. The remaining four samples (4) detected *L. pneumophila* (sero 2-14) and *L. spp.* A summary of the number samples and their *Legionella* levels is presented in Table 1.

Table 1 - Summary of *Legionella* detections on the 12-samples collected on 2.2.23.

	ND Samples	<i>L. pneumophila</i> (<1 CFU/ml)	<i>L. pneumophila</i> (1-10 CFU/ml)	<i>L. pneumophila</i> (>10 CFU/ml)	<i>Legionella</i> spp. (<1 CFU/ml)	<i>Legionella</i> spp. (1-10 CFU/ml)	<i>Legionella</i> spp. (>10 CFU/ml)
No. of samples detected	8	2	-	1	-	1	-

Results Interpretation and Discussion

Species of *Legionella* were detected in the cold-water system at the facility with *L. pneumophila* and *L. spp.* in four (4) of twelve (12) samples.

The guidelines from the *AIHA's Recognition, Evaluation, and Control of Legionella in Building Water Systems* are used to assess the effectiveness of water system maintenance and to interpret the sampling results. The Recommended Action Levels are also derived from the AIHA Guidance; there are other criteria for sample sources or water outlets; however, the information has been revised for use at the sampled facility.

AIHA's guidance separates levels into three areas:

- Action Level 1: Results are Non-Detectable or Acceptable Low
- Action Level 2: Results indicate Possible Amplification of *Legionella* spp.
- Action Level 3: Results indicate Amplification of *Legionella* spp.

There is a listed requirement in the AIHA guidance for a *Legionella* Management Plan (LMP) to institute more stringent controls if *Legionella pneumophila* is detected. The facility goal for *L. pneumophila* is zero (below detectable limits). If the sampling detects *L. pneumophila*, then the result is considered positive and corrective actions should be implemented in accordance with the facility's LMP.

Table 3 – Summary of *Legionella* detections on the 2/2/23 sampling.

Sample No.	Sample Description	<i>Legionella</i> (CFU/ml)	Species Identification	Recommended Action Level
7575-01	Janitor Mop Sink	0.50	<i>L. pneumophila</i> (sero 2-14)	1
7575-04	Men's Restroom Sink	14.00	<i>L. pneumophila</i> (sero 2-14)	3
7575-06	Men's Restroom Sink	0.50	<i>L. pneumophila</i> (sero 2-14)	1
7575-11	Janitor Mop Sink	5.00	<i>L. spp.</i>	2

Table 4 - *Legionella pneumophila* Data Interpretation Guidelines.

Sample Source	Non-Detectable	Acceptably Low†	Action Level	Possible Amplification	Action Level	Indicates Amplification	Action
Potable Water Outlets	<1 CFU/mL	<1 CFU/mL	1	1-10 CFU/mL	2	>10 CFU/mL	3

Discussion

The most known species causing the *Legionella*-related diseases and the general percentages of disease occurrence are:

- *Legionella pneumophila* (91.5%), with serogroup (SG) 1 most common and SGs 2-15 also causing disease.
- *L. longbeachae* (3.9%).
- *L. bozemanii* (2.4%).
- *L. micdadei*, *L. feeleeii*, *L. dumoffii*, *L. wadsworthii*, and *L. anisa* (2.2%).

Legionella species are known to survive in varied water conditions. This includes temperatures ranging from 32°F to ~120°F and a pH range of 5.0 to 8.5. For residual biocide (e.g., chlorine), the level of chlorine must be above 0.5-ppm to be effective against *Legionella*. It is reasonable to maintain 1-ppm in the water system for a safety factor; the EPA limit for chlorine in drinking water is 4-ppm. In addition, the chlorine dissipation rate is faster in hot water systems (e.g., which generally makes hot-water systems more susceptible to *Legionella* colonization). For both hot and cold-water delivery systems, the ideal temperatures to reduce and/or prevent *Legionella* colonization is to:

- maintain the hot-water system at 124°F in all water lines and have appropriate temperature limiting valves to prevent scalding;
- maintain hot-water storage temperatures at a minimum of 140°F; and
- maintain the cold-water system below 68°F.

