



MONTHLY REPORTING PERIOD - MAY, 2023

SUMMARY

This document provides a summary of the water quality information collected by BMID in May 2023. Documentation and figures are provided on the following pages to support this submission.

WATER SUPPLY & USAGE SUMMARY

1. Water usage data for May is as follows:

Source	Total (US Gals)	Total (Mega Litres)
Mission Creek	355,887,895	1,347.04
Well 4	3,875,374	14.67
Well 5	16,661,730	63.06
Well 6 (Irrigation Only)	9,970,752	37.74
Scotty Creek (Irrigation Only)	7,763,390	29.38
Total	394,159,142	1,491.89

2. May 2023 was considerably hotter and dryer than historical averages. Average daily highs for May are 19.2 degrees with an average of 56mm of precipitation. For 2023, the average daily high was 25.2 degrees and only 11.6mm of rain fell in Kelowna during May;
3. Mission Creek experienced the majority of the year's freshet during May. Mission Creek's peak flow was 74m³/s on May 23;
4. BMID's control gates on the high-elevation reservoirs are closed for the spring. The gates will remain closed until summer of 2023;
5. BMID's Scotty Creek source supplying irrigation water to the north-end of the service area, provided water from May 1st, 2023 as irrigation demands in the north-end increased for the growing season;
6. Well #4, used as a primary source for domestic water in the north-end of the distribution system, was in operation throughout most of May;
7. Well #5, used as the primary domestic water source in the north-end of the system for both irrigation and domestic consumption during the summer months, resumed operation on April 19th as flows in the north-end increased. Well #5 was utilized throughout most of May;
8. Well #6, which supplies water to the north-end irrigation distribution system, resumed operations on May 11th. Well #6 will continue to operate until irrigation demand reduces later in the fall;
9. A portion of the BMID's transmission main west of the Mission Creek Intake and east of the tunnel is located on an unstable slope. Slope movement continues to be monitored. It is currently stable and is not moving;

WATER QUALITY SUMMARY

1. An “off spec” incident occurred at the UV treatment plant at 6:49 PM on May 18, 2023. A lightning storm caused a power outage that triggered the PLC to operate the UV reactors isolation valves in unintended ways. As a result, the plant closed the isolation valves downstream of the reactors stopping the water supply at the UV station. Water flow was restored about an hour after the event;
2. Refilling the reactors and the water main resulted in a brief isolated spike in turbidity and the reactors were not able to adequately meet the required dose while refilling the water mains. Therefore, BMID called a voluntary Water Quality Advisory for 24 hours after in incident;
3. Throughout the “off spec” incident and subsequent refilling, chlorine disinfection remained in place. 2322 cubic meters off “off spec” water was recorded during the incident. Moreover, peak turbidity at Booster 1 was 3.77 NTU however, turbidity levels dropped below 1.0 NTU after a few hours. The Water Quality Advisory was rescinded after 24 hours;
4. The May 29th bacterial sample at Kirschner reservoir had background colonies present in the sample. However, there were no detectable *E.Coli* of *Total Coliforms* present in the sample. Subsequent retesting of the same sample location did not show any background colonies present;
5. The WTP ran throughout all of May as spring freshet increased both turbidity and colour in the raw water. The WTP will remain in use until the late-fall/early-winter;
6. Raw water turbidity levels in Mission Creek peaked at over 100 NTU at several times throughout May. The highest average daily turbidity (as recorded at the Grit Pond) was 68.61 NTU on May 15th. Average daily raw water turbidity for May was 25.43 NTU at the Grit Pond, located downstream of the Mission Creek Intake;
7. The highest turbidity level at the Distribution Intake (end of Hadden Reservoir) was 0.86 NTU on May 9th, 2023. Average settled water turbidity for May was 0.71 NTU at the Distribution Intake at the lower end of Hadden Reservoir;
8. The highest turbidity level at the first customer (Booster #1) was 1.11 NTU on May 12th. The increase in turbidity is primarily a result of increased system flows stirring up sediment in the water main. However, the increased turbidity was after disinfection took place downstream of the chlorination and UV facilities. Average monthly turbidity at the first customer was 0.84 NTU;
9. The highest turbidity daily average at the UV plant was 2.5 NTU on May 5th. This rise in turbidity was a result of sediment already present in the water main becoming resuspended by increased system flows for early May. Average monthly turbidity at the UV plant was 0.76 NTU throughout May;
10. BMID’s Ultraviolet Treatment Facility treated 1,343,631 m³ of water, 3,551 m³ of which was “Off-Spec” (0.264%);
11. Regarding microbiological readings, the Mission Creek upper and mid-elevation watershed experienced rising temperatures which melted most of the snowpack in the watershed during May. Mission Creek will have greater variability in microbiological conditions as surface water runoff will affect creek conditions;
12. *E.Coli* levels at Mission Creek’s Point-of-Diversion (creek intake prior to WTP) had average counts for May. The May 8th sample had the peak monthly count of 19 coliforms. The average monthly *E.Coli* was 10.5, based on 5 samples;
13. *E.Coli* levels in the raw water at the water distribution system intake at the east end of Hadden Reservoir, immediately prior to disinfection, had low counts on all 5 samples. The highest *E.Coli* count was on May 23 with 2 coliforms. Reduction in *E.Coli* levels is

