



MONTHLY REPORTING PERIOD - FEBRUARY, 2017

1. SUMMARY

The list below provides a summary of the water quality information collected by BMID in February, 2017. Documentation and figures are provided on the following pages to support this submission.

February 2017

Source	Total (US Gals)	Total (Mega Litres)
Mission Creek	51,827,000	196.17
Well 4	0	0
Well 5	1,315,000	4.98
Scotty Creek (Irrigation Only)	0	0
Total	53,142,000	201.14

1. Turbidity levels at Hadden Pond Outlet, remained below 1.0 NTU for all of February. Peak turbidity at the intake was 0.48 NTU on February 18, 2017;
2. The highest monthly turbidity level recorded at the first customer (Booster #1) was 0.51 NTU on February 21, 2017 and average monthly turbidity was 0.46 NTU;
3. Mission Creek had average flows for February as temperatures in the Mission Creek watershed remained well below freezing, resulting in stable flows throughout the month;
4. *E.Coli* levels at the raw water intake on Mission Creek were average during February. The highest raw water *E.Coli* count was 5 on February 9, 2017;
5. *E.Coli* levels at the point immediately prior to disinfection (Hadden Outlet) had zero counts on most samples during February, with a peak count of 1 on February 16, 2017;
6. No *E.Coli* and no Coliforms were found in treated water in the distribution system through third-party analysis and no positive bacteria tests were found from the in-house presence-absence tests;
7. Well #5 was used throughout February 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;
8. BMID's Water Treatment Plant was shut down for the winter on December 3, 2016 as water quality in Mission Creek was of high enough quality to allow BMID to bypass the WTP;

1.0 FLOWS - FEBRUARY, 2017

Maximum est. Daily Flow was on February 16, 2017 at 2,614,000 US gallons (9.89 ML)

Minimum est. Daily Flow was on February 17, 2017 at 1,212,000 US gallons (4.59 ML)

Mission Creek provided 97.5% of domestic flow throughout February.

Figure 1.1 - Domestic Water System Flow

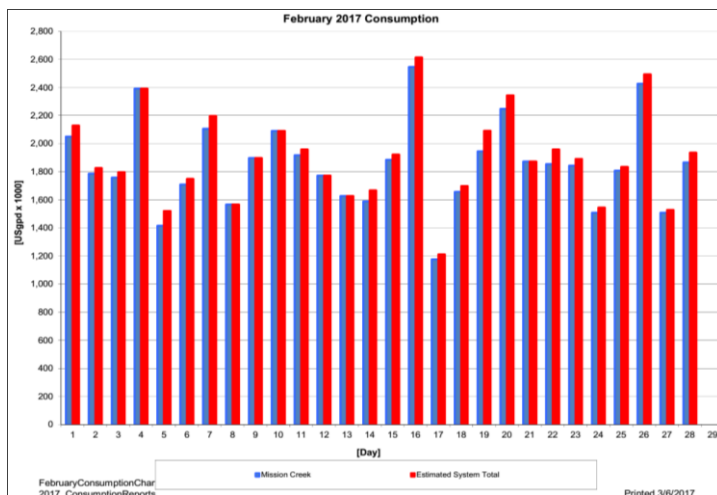


Table 1.2 - February, 2017 Daily Consumption Report

Year	Mission Creek	Well #4	Well #5	System Total	System Total
2017	Us galpd	Us galpd	Us galpd	Us galpd	ML/Day
1-Feb	2,051,000	0	78,000.0	2,129,000	8.06
2-Feb	1,787,000	0	40,000.0	1,827,000	6.92
3-Feb	1,758,000	0	39,000.0	1,797,000	6.80
4-Feb	2,392,000	0	0.0	2,392,000	9.05
5-Feb	1,416,000	0	105,000.0	1,521,000	5.76
6-Feb	1,710,000	0	40,000.0	1,750,000	6.62
7-Feb	2,106,000	0	92,000.0	2,198,000	8.32
8-Feb	1,567,000	0	0.0	1,567,000	5.93
9-Feb	1,897,000	0	0.0	1,897,000	7.18
10-Feb	2,091,000	0	0.0	2,091,000	7.91
11-Feb	1,918,000	0	41,000.0	1,959,000	7.41
12-Feb	1,772,000	0	0.0	1,772,000	6.71
13-Feb	1,627,000	0	0.0	1,627,000	6.16
14-Feb	1,588,000	0	79,000.0	1,667,000	6.31
15-Feb	1,885,000	0	38,000.0	1,923,000	7.28
16-Feb	2,546,000	0	68,000.0	2,614,000	9.89
17-Feb	1,177,000	0	35,000.0	1,212,000	4.59
18-Feb	1,656,000	0	43,000.0	1,699,000	6.43
19-Feb	1,946,000	0	146,000.0	2,092,000	7.92
20-Feb	2,248,000	0	96,000.0	2,344,000	8.87
21-Feb	1,873,000	0	0.0	1,873,000	7.09
22-Feb	1,854,000	0	106,000.0	1,960,000	7.42
23-Feb	1,843,000	0	48,000.0	1,891,000	7.16
24-Feb	1,508,000	0	38,000.0	1,546,000	5.85
25-Feb	1,808,000	0	26,000.0	1,834,000	6.94
26-Feb	2,428,000	0	66,000.0	2,494,000	9.44
27-Feb	1,508,000	0	21,000.0	1,529,000	5.79
28-Feb	1,867,000	0	70,000.0	1,937,000	7.33
Totals Us galpd	51,827,000	0	1,315,000	53,142,000	201.14
Totals ML	196.17	0.00	4.98		
Avg's	1,850,964	7.01		1,897,929	7.18
Max	2,546,000	9.64		2,614,000	9.89
Min	1,177,000	4.45		1,212,000	4.59