Recommended Corrective Actions Recommendations

Millennium recommends the following corrective actions to improve the water quality at the facility:

Recommendation 1:

Develop and implement a *Legionella* Management Plan for the facility. A LMP is a written program utilized to reduce risk associated with *Legionella*. It is common for a LMP to address the following:

1. Establishment of a Water Management Team with a *Legionella* focus. This is usually a multi-disciplined team for the implementation and monitoring of the LMP.
2. Define the purpose of the LMP and determine the goals of the water system and.
3. Describe the site-specific water system including a water flow diagram that follows the water as it flows through the facility.
4. Identify potential risks and conduct a hazard analysis of the system and type of occupancy.
5. Define strategies for reducing *Legionella* associated risks including type of corrective actions to be performed at the facility.

6. Define a water monitoring and verification program to mitigate risks and proactively manage the water system.

Recommendation 2a:

Two (2) of twelve (12) samples detected *L. pneumophila* that meet the criteria for Action Level 1 corrective measures. It is recommended to:

- Continue monitoring in accordance with a *Legionella* Management Program based the results; and
- Continue maintaining the system and consider reassessment if conditions change to favor *Legionella* colonization or amplification.

Recommendation 2b:

One (1) sample detected *L. spp.* meet the criteria for Action Level 2 corrective measures. The following actions are recommended to be performed:

- Reassess maintenance and treatment practices;
- Implement remedial cleaning or disinfection protocols; and
- Schedule retesting.

If an amplification site is identified during further investigation, implement measures to remediate the source and prevent its reoccurrence.

Recommendation 2c:

One (1) sample detected *L. pneumophila* meeting the criteria for Action Level 3 corrective measures. The following actions are recommended to be performed:

- Take immediate steps to prevent further exposure to residents, staff, and the public. Interim measures to restrict water use, point-of-use filters, and prevention of aerosolization can effectively prevent exposure until terminal measures are implemented;
- Coordinate and implement cleaning, and/or disinfection protocols with any proposed testing by public health officials, if necessary;
- Continue water use restrictions and/or interim measures until post-treatment sample results are received from the laboratory and reviewed by a competent professional;
- Reassess maintenance and treatment practices, implement disinfection protocol, and schedule retesting;
- Re-examine secondary parameters (pH, residual free chlorine, temperature, etc.) to identify potential cause of elevated *Legionella* levels and make necessary adjustments.
- Implement weekly monitoring of water temperature, pH, and residual chlorine levels;
- Implement quarterly monitoring for *Legionella* in the hot and cold-water systems; and
- Flush the water lines from the sinks in idle rooms to remove stagnant water.

If an amplification site is identified during further investigation, implement measures to remediate the source and prevent its reoccurrence.

Should you have any questions or require further information, please feel free to contact me.

Sincerely,
MILLENIUM CONSULTING ASSOCIATES



Jeremy Malson, CIH, CSP
Principal

Attachments
Figures 1-3: Sampling Locations
LA Testing Laboratory Reports 322303018



Legionella Chain of Custody

EMSL Order Number / Lab Use Only

LATesting
5431 Industrial Drive

Huntington Beach, CA 92649
PHONE: (714) 828-4999
EMAIL: huntingtonbeachlab@latesting.c

#322303018

If Bill-To is the same as Report-To leave this section blank. Third-party billing requires written authorization.

Customer Information	Customer ID:	Billing ID:
	Company Name: Aurora Industrial Hygiene	Company Name: Jeremy Malson/MECA62
	Contact Name: Karen Shockley	Billing Contact: Jeremy Malson
	Street Address: 9666 BUSINESSPARK AVE STE 102	Street Address: 4683 Chabot Drive, Suite 380
	City, State, Zip: San Diego CA 92131 Country: US	City, State, Zip: Pleasonton CA 94588 Country: US
	Phone: 6192765901	Phone: 925-808-6700
Email(s) for Report: kshockley@auroraih.com	Email(s) for Invoice:	

Project Information

Project Name/No: ~~62093~~ ~~612~~ 62102 7575 Metropolitan Drive

EMSL LIMS Project ID: (If applicable, EMSL will provide)

US State where samples collected: CA

State of Connecticut (CT) must select project location:
 Commercial (Taxable) Residential (Non-Taxable)

Sampled By Name: Rick Shockley

Sampled By Signature: *[Signature]*

No. of Samples in Shipment: 12

Sterile, Sodium Thiosulfate Preserved Bottled Used

Biocide Used in Source (If Checked, Please Specify Type)

Bottles Chilled on Frozen Ice Packs

Public Water Supply Samples Note: All results may automatically be reported to DOH if required by State.

