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BMID FILE: 486

MONTHLY REPORTING PERIOD - JANUARY, 2018

1. SUMMARY

The list below provides a summary of the water quality information collected by BMID in January, 2018. Documentation and figures are provided on the following pages to support this submission.

	January 2018	
Source	**Total (US Gals)**	**Total (Mega Litres)**
Mission Creek	60,097,000	227.47
Well 4	0	0
Well 5	992,000	3.75
Scotty Creek (Irrigation Only)	0	0
Total	61,089,000	231.22

1. Turbidity levels at the Distribution Intake remained below 1.0 NTU for all of January. Peak turbidity at the Distribution Intake was 0.28 NTU at various times during January, 2018;
2. The highest monthly turbidity level recorded at the first customer (Booster #1) was 0.42 NTU on January 1, 2018 and average monthly turbidity was 0.37 NTU;
3. Mission Creek experienced normal flows for winter as freezing conditions in the watershed continued throughout January;
4. BMID's Scotty Creek source, used for irrigation in the north end, was shut-off for the season on September 10, 2017;
5. Well #5 was used throughout January as a source for domestic water in the north-end of the system, in conjunction with Mission Creek system water, as determined by usage and pressures in the area;
6. A new dedicated sample location was added on Sylvania Crescent which will take the place of the former sample site previously located at 2670 Enterprise Way;
7. *E.Coli* levels at Mission Creek's Point of Diversion were average during January. The highest raw water *E.Coli* count was 5 on January 8, 2018;
8. *E.Coli* levels at the Distribution Intake had low counts on all samples throughout the month, with a peak count of 2 on January 23, 2018;
9. No *E.Coli* and no *Coliforms* were found in treated water in the distribution system through third-party analysis. In addition, no positive bacteria tests were found from the in-house presence-absence tests during routine testing;
10. BMID's Water Treatment Plant was first placed on stand-by on October 13, 2017. The WTP remains able to resume operations if Mission Creek is not of sufficient quality to by-pass treatment. Throughout January 2018, the WTP has remained on stand-by;

1.0 FLOWS - JANUARY, 2018

Maximum est. Daily Flow was on January 18, 2018 at 2,538,000 US gallons (9.61 ML)

Minimum est. Daily Flow was on January 19, 2018 at 1,158,000 US gallons (4.38 ML)

Mission Creek provided 98% of domestic flow throughout January.