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 Hadden Reservoir Outlet (point of disinfection) and at the raw water intake on Mission Creek; one sample is taken per week at Stevens (east, upstream settling basin) outlet.

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

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

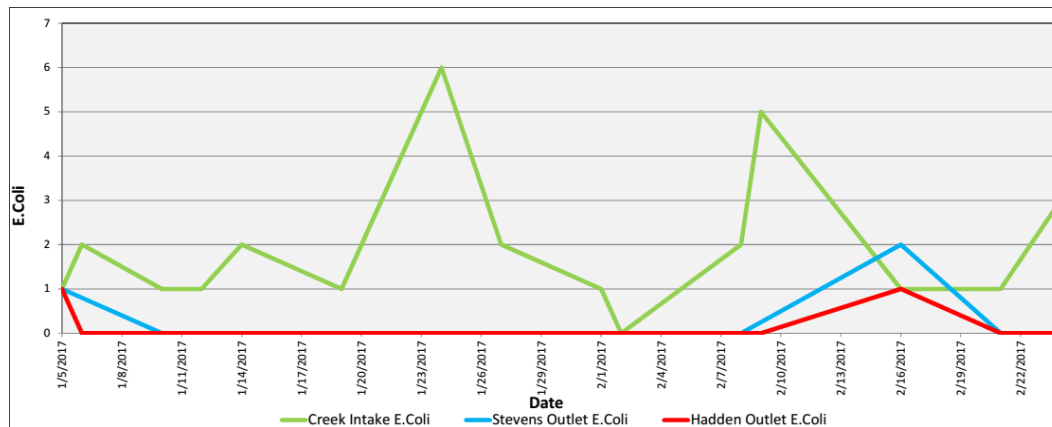


Table 2.2 - E.Coli Readings (CARO Labs)

Date	Creek Intake E.Coli	Stevens Outlet E.Coli	Hadden Outlet E.Coli
5-Jan-17	1	1	1
6-Jan-17	2	0	0
10-Jan-17	1	0	0
12-Jan-17	1	0	0
14-Jan-17	2	0	0
19-Jan-17	1	0	0
24-Jan-17	6	0	0
27-Jan-17	2	0	0
1-Feb-17	1	0	0
2-Feb-17	0	0	0
8-Feb-17	2	0	0
9-Feb-17	5	0	0
16-Feb-17	1	2	1
21-Feb-17	1	0	0
24-Feb-17	3	0	0

Stevens or WTP Intake (Raw) - Sampling of raw water at intake from Mission Creek

Stevens Outlet (Raw) - Sampling point after exiting 142,000 m³ 1st upper balancing reservoir (Stevens Res.)

Hadden Outlet (Raw) - Sampling point after exiting 75,000 m³ 2nd lower balancing reservoir (Hadden Res.)
(Hadden Outlet = 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 February 2017. The highest turbidity recorded at this location was 0.51 NTU on February 21, 2017.

Figure 3.1 – Daily Turbidity Readings (Hadden and Bst Stn 1)

