December 9, 2015

Test Report

Client:

Ronny Cohen

Mitrana Group

18851 NE 29th Ave, Ste. 706

Aventura, FL 33180

Testing Laboratory:

BioVir Laboratories

685 Stone Road, Unit 6

Benicia, California 94510

Report Number:	REP.6619.1501L.1501C.120715.03.R1
Certification Project #:	6619.1501C
Project Leader:	Cassandra Rudniski
Test Unit:	6619.1501C.01/02
Model/Description:	HWB1052
Test Method:	NSF/ANSI Standard 42: Study of the Determination of the Bacteriostasis Ability
Deviation:	Yes, see below comments
Test Completion Date:	September 30, 2015

Test Results: **PASS**

Dear Ronny Cohen,

For your records, WQA is sending you the enclosed test report for your review. We appreciate your business and look forward to working with you on future testing and certification projects.

The following deviations occurred during testing:

1) The units were fun for 8 hours per day isntead of the stated 16 hours. To make up for this, 2 unit volumes (3.5L each) per batch were utilized.

2) The total organic carbon level of the general test water did not always meet the requirement of >/=2 mg/L. Since there was no provision in the standard to make adjustments to public water supply, BioVir obtained WQA pre-approval to perform testing with this deviation.

Revision R1: Test Results revised from Complete to Pass. Refer to Table 3: Challenge Results.

Should you have any questions or need additional information, please feel free to contact your Project Leader.

Report Reviewed By:

_____   12/9/15

Tom Spoden, Product Certification Director   Date

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International Headquarters
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INTRODUCTION

The Water Quality Association (WQA) requested that BioVir Laboratories, Inc. conduct an evaluation of the bacteriostasis potential of the Mitrana HWB1052 water cooler system in accordance with section 7.2 of ANSI/NSF Standard 42-Bacteriological Performance. The purpose of this challenge study was to verify that the geometric mean of the heterotrophic plate counts of the product water samples from each system were not greater than the influent challenge samples, within a measurement precision of ±20%.

On June 30, 2015, BioVir received two Mitrana units from WQA. Table 1 shows how the units were identified by BioVir upon arrival.

Table 1. Water Cooler Identification		
WQA ID	Mitrana S/N	BioVir ID
6619.1501C.01	201411025348	151165 A
6619.1501C.02	201411025370	151165 B

DISCUSSION

Description of Test System-

Test water was pumped from the holding tank to the unit reservoirs (3.5 L). Sterile hoses were attached to the hot and cold outlets of each unit, and the units were allowed to drain into the adjacent sink by depressing the hot and cold levers (Figure 1). New sterile tubing was placed on the taps before an effluent sample was taken.

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Description of Challenge Water -

De-chlorinated Benicia tap water was fed into a holding tank. Temperature and pH adjustments were made as was necessary to meet the specifications set forth in the protocol (see attached).

Description of Challenge organisms and assays-

The units were continuously challenged with the native bacteria in the tap water. This value ranged from 1.0×10^3 CFU/mL - 1.5×10^5 CFU/mL.

Heterotrophic plate counts were conducted on R2A agar by the membrane filtration method (SM 9215D). All samples were appropriately diluted to account for the anticipated bacterial concentration. All samples were assayed in triplicate. Plates were incubated at $25^{\circ}C$ for 5 days, and the resultant colonies were counted.

Description of Quality Control -

Quality control documentation followed Good Laboratory Practices (GLP, 40 CFR Part 160). Batches of microbiological media were checked for sterility and against positive controls. In addition, with every batch of samples processed, positive growth controls were also run.

Description of Test Run -

Testing commenced on August 17, 2015 and ran through the morning of September 25, 2015 when the final post stagnation sample was taken (a total of 6 weeks). The units were conditioned by passing 3.5 L of water through them. After conditioning, the following procedure was followed for the duration of the test:

1. The units were filled with 3.5 L of water.
2. The hot and cold levers were depressed to allow the water to pass through the units.
3. The units were refilled with 3.5 L of water
4. The hot and cold levers were depressed to allow the water to pass through the units.
5. The units were refilled with 3.5 L of water, a timer was started for 60 minutes, and the water in the reservoir was allowed to sit in the reservoir for this period.
6. At the end of the 60 minutes, steps 2-5 were repeated for an 8 hour day (a total of 16 fills),
7. After the 16th fill, the reservoir was filled with 3.5 L and this remained in the reservoir overnight.
8. Steps 2-7 were then repeated for the next 6 weeks.