Legionella Analysis (Performed by ISO 11731:2017 Culture Method) - TAT's are subject to methodology requirements.

M341: *Legionella pneumophila* confirmation and enumeration. Individual serotyping not included. Other species reported as *Legionella sp.*

M342: *Legionella pneumophila* confirmation and enumeration of individual serotypes 1-14. Other species reported as *Legionella sp.*

M343: *Legionella* Species confirmation and individual enumeration of 11 *Legionella* species (*L. anisa*, *L. bozmannii*, *L. dumoffii*, *L. feeleii*, *L. gormanii*, *L. jordanis*, *L. longbeachae*, *L. maceachernii*, *L. micdadei*, *L. pneumophila*, and *L. saintelensis*) and their individual serotypes. Other species can be requested at an additional charge.

M344: ISO filter direct for water expected to have low bacterial concentrations (bottled water for dialysis, distilled water.) 11 *Legionella* species (above) and their respective serotypes, identified and enumerated individually. Other species reported as *Legionella sp.*

M345: Identification and enumeration of *L. pneumophila* serotype 1, *L. pneumophila* serotypes 2-14, and *Legionella sp.*

M214: Pure Culture Preparation and Storage

M215: Pure Culture Preparation and Shipping

Heterotrophic Plate Count (HPC) Analysis (Check one below if requested) Test Code M015 Heterotrophic Plate Count (HPC) Standard Method 9215

Plate count agar, 35°C, 48 hour incubation

R2A agar, 25°C, 5-7 day incubation

Sample #	Sample Location	Sample Type	Potable / Non-Potable	Test Code	Volume	Date / Time Collected	Temperature (Lab Use Only)
Example: Sample 1	Kitchen	Water	Potable	M343	1,000 ml	1/1/2021 3:30pm	
7575-01	1st Floor Men's Shower	Water	Potable	M345	1,000 ml	2/2/23 0820	
-02	Breakroom sink					0827	
-03	Janitor's mop sink					0832	
-04	Men's RR center sink					0835	
-05	2nd Floor Right Water fountain					0845	
-06	Men's RR Right sink					0850	
-07	Breakroom sink					0958	
-08	Janitor's mop sink					0905	

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

BillTo: Jeremy Malson/MECA62, 4683 Chabot Drive, Suite 380, Pleasonton, CA, 94588, US

Attention: Jeremy Malson Phone: 925-808-6700 Email: jmalson@mecaenviro.com Purchase Order:

Method of Shipment:

Sample Condition Upon Receipt:

Relinquished by: *[Signature]* Date/Time: 2/2/2023 / 1145

Received by: *[Signature]* Date/Time: 2/2/23

Relinquished by: *[Signature]* Date/Time: 2/2/23 3:50pm

Received by: *[Signature]* Date/Time: 11:50am

Controlled Document - COC-26 Legionella R9 2/26/2022

AGREE TO ELECTRONIC SIGNATURE (By checking this box, you agree to this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

RW 10 TO8061



Legionella Chain of Custody

EMSL Order Number / Lab Use Only

#322303018

LATESTING
5431 Industrial Drive

Huntington Beach, CA 92649
PHONE: (714) 828-4999
EMAIL: huntingtonbeachlab@latesting.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Sample #	Sample Location	Sample Type	Potable / Non-Potable	Test Code	Volume	Date / Time Collected	Temperature (Lab Use Only)
7575 - 09	3rd floor Breakroom sink	Water	Potable	M345	1,000 ml	2/2/23	
-10	Men's RR Left sink						
-11	Janitor's nap sink						
-12	Left water fountain						

Method of Shipment:		Sample Condition Upon Receipt:	
Relinquished by: <i>Rick Jones</i>	Date/Time: 2/2/2023/1145	Received by: <i>(Signature)</i>	Date/Time: 2/2/23
Relinquished by:	Date/Time:	Received by: <i>Annette McKissack (fx)</i>	Date/Time: 02/03/23 1000

Controlled Document - COC-26 Legionella R9 2/26/2021

AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.