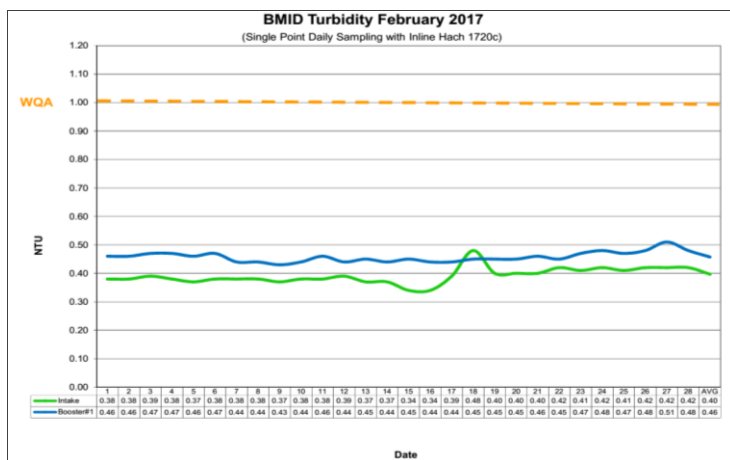


Table 3.2 - Daily Monitoring Record – Turbidity at Intake & Bst Stn 1

Turbidity Point Sampling for February 2017				
Date	Intake		Booster#1	
	Sample Time	[NTU]	Sample Time	[NTU]
1	8:51 AM	0.38	8:05 AM	0.46
2	9:17 AM	0.38	8:24 AM	0.46
3	8:35 AM	0.39	7:57 AM	0.47
4	1:40 PM	0.38	12:50 PM	0.47
5	10:30 AM	0.37	9:00 AM	0.46
6	9:45 AM	0.38	9:01 AM	0.47
7	9:14 AM	0.38	9:38 AM	0.44
8	8:50 AM	0.38	8:07 AM	0.44
9	2:10 PM	0.37	9:07 AM	0.43
10	8:45 AM	0.38	8:02 AM	0.44
11	11:59 AM	0.38	11:20 AM	0.46
12	12:55 PM	0.39	12:21 PM	0.44
13	10:45 AM	0.37	10:10 AM	0.45
14	9:05 AM	0.37	8:00 AM	0.44
15	8:48 AM	0.34	8:10 AM	0.45
16	9:03 AM	0.34	3:16 PM	0.44
17	9:39 AM	0.39	9:09 AM	0.44
18	8:36 AM	0.48	8:10 AM	0.45
19	9:25 AM	0.40	8:23 AM	0.45
20	3:13 PM	0.40	10:55 AM	0.45
21	11:40 AM	0.40	11:04 AM	0.46
22	11:54 AM	0.42	11:20 AM	0.45
23	11:41 AM	0.41	10:51 AM	0.47
24	2:34 PM	0.42	10:59 AM	0.48
25	7:40 AM	0.41	7:02 AM	0.47
26	7:36 AM	0.42	6:57 AM	0.48
27	11:39 AM	0.42	11:15 AM	0.51
28	11:39 AM	0.42	8:46 AM	0.48
AVG		0.40		0.46

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 February, 2017.