Figure 1.1 - Domestic Water System Flow

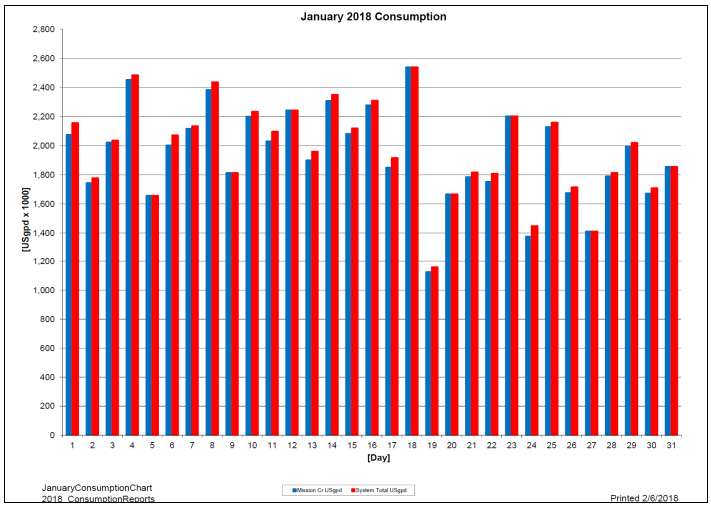

Table 1.2 - January, 2018 Daily Consumption Report

Year	Mission Cr	Well #4	Well #5	System Total	System Total
2018	Usgpd	Usgpd	Usgpd	Usgpd	ML/Day
1-Jan	2,074,000	0	81,000.0	2,155,000	8.16
2-Jan	1,743,000	0	33,000.0	1,776,000	6.72
3-Jan	2,021,000	0	14,000.0	2,035,000	7.70
4-Jan	2,451,000	0	33,000.0	2,484,000	9.40
5-Jan	1,656,000	0	0.0	1,656,000	6.27
6-Jan	2,001,000	0	70,000.0	2,071,000	7.84
7-Jan	2,116,000	0	18,000.0	2,134,000	8.08
8-Jan	2,382,000	0	53,000.0	2,435,000	9.22
9-Jan	1,812,000	0	0.0	1,812,000	6.86
10-Jan	2,199,000	0	34,000.0	2,233,000	8.45
11-Jan	2,029,000	0	67,000.0	2,096,000	7.93
12-Jan	2,242,000	0	0.0	2,242,000	8.49
13-Jan	1,899,000	0	60,000.0	1,959,000	7.41
14-Jan	2,307,000	0	42,000.0	2,349,000	8.89
15-Jan	2,081,000	0	37,000.0	2,118,000	8.02
16-Jan	2,277,000	0	32,000.0	2,309,000	8.74
17-Jan	1,849,000	0	66,000.0	1,915,000	7.25
18-Jan	2,538,000	0	0.0	2,538,000	9.61
19-Jan	1,124,000	0	34,000.0	1,158,000	4.38
20-Jan	1,666,000	0	0.0	1,666,000	6.31
21-Jan	1,784,000	0	32,000.0	1,816,000	6.87
22-Jan	1,751,000	0	56,000.0	1,807,000	6.84
23-Jan	2,201,000	0	0.0	2,201,000	8.33
24-Jan	1,375,000	0	73,000.0	1,448,000	5.48
25-Jan	2,128,000	0	30,000.0	2,158,000	8.17
26-Jan	1,675,000	0	39,000.0	1,714,000	6.49
27-Jan	1,410,000	0	0.0	1,410,000	5.34
28-Jan	1,789,000	0	24,000.0	1,813,000	6.86
29-Jan	1,993,000	0	26,000.0	2,019,000	7.64
30-Jan	1,670,000	0	38,000.0	1,708,000	6.46
31-Jan	1,854,000	0	0.0	1,854,000	7.02
Totals Usgpd	60,097,000	0	992,000	61,089,000	231.22
Totals ML	227.47	0.00	3.75		
Avg's	1,941,433	7.35		1,974,500	7.47
Max	2,538,000	9.61		2,538,000	9.61
Min	1,124,000	4.25		1,158,000	4.38

2.0 RAW WATER QUALITY - BACTERIOLOGICAL MONITORING

Raw water samples were taken at three points at BMID settling ponds before chlorination

Samples were taken twice per week at the Distribution Intake's Point of Disinfection and at the Mission Creek raw water Point of Diversion; one sample is taken per week at Stevens Pond outlet (point halfway between WTP Outlet and Distribution Intake).

Samples from the previous month are also provided to show a two month trend

Figure 2.1 - E.Coli Readings (CARO Lab results) December 2017 - January 2018

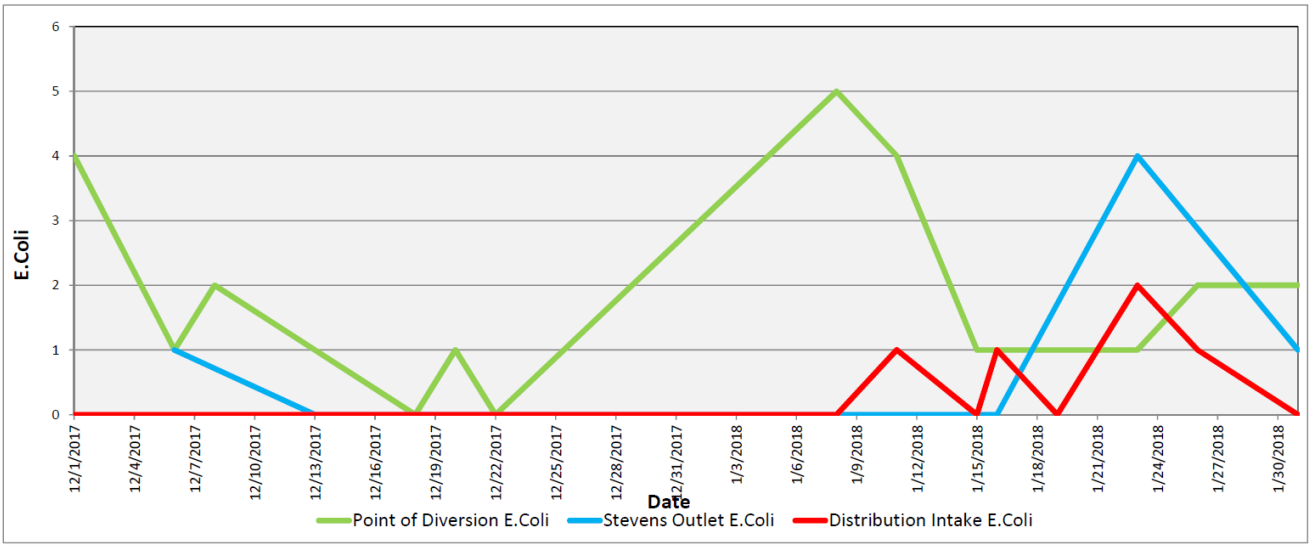

Table 2.2 - E.Coli Readings (CARO Labs)