due to the settling of particles as water passes through Stevens and Hadden Reservoirs;

14. No *E.Coli* or *Total Coliforms* were found in treated water in the distribution system through third-party analysis. In addition, zero positive samples were detected by BMID's in-house presence/absence testing throughout May;

1.0 FLOWS - MAY, 2023

The Maximum Daily Flow was on May 30th, at 21,203,153 US gallons (80.25 ML)

The Minimum Daily Flow was on May 6th, at 5,357,468 US gallons (20.35 ML)

Mission Creek provided just over 90% of domestic and irrigation flow supplied in May.

Figure 1.1 - Domestic Water System Flow

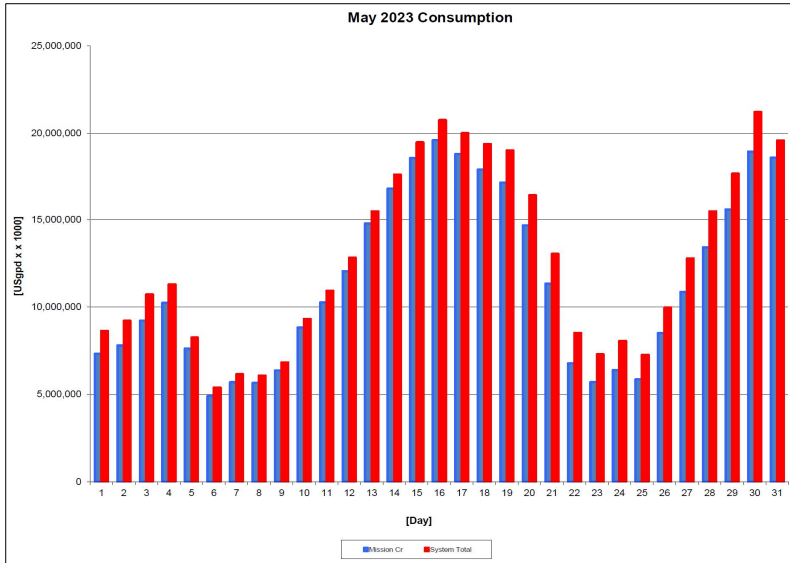


Table 1.2 - May 2023 - Daily Consumption Report

Year	Mission Cr	Well #4	Well #5	Well #6	Scotty Crk	System Total	System Total
2023	Usgpd	Usgpd	Usgpd	Usgpd	Usgpd	Usgpd	ML/Day
1-May	7,321,157	311,456	813,115	0	172,880	8,618,609	32.62
2-May	7,778,967	258,358	934,633	0	219,250	9,191,209	34.79
3-May	9,203,198	284,511	954,446	0	259,990	10,702,145	40.51
4-May	10,221,924	315,683	457,278	0	287,760	11,282,646	42.70
5-May	7,618,641	322,287	-	0	296,310	8,237,239	31.18
6-May	4,891,699	208,958	-	0	274,810	5,375,468	20.35
7-May	5,679,249	201,562	-	0	264,780	6,145,591	23.26
8-May	5,638,434	201,562	-	0	219,190	6,059,186	22.93
9-May	6,363,428	221,110	-	0	230,500	6,815,038	25.79
10-May	8,809,132	254,660	-	0	233,030	9,296,822	35.19
11-May	10,243,507	254,660	-	205,392	209,390	10,912,949	41.31
12-May	12,035,623	100,120	-	482,856	192,100	12,810,700	48.49
13-May	14,771,785	0	-	491,040	192,340	15,455,165	58.50
14-May	16,813,650	0	-	577,896	220,680	17,612,226	66.66
15-May	18,569,865	0	-	666,336	233,780	19,469,981	73.69
16-May	19,579,795	0	-	927,168	233,780	20,740,743	78.50
17-May	18,794,596	0	-	955,680	238,790	19,989,066	75.66
18-May	17,901,906	0	267,868	951,720	243,060	19,364,555	73.29
19-May	17,156,281	0	793,038	797,544	259,730	19,006,593	71.94
20-May	14,646,066	0	808,624	652,080	263,900	16,370,670	61.96
21-May	11,324,023	0	832,664	626,472	243,790	13,026,949	49.31
22-May	6,767,373	0	851,156	632,808	249,280	8,500,617	32.17
23-May	5,693,118	0	1,312,397	17,952	253,330	7,276,796	27.54
24-May	6,386,226	0	1,354,400	5,016	296,860	8,042,502	30.44
25-May	5,843,009	0	1,105,287	5,016	297,210	7,250,522	27.44
26-May	8,507,897	138,425	1,061,963	2,640	243,460	9,954,385	37.68