LA Testing

520 Mission Street South Pasadena, CA 91030
Tel/Fax: (323) 254-9960 / (323) 254-9982
<http://www.LATesting.com / pasadenalab@lateesting.com>

LA Testing Order: 322303018

Customer ID: AURO50

Customer PO:

Project ID:

Attention: Karen Shockley
Aurora Industrial Hygiene, Inc
9666 Business Park Ave
Suite 102
San Diego, CA 92131

Phone: (619) 276-5901
Fax: (619) 276-5904
Collected Date: 02/02/2023
Received Date: 02/03/2023 10:00 AM
Processed Date: 02/03/2023 03:35 PM
Analyzed Date: 02/20/2023 08:36 AM

Project: 62102 7575 Metropolitan Drive

Legionella Detection - ID & Enumeration of *L. pneumophila* serotype 1, *L. pneumophila* (2-14) and *Legionella* species by ISO 11731:2017 Culture Method (EMSL Test Code M345 & Method MICRO-SOP-105)

Client Sample ID/Sample Location Lab Sample Number	Sample Type	Volume Submitted (mL)	Volume Filtered (mL)	Method Processed	Identification	Volume Examined (mL)	Limit of Detection (CFU/mL)	Final Results (CFU/mL)
7575-01 - 1st Floor Men's Shower 322303018-0001	Potable	1000	1000	Concentrated	None Detected	20	0.05	ND
7575-02 - 1st Floor Breakroom Sink 322303018-0002	Potable	1000	1000	Concentrated	None Detected	20	0.05	ND
7575-03 - 1st Floor Janitor's Mop Sink 322303018-0003	Potable	1000	1000	Concentrated	<i>Legionella pneumophila</i> (sero 2-14)	20	0.05	0.50
7575-04 - 1st Floor Men's RR Center Sink 322303018-0004	Potable	1000	1000	Concentrated (Acid)	<i>Legionella pneumophila</i> (sero 2-14)	2	0.50	14.00
7575-05 - 2nd Floor Right Water Fountain 322303018-0005	Potable	1000	1000	Concentrated	None Detected	20	0.05	ND
7575-06 - 2nd Floor Men's RR Right Sink 322303018-0006	Potable	1000	1000	Concentrated (Acid)	<i>Legionella pneumophila</i> (sero 2-14)	2	0.50	0.50
7575-07 - 2nd Floor Breakroom Sink 322303018-0007	Potable	1000	1000	Concentrated	None Detected	20	0.05	ND
7575-08 - 2nd Floor Janitors Mop Sink 322303018-0008	Potable	1000	1000	Concentrated	None Detected	20	0.05	ND
7575-09 - 3rd Floor Breakroom Sink 322303018-0009	Potable	1000	1000	Concentrated	None Detected	20	0.05	ND
7575-10 - 3rd Floor Men's RR Left Sink 322303018-0010	Potable	1000	1000	Concentrated	None Detected	20	0.05	ND
7575-11 - 3rd Floor Janitor's Mop Sink 322303018-0011	Potable	1000	1000	Concentrated (Acid)	<i>Legionella</i> sp. (not <i>L. pneumophila</i>)	2	0.50	5.00
7575-12 - 3rd Floor Left Water Fountain 322303018-0012	Potable	1000	1000	Concentrated	None Detected	20	0.05	ND

Cheryl Replogle, Microbiology Lab Manager
or other Approved Signatory



LA Testing

520 Mission Street South Pasadena, CA 91030
Tel/Fax: (323) 254-9960 / (323) 254-9982
<http://www.LATesting.com> / pasadenalab@lateesting.com

LA Testing Order: 322303018

Customer ID: AURO50

Customer PO:

Project ID:

Attention: Karen Shockley
Aurora Industrial Hygiene, Inc
9666 Business Park Ave
Suite 102
San Diego, CA 92131