Figure 4.1 - CT Trending – BMID Mission Creek Source – February 2017

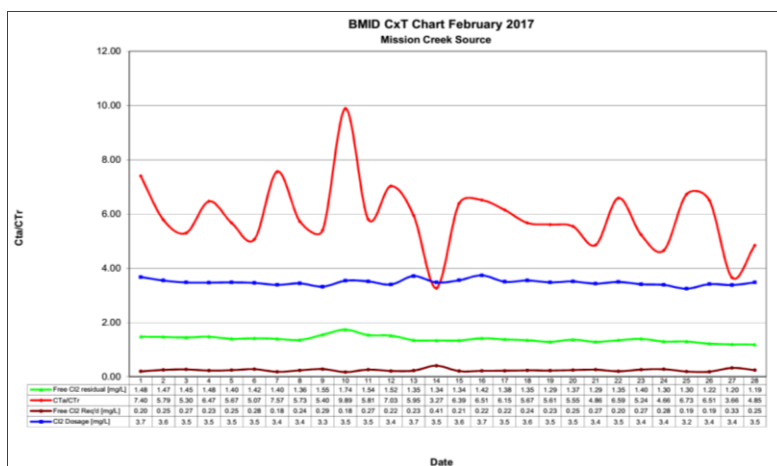


Table 4.2 - CT Table – Mission Creek Source

DATE	BMID February 2017 Mission Creek Source												
	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
	February	[°C]	[USgpm]	[mg/L]				[mg/L]	[mg/L]	[USgal]	[mins]	6873	[PPD]
1	7.81	1.6	1846	1.48	2124.3	286.9	7.40	0.20	3.7	2649600	1435	1176	52
2	7.80	1.6	2356	1.47	1653.2	285.7	5.79	0.25	3.6	2649600	1125	1617	69
3	7.83	1.6	2515	1.45	1527.6	288.0	5.30	0.27	3.5	2649600	1054	1866	78
4	7.83	1.4	2069	1.48	1895.3	292.9	6.47	0.23	3.5	2649600	1281	1678	70
5	7.84	1.3	2228	1.40	1664.9	293.5	5.67	0.25	3.5	2649600	1189	2082	87
6	7.84	1.3	2524	1.42	1490.7	294.2	5.07	0.28	3.5	2649600	1050	1202	50
7	7.83	1.5	1699	1.40	2183.3	288.5	7.57	0.18	3.4	2649600	1560	1252	51
8	7.84	1.4	2167	1.36	1662.9	290.2	5.73	0.24	3.4	2649600	1223	1812	75
9	7.84	1.4	2568	1.55	1599.3	296.0	5.40	0.29	3.3	2649600	1032	2253	90
10	7.84	2.0	1614	1.74	2856.4	288.9	9.89	0.18	3.5	2649600	1642	1245	53
11	7.83	2.0	2484	1.54	1642.7	282.7	5.81	0.27	3.5	2649600	1067	1821	77
12	7.82	1.6	1981	1.52	2033.0	289.1	7.03	0.22	3.4	2649600	1338	1760	72
13	7.84	2.2	2193	1.35	1631.1	274.3	5.95	0.23	3.7	2649600	1208	1972	88
14	7.85	1.8	3841	1.34	924.4	282.6	3.27	0.41	3.5	2649600	690	1244	52
15	7.85	1.8	1966	1.34	1805.9	282.6	6.39	0.21	3.6	2649600	1348	1636	70
16	7.85	2.0	2054	1.42	1831.8	281.2	6.51	0.22	3.7	2649600	1290	1757	79
17	7.85	1.7	2079	1.38	1758.8	285.9	6.15	0.22	3.5	2649600	1274	1329	56
18	7.93	1.6	2138	1.35	1673.0	294.8	5.67	0.24	3.6	2649600	1239	1781	76
19	8.03	1.6	2010	1.29	1700.5	302.9	5.61	0.23	3.5	2649600	1318	932	39
20	7.87	1.6	2260	1.37	1606.2	289.5	5.55	0.25	3.5	2649600	1172	1420	60
21	7.88	1.6	2444	1.29	1398.5	287.9	4.86	0.27	3.4	2649600	1084	1526	63
22	7.88	1.8	1899	1.35	1883.6	285.9	6.59	0.20	3.5	2649600	1395	1214	51
23	7.81	1.6	2490	1.40	1489.7	284.5	5.24	0.27	3.4	2649600	1064	1390	57
24	7.89	1.7	2572	1.30	1339.2	287.2	4.66	0.28	3.4	2649600	1030	1990	81
25	7.89	1.8	1794	1.30	1920.0	285.2	6.73	0.19	3.2	2649600	1477	1204	47
26	7.90	2.0	1776	1.22	1820.1	279.6	6.51	0.19	3.4	2649600	1492	1267	52
27	7.91	1.8	3064	1.20	1037.7	283.8	3.66	0.33	3.4	2649600	865	3001	122
28	7.91	2.0	2327	1.19	1355.0	279.5	4.85	0.25	3.5	2649600	1139	1603	67
Averages	7.86	1.7	2249	1.39	1696.7	287.3	5.90	0.24	3.5				

5.0 WATER DISTRIBUTION SAMPLING (TREATED)

Third Party Analysis (CARO Analytical Services)

- Samples taken once per week at seven locations around the BMID service area
- 27 samples were found to be absent of Coliforms.
- 27 samples were found to be absent of *E.Coli*.
- Zero samples were had Coliforms or *E.Coli* present.

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

Date	PRV 7		Booster 1		Ellison Blow-Off		612 Adams Rd		Prospect Reservoir		Tower Reservoir		Well #5	
	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli
5-Jan-17	0	0	0	0	0	0	0	0	0	0	0	0	-	-
10-Jan-17	0	0	0	0	0	0	0	0	0	0	0	0	-	-
17-Jan-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24-Jan-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Feb-17	0	0	0	0	0	0	0	0	0	0	0	0	-	-
8-Feb-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16-Feb-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21-Feb-17	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

Location	2/6/2017				2/14/2017				2/20/2017				2/27/2017			
	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.
2670 Enterprise Way					0.71	7.0	-	X								
#5 217 Franklin Rd									0.90	3.8	-	X				
2105 Morrison					0.33	3.8	-	X								
654 Mayfair Ct	0.96	4.4	-	X									0.93	5.8	-	X
800 Galbraith Ct									0.92	5.0	-	X				
1625 Hyashi									0.82	4.0	-	X				
PRV #10					1.02	3.0	-	X								
260 Campion Rd	0.22	4.2	-	X									0.53	1.8	-	X
2821 Fenwick Rd									0.42	5.6	-	X				
2931 Belgo Rd	0.70	4.6	-	X									0.73	5.8	-	X

- BMID Population = 22,400

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) = 13
- Total tests sampled by BMID and tested by Caro Labs = 27
- Total tests sampled in BMID treated distribution system = 40 (Zero positive samples)