27-May	10,848,752	322,816	1,223,371	111,936	252,130	12,759,005	48.29
28-May	13,390,350	336,553	1,265,638	208,560	254,580	15,455,681	58.50
29-May	15,558,674	142,652	1,299,981	368,280	296,530	17,666,116	66.87
30-May	18,935,638	0	1,325,869	626,736	314,910	21,203,153	80.25
31-May	18,593,931	0	-	657,624	315,260	19,566,815	74.06
Totals Usgpd	355,887,895	3,875,374	16,661,730	9,970,752	7,763,390	394,159,142	1491.89
Totals ML	1,347.04	14.67	63.06	37.74	29.38	1,492	
Avg's	11,480,255	43.45				12,714,811	48.13
Max	19,579,795	74.11				21,203,153	80.25
Min	4,891,699	18.52				5,375,468	20.35

2.0 RAW WATER QUALITY - BACTERIOLOGICAL MONITORING

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

Samples were taken at the Distribution Intake’s Point of Disinfection and at the Mission Creek raw water Point of Diversion and 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

The upper watershed experienced considerable snow melt throughout May, resulting in increased E.Coli levels compared to previous months. Moreover, The *E. Coli* readings confirm the WTP’s effectiveness in reducing raw water quality risks with coagulation, flocculation, and sedimentation processes followed by settling times across Stevens and Hadden Reservoirs.

Figure 2.1 - Raw Water *E.Coli* Readings (CARO Lab results) April 2023 - May 2023



Table 2.1 - *E.Coli* Readings (CARO Labs)

Date	Point of Diversion E.Coli	Stevens Outlet E.Coli	Distribution Intake E.Coli
3-Apr-23	2	0	0
11-Apr-23	5	0	0
17-Apr-23	3	0	0
24-Apr-23	53	0	0
1-May-23	10	0	1
8-May-23	19	0	1
15-May-23	1	0	1
23-May-23	12	6	2
29-May-23	10	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 = Distribution Intake - Point of Disinfection)

3.0 RAW AND TREATED WATER TURBIDITY

Through May 2023, turbidity for the Mission Creek source was measured at Booster Station No. 1 on Gallagher’s Road, which is the approximate location of the first-customer. The highest turbidity level recorded at this location was 1.11 NTU on May 12th, 2023. The lowest turbidity level was 0.57 NTU and the average turbidity was 0.84 NTU.

The distribution intake is where the water leaves Hadden Reservoir and enters a closed conduit. Turbidity levels are greatly reduced through the settling process as Mission Creek treated water makes its way through the reservoirs.