Phone: (619) 276-5901

Fax: (619) 276-5904

Collected Date: 02/02/2023

Received Date: 02/03/2023 10:00 AM

Processed Date: 02/03/2023 03:35 PM

Analyzed Date: 02/20/2023 08:36 AM

Project: 62102 7575 Metropolitan Drive

Legionella identification is carried out using a direct fluorescent antibody (DFA) for *Legionella pneumophila* (serogroups 1-14), a DFA for *L. pneumophila* serogroup 1 (LP1) and a DFA for 15 other *Legionella* species. *L. pneumophila* (2-14) has tested positive by DFA for *L. pneumophila* but negative for LP1. *Legionella* spp. have tested negative by DFA but are positive for growth on selective media. ND = None Detected/Below LOD. The limit of detection (LOD) is the lowest reportable CFU/mL count and is dependent on the sample volume processed and the dilutions used during testing. Volume processed may be lower than volume submitted if sample is turbid or contains components that restrict concentration of the sample. Volume examined is the calculated amount of the original sample that is plated for culture analysis. High bacterial counts (*Legionella* or otherwise) may require dilution of the sample that will lower the Volume Examined and raise the Limit of Detection.

Samples high in non-*Legionella* bacteria may obscure the detection of *Legionella*.

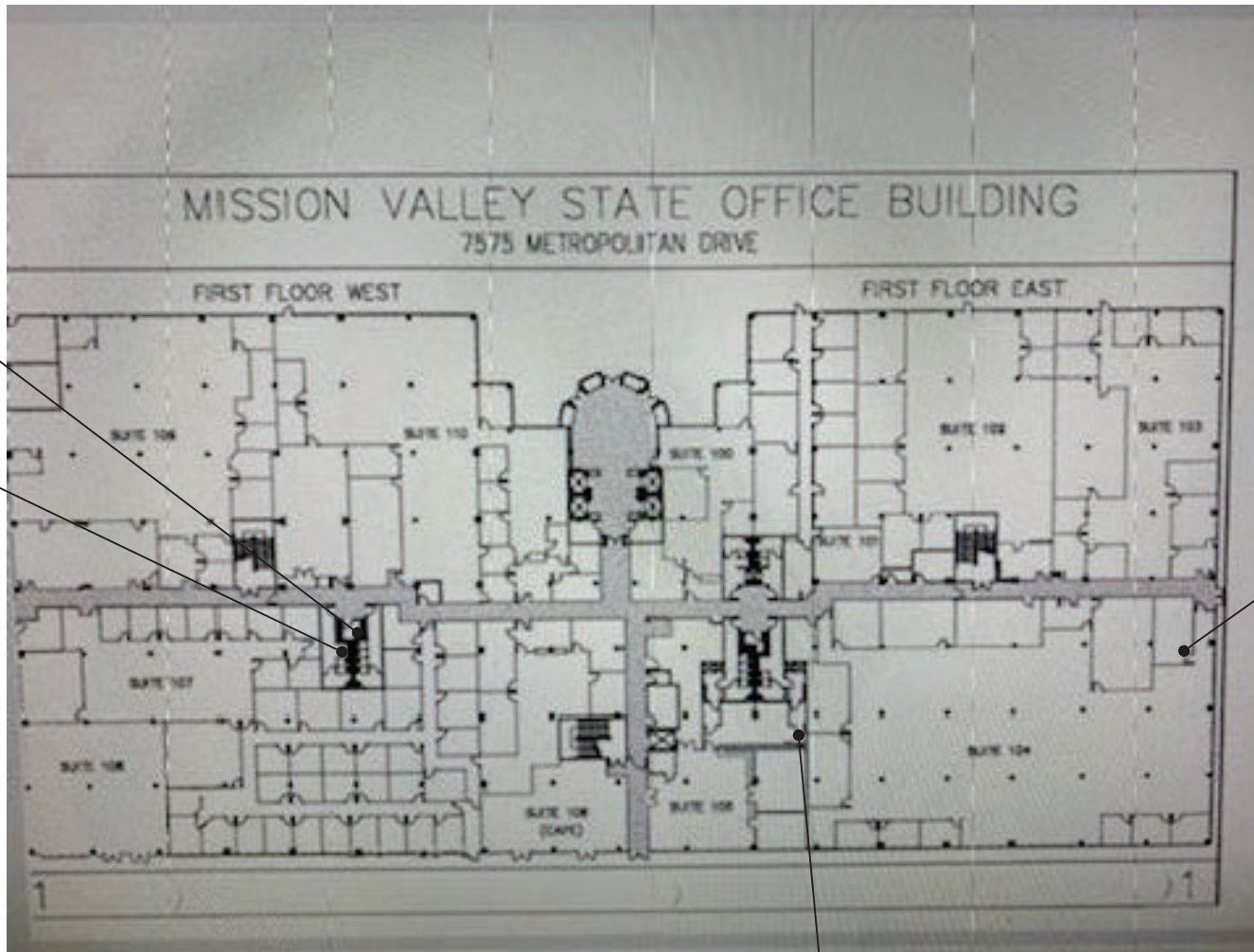
EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.