An influent sample and effluent samples from both the hot and cold taps on each unit were taken after the second fill was performed at the start of testing, at the end of testing on day 1, and before (end of day on Friday) and after (start of day on Monday) each 56 hour stagnation period.

SUMMARY OF RESULTS

The measured water quality for each day of testing is presented in Table 2. All water quality specifications were met except for the TOC. In most cases the TOC was under the required 2 mg/L, as this is the level in the public water supply. The standard does not provide direction for TOC adjustment, and prior notice was given to WQA that BioVir's water supply may be under 2 mg/L.

Table 2. Water Quality Measurements					
Test Date	Chlorine (mg/L)	pH	Temp. (°C)	TOC (mg/L)	TDS (mg/L)
8/17/15	ND[1]	7.41	23.4	1.42	200
8/18/15	-	7.40	19.9	1.54	208
8/19/15	-	7.24	21.6	1.54	208
8/20/15	-	7.26	22.0	1.47	212
8/21/15	ND	7.58	19.5	2.02	212
8/24/15	-	7.10	21.5	1.64	213
8/25/15	-	7.20	21.4	1.59	214
8/26/15	-	7.63	21.2	1.64	219
8/27/15	-	7.42	21.8	1.59	221
8/28/15	-	7.60	21.9	1.67	232
8/31/15	-	7.67	22.0	1.60	229
9/1/15	-	7.71	21.6	1.25	243
9/2/15	-	7.40	21.6	1.22	247
9/3/15	-	7.57	20.8	1.28	251
9/4/15	-	7.57	21.7	1.16	205
9/8/15	-	7.86	21.5	1.21	207
9/9/15	-	7.81	22.1	1.57	216
9/10/15	-	7.95	21.7	1.90	212
9/11/15	-	7.80	22.4	1.70	214
9/14/15	-	7.84	21.9	1.41	218
9/15/15	-	7.92	21.2	1.46	221
9/16/15	-	7.91	19.8	1.47	205
9/17/15	-	7.88	20.9	1.39	207
9/18/15	-	7.81	21.4	1.73	208
9/21/15	-	7.76	22.3	1.49	213
9/22/15	-	7.95	22.2	2.18	217
9/23/15	-	7.87	20.1	2.21	226
9/24/15	-	7.79	21.2	1.88	204
9/25/15	-	7.89	22.9	2.10	203
[1]Non-detect					

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Table 3 summarizes the challenge results for the test period. The requirement for the study is that the geometric mean of the heterotrophic plate counts of the product water samples from each system shall be no greater than that of the influent challenge samples, within a measurement precision of ±20%. For unit A, the geometric mean of the heterotrophic plate counts for the hot and cold taps were a little higher than the geometric mean of the influent heterotrophic plate counts, but well within the required 20%. For unit B, the geometric mean of the counts for the hot tap was a little under the influent, and the cold tap was slightly over the influent, but both were within the required 20% precision.

Table 3. Challenge Results									
Date	Influent (CFU/mL)		Unit A Hot (CFU/mL)		Unit A Cold (CFU/mL)		Unit B Hot (CFU/mL)		Unit B Cold (CFU/mL)
8/17/2015	1400		1500		1200		500		1400
8/17/2015	2200		1700		2000		2200		2200
8/21/2015	5200		4500		6100		4100		5100
8/24/2015	12000		13000		12000		12000		14000
8/28/2015	100000		100000		100000		120000		100000
8/31/2015	87000		130000		110000		110000		89000
9/4/2015	99000		140000		130000		96000		100000
9/8/2015	78000		96000		79000		83000		79000
9/11/2015	60000		61000		63000		81000		76000
9/14/2015	56000		63000		66000		68000		65000
9/18/2015	55000		69000		64000		68000		40000
9/21/2015	67000		60000		60000		62000		62000
9/25/2015	120000		150000		97000		100000		110000
Geometric Mean	30430.09		33311.95		31553.81		29570.57		30624.18
Measurement Precision (%)			-9.47		-3.69		2.82		-0.64

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Manufacturer:	Mitrana Group
Model:	HWB1052
Test Unit Number(s):	6619.1501C.01/02