Figure 3.1 – Daily Turbidity Readings (Mission Creek Raw - Distribution Intake - Booster Station 1 and UV Plant)

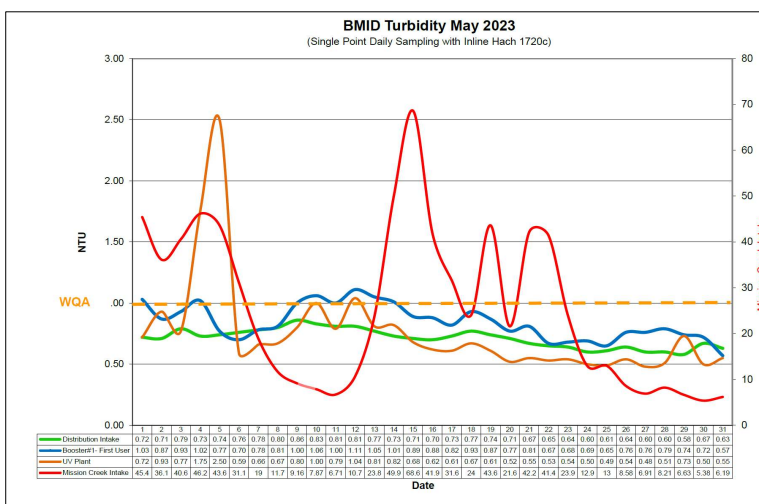


Table 3.1 - Daily Monitoring Record – Turbidity at On-Line Turbidity Analysers

Turbidity Point Sampling for May 2023				
Date	Mission Creek Intake	Distribution Intake	Booster#1- First User	UV Plant
	Daily Average [NTU]	Daily Average [NTU]	Daily Average [NTU]	Daily Average [NTU]
1	45.42	0.72	1.03	0.72
2	36.13	0.71	0.87	0.93
3	40.57	0.79	0.93	0.77
4	46.18	0.73	1.02	1.75
5	43.61	0.74	0.77	2.50
6	31.11	0.76	0.70	0.59
7	18.95	0.78	0.78	0.66
8	11.72	0.80	0.81	0.67
9	9.16	0.86	1.00	0.80
10	7.87	0.83	1.06	1.00
11	6.71	0.81	1.00	0.79
12	10.66	0.81	1.11	1.04
13	23.78	0.77	1.05	0.81
14	49.87	0.73	1.01	0.82
15	68.61	0.71	0.89	0.68
16	41.89	0.70	0.88	0.62
17	31.58	0.73	0.82	0.61
18	24.04	0.77	0.93	0.67
19	43.64	0.74	0.87	0.61
20	21.58	0.71	0.77	0.52
21	42.16	0.67	0.81	0.55
22	41.39	0.65	0.67	0.53
23	23.94	0.64	0.68	0.54
24	12.94	0.60	0.69	0.50
25	13	0.61	0.65	0.49
26	8.58	0.64	0.76	0.54
27	6.91	0.60	0.76	0.48
28	8.21	0.60	0.79	0.51
29	6.63	0.58	0.74	0.73
30	5.38	0.67	0.72	0.50
31	6.19	0.63	0.57	0.55
AVG	25.43	0.71	0.84	0.76

4.0 CHLORINE CONTACT TIME

Temperature, pH, peak 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 May, 2023.