CDC ELITE certified

Initial report from: 02/20/2023 10:33 AM

Printed 02/20/2023 10:36 AM

MIC_CDCISO_0017



0.50
CFU/ml. 7575-03
1ST FL. JANITOR MOP SINK

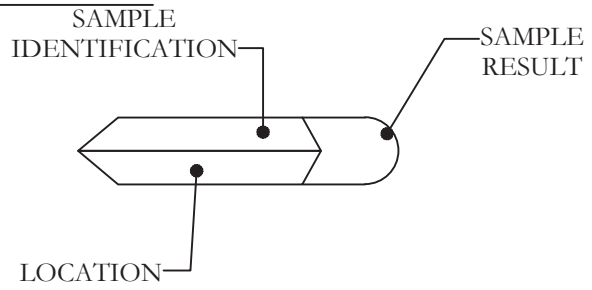
14 CFU/ml. 7575-04
1ST FL. MENS RESTROOM
CENTER SINK

7575-01
1ST FL. MENS SHOWER ND

7575-02
1ST FL. BREAK ROOM SINK ND



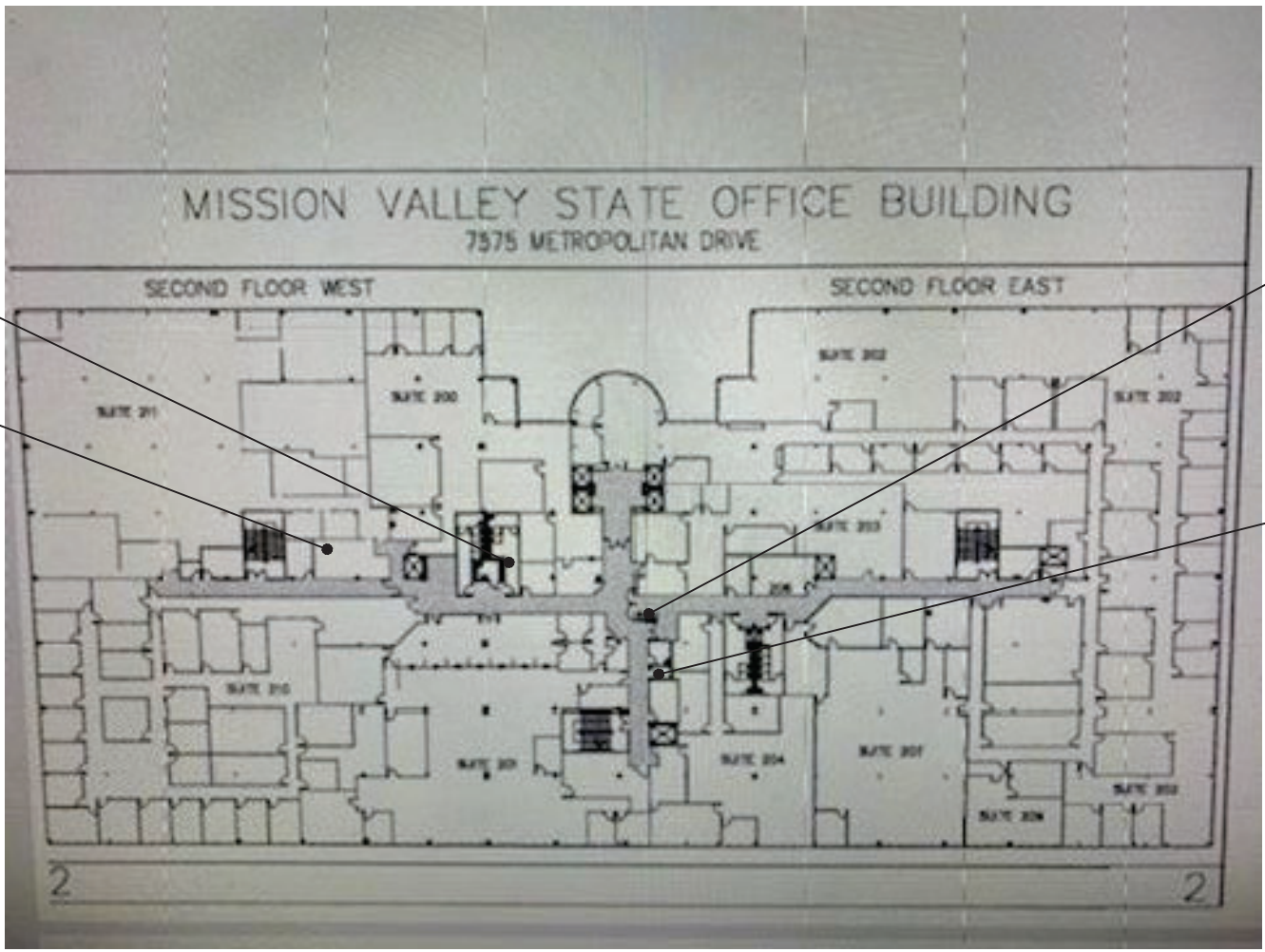
LEGEND



STATE OF CALIFORNIA

MILLENNIUM CONSULTING ASSOCIATES
PLEASANTON, CA

SCALE: N.T.S.	FOR	MISSION VALLEY STATE BUILDING 7575 METROPOLITAN DRIVE	
DATE: 3/2/23	TITLE	1ST FLOOR LOCATION MAP	
DRWN: BG	JOB NO.	3114.2000	DWG. NO. FIGURE-1
CHECKED: JTM			
APPROVED: JTM			