Date	Point of Diversion E.Coli	Stevens Outlet E.Coli	Distribution Intake E.Coli
1-Dec-17	4		0
6-Dec-17	1	1	0
8-Dec-17	2		0
13-Dec-17	1	0	0
18-Dec-17	0		0
20-Dec-17	1	0	0
22-Dec-17	0		
8-Jan-18	5		0
11-Jan-18	4	0	1
15-Jan-18	1		0
16-Jan-18	1	0	1
19-Jan-18	1		0
23-Jan-18	1	4	2
26-Jan-18	2		1
31-Jan-18	2	1	0

Stevens or WTP Intake (Raw) - Sampling of raw water at intake from Mission Creek
Stevens Outlet (Raw) - Sampling point after exiting 142,000 m^3 1st upper balancing reservoir (Stevens Res.)
Hadden Outlet (Raw) - Sampling point after exiting 75,000 m^3 2nd lower balancing reservoir (Hadden Res.)
(*Hadden Outlet = Distribution Intake - Point of Disinfection*)

3.0 RAW AND TREATED WATER TURBIDITY

Turbidity for the Mission Creek source was measured at Booster Station No. 1 on Gallagher's Road, the first-customer, through January 2018. The highest turbidity recorded at this location was 0.42 NTU on January 1, 2018.

Figure 3.1 – Daily Turbidity Readings (Distribution Intake and Booster Station 1)

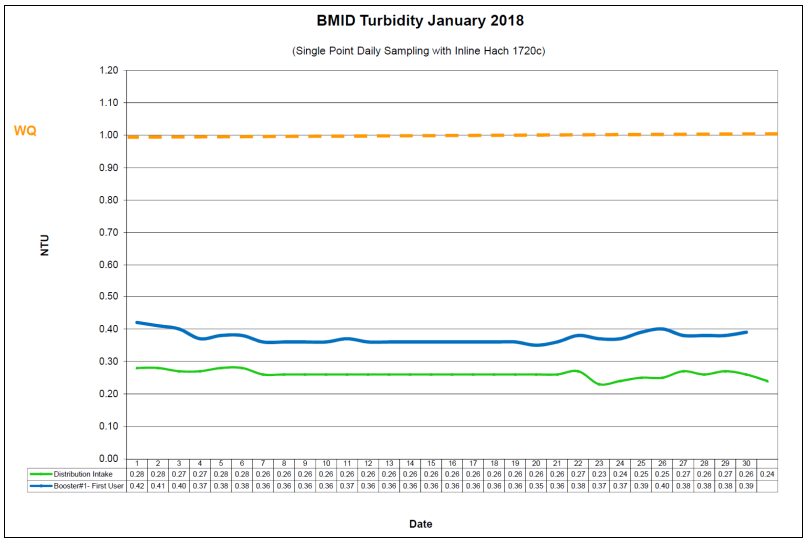

Table 3.2 - Daily Monitoring Record – Turbidity at Distribution Intake & Bst Stn 1

Turbidity Point Sampling for January 2018				
Date	Distribution Intake		Booster#1- First User	
	Sample Time	[NTU]	Sample Time	[NTU]
1	12:34 PM	0.28	12:40 PM	0.42
2	10:24 AM	0.28	9:24 AM	0.41
3	9:40 AM	0.27	9:00 AM	0.40
4	8:36 AM	0.27	2:02 PM	0.37
5	10:30 AM	0.28	8:45 AM	0.38
6	8:45 AM	0.28	8:20 AM	0.38
7	9:03 AM	0.26	8:35 AM	0.36
8	10:47 AM	0.26	11:30 AM	0.36
9	8:21 AM	0.26	7:54 AM	0.36
10	9:11 AM	0.26	8:27 AM	0.36
11	8:47 AM	0.26	8:24 AM	0.37
12	11:20 AM	0.26	10:15 AM	0.36
13	9:10 AM	0.26	8:16 AM	0.36
14	10:25 AM	0.26	10:05 AM	0.36
15	9:43 AM	0.26	8:53 AM	0.36
16	10:28 AM	0.26	10:40 AM	0.36
17	8:27 AM	0.26	7:48 AM	0.36
18	2:00 PM	0.26	1:40 PM	0.36
19	8:39 AM	0.26	8:02 AM	0.36
20	8:28 AM	0.26	8:09 AM	0.35
21	8:54 AM	0.26	8:39 AM	0.36
22	9:04 AM	0.27	8:12 AM	0.38
23	10:55 AM	0.23	1:53 PM	0.37
24	9:01 AM	0.24	8:01 AM	0.37
25	1:16 PM	0.25	1:13 PM	0.39
26	12:56 PM	0.25	11:27 AM	0.40
27	8:00 AM	0.27	7:23 AM	0.38
28	8:17 AM	0.26	7:44 AM	0.38
29	10:44 AM	0.27	9:15 AM	0.38
30	8:35 AM	0.26	7:52 AM	0.39
31	1:44 PM	0.24	11:04 AM	0.39
AVG		0.26		0.37