Figure 4.1 - CT Trending – BMID Mission Creek Source – May 2023

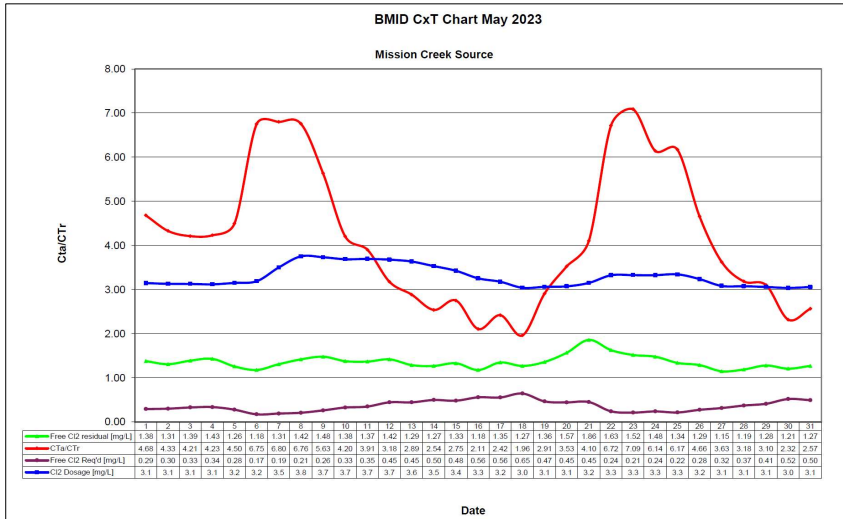


Table 4.2 - CT Table – Mission Creek Source

BMID May 2023													
Mission Creek Source													
DATE	pH	TEMP	PEAK	Free Cl2	CT	CT	CTa/CTr	Free Cl2	Cl2	VOLUME	TIME	FLOW	CL2 DOSAGE
May	(Average)	(Present)	FLOW	residual	achieved	req'd		Req'd	Dosage	TOTAL		Daily Average	Average
		[°C]	[Usgpm]	[mg/L]				[mg/L]	[mg/L]	[USgal]	[mins]	[Usgpm]	[PPD]
1	7.61	16.1	8063	1.38	453.5	96.9	4.68	0.29	3.1	2649600	329	5188	196.30
2	7.58	16.2	8488	1.31	408.9	94.4	4.33	0.30	3.1	2649600	312	5519	207.70
3	7.50	16.4	9575	1.39	384.6	91.3	4.21	0.33	3.1	2649600	277	6405	240.80
4	7.42	16.1	9843	1.43	384.9	91.0	4.23	0.34	3.1	2649600	269	7240	271.50
5	7.37	16.5	8705	1.26	383.5	85.3	4.50	0.28	3.2	2649600	304	5386	204.00
6	7.34	15.4	5139	1.18	608.4	90.1	6.75	0.17	3.2	2649600	516	3470	133.00
7	7.37	15.1	5400	1.31	642.7	94.5	6.80	0.19	3.5	2649600	491	4016	169.10
8	7.29	14.0	5552	1.42	677.6	100.3	6.76	0.21	3.8	2649600	477	3991	180.00
9	7.20	14.3	7283	1.48	538.4	95.6	5.63	0.26	3.7	2649600	364	4511	202.40
10	7.13	13.9	9184	1.38	398.1	94.7	4.20	0.33	3.7	2649600	289	6247	276.90
11	7.11	14.3	10179	1.37	356.6	91.3	3.91	0.35	3.7	2649600	260	7255	322.10
12	7.10	14.1	12771	1.42	294.6	92.7	3.18	0.45	3.7	2649600	207	8529	377.00
13	7.08	14.3	13235	1.29	258.3	89.5	2.89	0.45	3.6	2649600	200	10458	457.00
14	7.08	14.5	15050	1.27	223.6	88.0	2.54	0.50	3.5	2649600	176	11924	506.10
15	7.09	15.4	15318	1.33	230.1	83.6	2.75	0.48	3.4	2649600	173	13159	541.90
16	7.09	15.0	17567	1.18	178.0	84.4	2.11	0.56	3.3	2649600	151	13894	543.60
17	7.12	15.0	16955	1.35	211.0	87.1	2.42	0.56	3.2	2649600	156	13295	507.80
18	7.07	14.2	19133	1.27	175.9	89.5	1.96	0.65	3.0	2649600	138	12330	450.80
19	6.99	14.5	14413	1.36	250.0	85.9	2.91	0.47	3.1	2649600	184	12141	446.80
20	7.02	14.5	13278	1.57	313.3	88.8	3.53	0.45	3.1	2649600	200	10366	383.00
21	7.05	14.5	13031	1.86	378.2	92.2	4.10	0.45	3.2	2649600	203	8006	303.20
22	7.01	14.1	7027	1.63	614.6	91.5	6.72	0.24	3.3	2649600	377	4790	191.40
23	6.98	13.7	6177	1.52	652.0	92.0	7.09	0.21	3.3	2649600	429	4043	161.70
24	6.98	14.0	7112	1.48	551.4	89.8	6.14	0.24	3.3	2649600	373	4449	177.90
25	7.07	14.5	6508	1.34	545.5	88.4	6.17	0.22	3.3	2649600	407	4129	166.00
26	7.17	15.9	8859	1.29	385.8	82.8	4.66	0.28	3.2	2649600	299	6055	235.60
27	7.24	16.4	10411	1.15	292.7	80.7	3.63	0.32	3.1	2649600	255	7724	286.30
28	7.19	16.6	12603	1.19	250.2	78.6	3.18	0.37	3.1	2649600	210	9507	351.60
29	7.22	16.3	13332	1.28	254.4	82.0	3.10	0.41	3.1	2649600	199	11062	406.80
30	7.25	15.9	16345	1.21	196.1	84.5	2.32	0.52	3.0	2649600	162	13465	491.50
31	7.26	15.8	15242	1.27	220.8	86.1	2.57	0.50	3.1	2649600	174	13184	484.50
Average	7.19	15.08	11025	1.3603	377.87	89.1	4.19	0.367	3.3				