7575-06
0.5 CFU/ml
2ND FL MENS
RESTROOM SINK

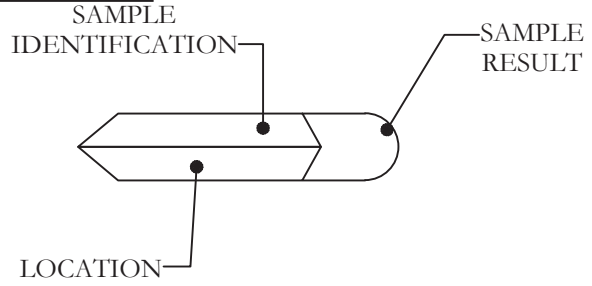
7575-07
ND
2ND FL MENS
RESTROOM SINK

7575-05
ND
2ND FL RIGHT
WATER FOUNTAIN

7575-08
ND
2ND FL JANITORS
MOP SINK



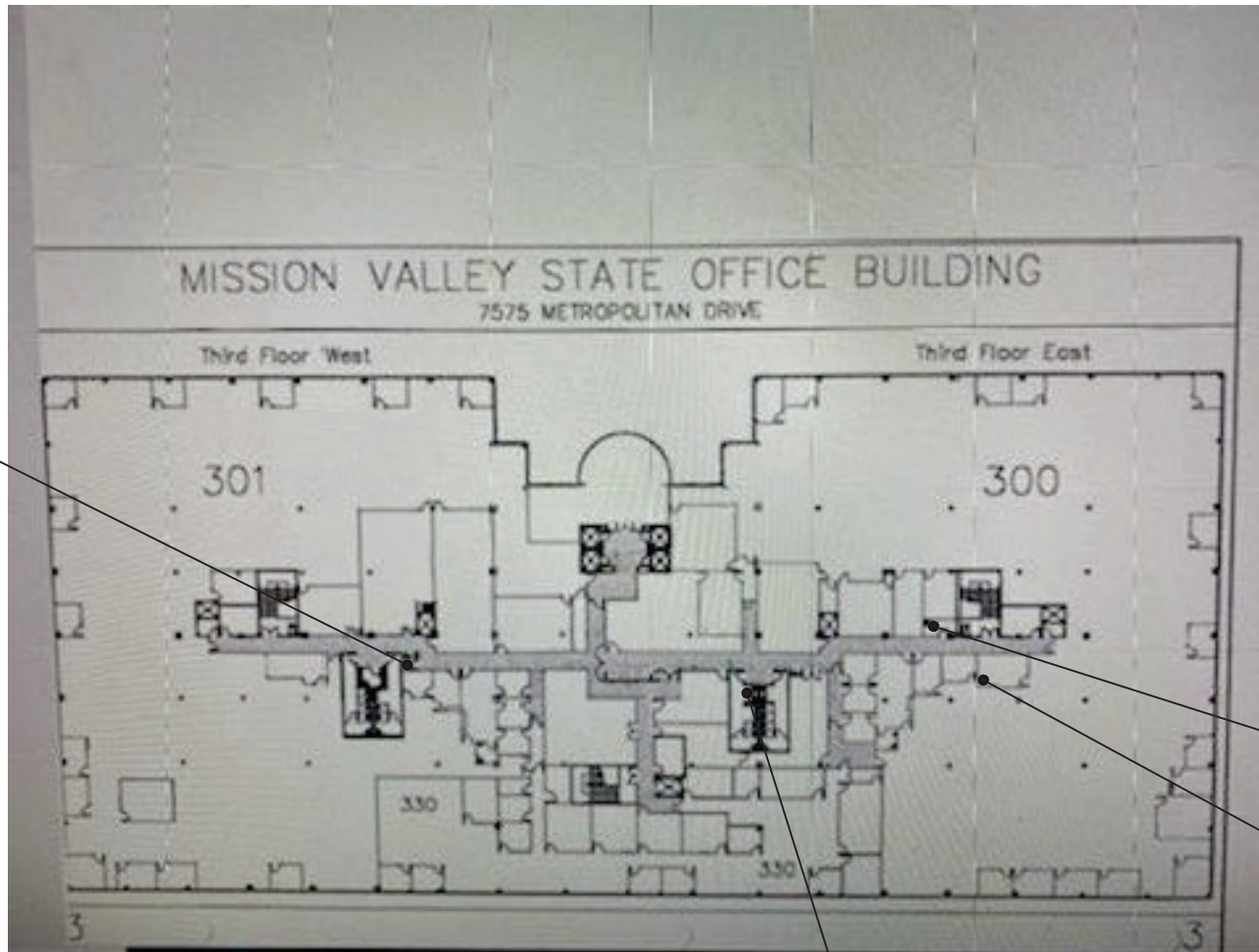
LEGEND



STATE OF CALIFORNIA

MILLENNIUM CONSULTING ASSOCIATES
PLEASANTON, CA

SCALE: N.T.S.	FOR	MISSION VALLEY STATE BUILDING 7575 METROPOLITAN DRIVE	
DATE: 3/1/23			
DRWN: BG	TITLE	2ND FL LOCATION MAP	
CHECKED: JTM			
APPROVED: JTM	JOB NO.	3114.2000	DWG. NO. FIGURE-2