4.0 CHLORINE CONTACT TIME

Temperature, pH, current flow and chlorine residual levels are recorded to determine the CT levels that are required to provide 3 log inactivation of *Giardia*. Chlorine Contact times exceeded the CT levels required to provide 3 log (99.9%) inactivation of *Giardia Lamblia* throughout the month of January, 2018.

Figure 4.1 - CT Trending – BMID Mission Creek Source – January 2018

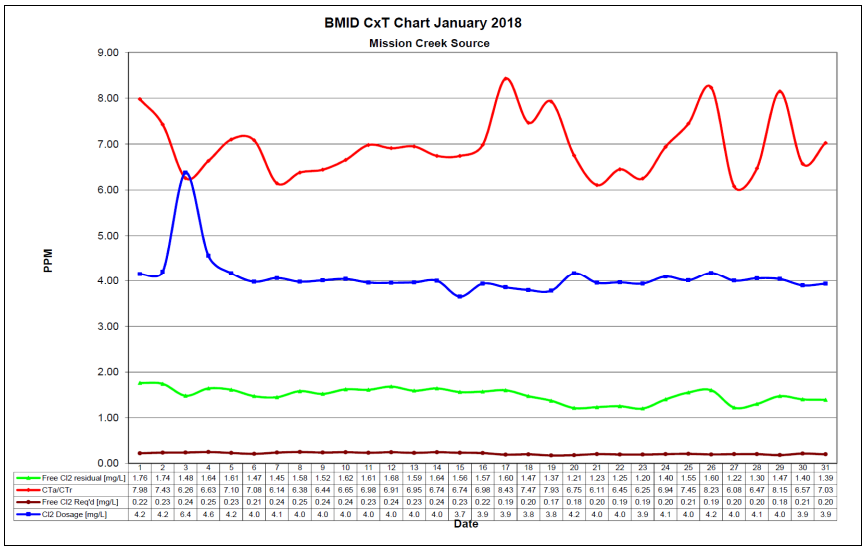

Table 4.2 - CT Table – Mission Creek Source

	BMID January 2018												
	Mission Creek Source												
DATE	pH	TEMP	PEAK	Free Cl_2	CT	CT	CTa/CTr	Free Cl_2	Cl_2	VOLUME	TIME	FLOW	CL_2 **DOSAGE**
	(highest)	(lowest)	FLOW	residual	achieved	req'd		Req'd	Dosage	TOTAL		PRESENT	PRESENT
January		[°C]	[Usgpm]	[mg/L]				[mg/L]	[mg/L]	[USgal]	[mins]		[PPD]
1	7.63	2.3	2218	1.76	2102.5	263.5	7.98	0.22	4.2	2649600	1195	1562	78
2	7.62	2.1	2333	1.74	1976.1	266.1	7.43	0.23	4.2	2649600	1136	1364	69
3	7.62	2.1	2414	1.48	1624.4	259.6	6.26	0.24	6.4	2649600	1098	1096	84
4	7.62	2.0	2477	1.64	1754.3	264.5	6.63	0.25	4.6	2649600	1070	1204	66
5	7.63	2.0	2268	1.61	1880.9	264.9	7.10	0.23	4.2	2649600	1168	1216	61
6	7.63	2.2	2124	1.47	1833.8	259.0	7.08	0.21	4.0	2649600	1247	1401	67
7	7.63	2.1	2409	1.45	1592.6	259.3	6.14	0.24	4.1	2649600	1100	1352	66
8	7.63	2.2	2509	1.58	1668.5	261.6	6.38	0.25	4.0	2649600	1056	1192	57
9	7.64	2.1	2376	1.52	1695.0	263.2	6.44	0.24	4.0	2649600	1115	1349	65
10	7.64	2.1	2428	1.62	1767.9	265.7	6.65	0.24	4.0	2649600	1091	1318	64
11	7.64	2.0	2293	1.61	1860.4	266.6	6.98	0.23	4.0	2649600	1156	1366	65
12	7.64	1.9	2393	1.68	1860.1	269.2	6.91	0.24	4.0	2649600	1107	1410	67
13	7.64	1.9	2265	1.59	1860.0	267.7	6.95	0.23	4.0	2649600	1170	1533	73
14	7.65	2.0	2396	1.64	1813.6	269.0	6.74	0.24	4.0	2649600	1106	1602	77
15	7.65	1.9	2295	1.56	1801.0	267.2	6.74	0.23	3.7	2649600	1155	1550	68
16	7.66	2.0	2223	1.57	1871.3	268.0	6.98	0.22	3.9	2649600	1192	1163	55
17	7.66	2.0	1873	1.60	2263.4	268.6	8.43	0.19	3.9	2649600	1415	1403	65
18	7.66	2.0	1966	1.47	1981.1	265.4	7.47	0.20	3.8	2649600	1348	1206	55
19	7.68	2.0	1730	1.37	2098.2	264.6	7.93	0.17	3.8	2649600	1532	1365	62
20	7.68	2.0	1835	1.21	1747.1	258.8	6.75	0.18	4.2	2649600	1444	1177	59
21	7.69	2.0	2043	1.23	1595.2	261.3	6.11	0.20	4.0	2649600	1297	1199	57
22	7.68	1.9	1961	1.25	1688.9	261.9	6.45	0.19	4.0	2649600	1351	1238	59
23	7.69	2.0	1963	1.20	1619.7	259.2	6.25	0.19	3.9	2649600	1350	993	47
24	7.69	1.9	2005	1.40	1850.1	266.6	6.94	0.20	4.1	2649600	1321	1097	54
25	7.70	1.9	2025	1.55	2028.1	272.4	7.45	0.21	4.0	2649600	1308	1078	52