5.0 ULTRAVIOLET DISINFECTION

Total Water Treated:	1,347,182 m ³	100.00%
On-Spec Water:	1,343,631 m ³	99.736%
Off-Spec Water:	3,551 m ³	0.264%

Average monthly chlorine residual before UV Treatment was 1.27 mg/L
The average monthly chlorine residual after UV treatment and re-chlorination was 1.40 mg/L.

Figure 5.1 - UV Disinfection – BMID Mission Creek Source – May 2023

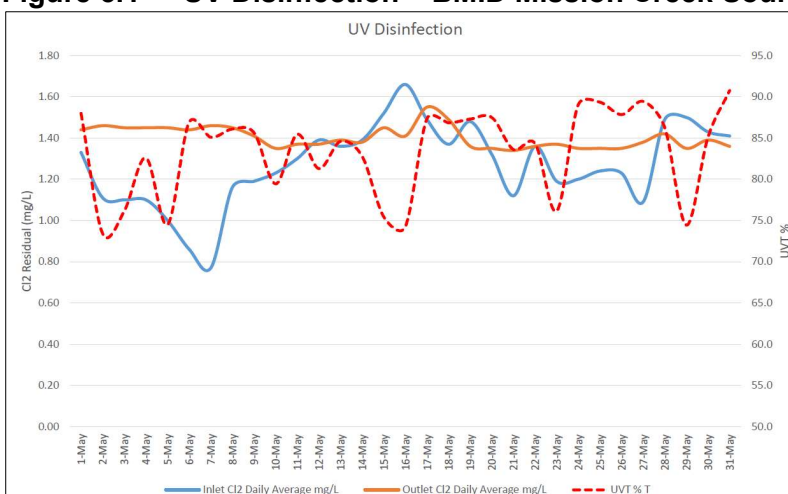


Table 5.2 - UV Disinfection Table – Mission Creek Source

Date	Inlet Cl2 Daily mg/L	Outlet Cl2 Daily mg/L	UVT % T	Turbidity NTU	In Spec Water Cubic Meters	Off Spec Water Cubic Meters	Off Spec % of Water Volume Percentage
1-May	1.33	1.44	88.0	0.72	27714	0	0.00%
2-May	1.11	1.46	73.4	0.93	29418	29	0.10%
3-May	1.10	1.45	76.2	0.77	34179	659	1.93%
4-May	1.10	1.45	82.6	1.75	38661	33	0.09%
5-May	1.00	1.45	74.5	2.50	28840	0	0.00%
6-May	0.86	1.44	86.9	0.59	18517	0	0.00%
7-May	0.77	1.46	85.1	0.66	21498	0	0.00%
8-May	1.16	1.45	86.1	0.67	21344	0	0.00%
9-May	1.19	1.41	85.7	0.80	24088	0	0.00%
10-May	1.23	1.35	79.5	1.00	33346	0	0.00%
11-May	1.30	1.37	85.5	0.79	38721	55	0.14%
12-May	1.39	1.37	81.3	1.04	45557	3	0.01%
13-May	1.36	1.39	84.6	0.81	55917	0	0.00%
14-May	1.39	1.38	82.8	0.82	63647	0	0.00%
15-May	1.52	1.45	75.5	0.68	70265	30	0.04%
16-May	1.66	1.41	74.3	0.62	74116	2	0.00%
17-May	1.49	1.55	87.4	0.61	71145	0	0.00%
18-May	1.37	1.49	86.9	0.67	65555	2211	3.37%
19-May	1.48	1.36	87.3	0.61	64833	111	0.17%
20-May	1.32	1.35	87.5	0.52	55441	0	0.00%
21-May	1.12	1.34	83.6	0.55	42866	0	0.00%
22-May	1.36	1.36	84.4	0.53	25617	0	0.00%
23-May	1.19	1.37	76.2	0.54	21551	0	0.00%
24-May	1.20	1.35	89.1	0.50	23774	401	1.69%
25-May	1.24	1.35	89.4	0.49	22098	20	0.09%
26-May	1.23	1.35	87.9	0.54	32206	0	0.00%
27-May	1.09	1.38	89.5	0.48	41067	0	0.00%
28-May	1.49	1.42	86.3	0.51	50688	0	0.00%
29-May	1.50	1.35	74.5	0.73	58896	0	0.00%
30-May	1.43	1.39	85.1	0.50	71679	0	0.00%
31-May	1.41	1.36	90.8	0.55	70386	0	0.00%
Average	1.27	1.40	83.5	0.76	Total 1343631	3551	0.264%

6.0 WATER DISTRIBUTION SAMPLING (TREATED)

Third Party Analysis (CARO Analytical Services)

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

Table 6.1 - CARO Independent Lab Testing – Total Coliforms – *E. Coli*