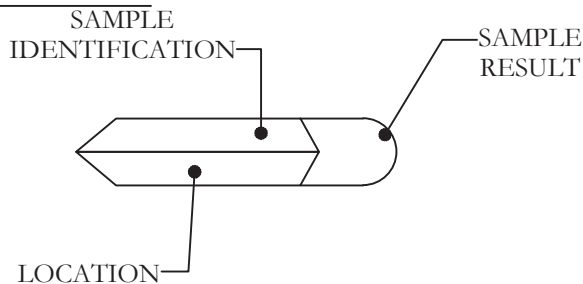
7575-12
3RD FL- LEFT
WATER FOUNTAIN
ND

7575-11
3RD FL- JANITOR MOP SINK
0 CFU/ml

7575-09
3RD FL- BREAKROOM SINK
ND

7575-10
3RD FL- MENS RESTROOM
LEFT SINK
ND

LEGEND



STATE OF CALIFORNIA

MILLENNIUM CONSULTING ASSOCIATES
PLEASANTON, CA

SCALE: N.T.S.	FOR	MISSION VALLEY STATE BUILDING 7575 METROPOLITAN DRIVE	
DATE: 3/1/23			
DRWN: BG	TITLE	SECOND FLOOR LOCATION MAP	
CHECKED: JTM	JOB NO.	3114.2000	DWG. NO. FIGURE-3
APPROVED: JTM			