26	7.76	1.8	1835	1.60	2310.3	280.6	8.23	0.19	4.2	2649600	1444	1075	54
27	7.77	2.0	1990	1.22	1624.4	267.2	6.08	0.20	4.0	2649600	1331	1122	54
28	7.78	2.0	1965	1.30	1752.9	270.9	6.47	0.20	4.1	2649600	1348	1620	79
29	7.77	1.9	1726	1.47	2256.6	276.9	8.15	0.18	4.0	2649600	1535	1215	59
30	7.78	2.0	2054	1.40	1806.0	274.9	6.57	0.21	3.9	2649600	1290	1238	58
31	7.79	2.0	1908	1.39	1930.3	274.8	7.03	0.20	3.9	2649600	1389	1015	48

5.0 WATER DISTRIBUTION SAMPLING (TREATED)

Third Party Analysis (CARO Analytical Services)

- Samples taken once per week at eight locations around the BMID service area
- 31 samples were found to be absent of Coliforms.
- 31 samples were found to be absent of *E.Coli*.

Table 5.1 - CARO Independent Lab Testing – Total Coliforms – E.Coli

	PRV 7		Booster 1		Ellison Blow-Off		Ellison School		612 Adams Rd		Prospect Reservoir		Tower Reservoir		Well #5	
Date	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli
6-Dec-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	/	/
13-Dec-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20-Dec-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	/	/
11-Jan-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16-Jan-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	/	/
23-Jan-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31-Jan-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

In-House Analysis (BMID Staff)

- Presence/Absence samples taken on a three week cycle at ten sites around the BMID service area.
- All samples were found to be absent of both Total Coliforms and *E.Coli*.

Table 5.2 - BMID In-house Testing – Presence Absence

	1/2/2018				1/8/2017				1/15/2017				1/24/2018				1/29/2018			
Location	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.
Sylvania Cres	1.02	11.8	-	X									0.88	10.0	-	X				
#5 217 Franklin Rd					0.60	6.0	-	X									0.70	6.4	-	X
2105 Morrison	0.61	6.8	-	X									0.64	8.2	-	X				
Pearson School									1.19	4.4	-	X								
Staymen Rd					0.89	6.6	-	X									0.90	4.6	-	X
PRV #10	1.06	0.7	-	X									0.84	6.2	-	X				
260 Campion Rd									0.81	5.6	-	X								
Fenwick Rd					0.84	6.0	-	X									0.77	5.0	-	X
2931 Belgo Rd									0.83	6.2	-	X								

- BMID Population = 22,550

RECOMMENDED TESTS

- Recommended number of samples per month = 22

  (as per Guide for Canadian Drinking Water Quality)

ACTUAL TESTS

- Total tests by BMID staff (presence/absence) = 15
- Total tests sampled by BMID and tested by Caro Labs = 31
- Total tests sampled in BMID treated distribution system = 46 (Zero Positive Samples)