Date	2921 Belgo Rd		Booster 1		Elison Blow-Off		Elison School		3976 Highway 97		Prospect Reservoir		Tower Reservoir		Well #5		Well #4		Kirschner Res		Pearson School	
	Coliforms	E. coli	Coliforms	E. coli	Coliforms	E. coli	Coliforms	E. coli	Coliforms	E. coli	Coliforms	E. coli	Coliforms	E. coli	Coliforms	E. coli	Coliforms	E. coli	Coliforms	E. coli	Coliforms	E. coli
3-Apr-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-Apr-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Apr-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24-Apr-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-May-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8-May-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-May-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-May-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-May-23	0	0	0	0	0	0	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 seven sites around the BMID service area.
- All 12 samples were found to be absent of both *Total Coliforms* and *E. Coli*.

Table 6.2 - BMID In-house Testing – Presence Absence

Location	5/1/2023				5/8/2023				5/15/2023				5/23/2023				5/29/2023			
	Cl2	Temp	Pres.	Abs.	Cl2	Temp	Pres.	Abs.	Cl2	Temp	Pres.	Abs.	Cl2	Temp	Pres.	Abs.	Cl2	Temp	Pres.	Abs.
Sylvania Cres	0.72	18.2	-	X									0.66	15.2	-	X				
170 Kneller Rd	0.84	15.8	-	X									0.79	13.6	-	X				
2105 Morrison									0.98	14.8	-	X								
Staymen Rd									0.40	15.6	-	X								
260 Campion Rd					0.09	17.4	-	X									0.22	16.6	-	X
Fenwick Rd					0.17	18.6	-	X									0.26	18.2	-	X
Solly Ct	0.89	20.6	-	X									0.79	15.8	-	X				

Table 6.3 - BMID Disinfection By-product Testing – THM and HAA

11-May-23		
Location	THM (mg/L)	HAA (mg/L)
Well 4 (Ellison School)	<0.00400	<0.00200

- Both THM and HAA results are within the limits as set out in the Guidelines for Canadian Drinking Water Quality at the Well 4 location

- BMID Population = 28,000

RECOMMENDED TESTS

- Recommended number of samples per month = 28
(as per Guide for Canadian Drinking Water Quality)

ACTUAL TESTS

- Total tests by BMID staff (presence/absence) = 12
- Total tests sampled by BMID and tested by Caro Labs 30
- Total tests sampled in BMID treated distribution system = 42
- 0 Positive *E. Coli* and Total Coliform Samples