



MONTHLY REPORTING PERIOD - AUGUST, 2024

SUMMARY

This document provides a summary of the water quantity and quality information collected by BMID in August 2024. Documentation and figures are provided on the following pages to support this submission.

WATER SUPPLY & USAGE SUMMARY

1. Water usage data for August, 2024 is as follows:

Source	Total (US Gallons)	Total (Mega Litres)
Mission Creek	486,839,197	1,842.69
Well 4	2,141,098	8.10
Well 5	17,578,400	66.53
Well 6 (Irrigation Only)	499,752	1.89
Scotty Creek (Irrigation Only)	22,503,756	85.18
Total	529,562,203	2,004.39

2. BMID began withdrawing stored water from high-elevation reservoirs in mid-July to supplement Mission Creek flows during the summer. BMID utilized the upper elevation reservoirs to maintain acceptable flows in Mission creek for both domestic and irrigation consumption as well as maintaining fish flows in the creek throughout August;
3. The Scotty Creek source was used to supplement irrigation flows in the north-end of the system during periods of high irrigation demands. The Scotty Creek system was in operation for most of August;
4. Well #5, used as the primary water source in the north-end of the system for both irrigation and domestic consumption, resumed operations on April 22, 2024, as system flows increased. Well #5 operated throughout early August to meet irrigation and domestic demands;
5. Well #4, used as a primary source for domestic water in the north-end of the distribution system during low-flow periods was in operation during late August when flows reduced due to cooler weather. Well #4 will remain operational when required, depending on system demands;
6. Well #6, which supplies water to the north-end irrigation distribution system, resumed operation on May 6th. Well #6 is used during times of high irrigation demands, and the well ran when required in August 2024;
7. 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. BMID is investigating the use of Well #6 as a possible future potable water source. Initial potability testing took place in June and monthly bacterial samples continued into August. Testing will continue for the next year to verify its water quality characteristics;
2. The WTP was in operation throughout August as Mission Creek experienced increased turbidity and colour in the raw water. The WTP will remain in operation until turbidity and colour levels in Mission Creek reduce later in the year;
3. Raw water turbidity levels in Mission Creek peaked, due to a rainfall event, at 2.42 NTU on August 28th. Average daily raw water turbidity for August was 1.21 NTU at the Grit Pond;
4. The highest turbidity level at the Distribution Intake was 0.47 NTU on August 11th and 12th, 2024. Average settled water turbidity for August was 0.30 NTU at the Distribution Intake at the lower end of Hadden Reservoir. The lowest daily average recording was 0.15 NTU on August 1st and 2nd;
5. The highest turbidity level at the first customer (Booster #1) was 0.33 NTU on August 15th. Average monthly turbidity at the first customer was 0.20 NTU, while the lowest daily average turbidity was 0.10 NTU on August 2nd;
6. Average daily turbidity at the UV station peaked at 0.65 NTU on August 11th and 12th. Average monthly turbidity at the UV disinfection station was 0.44 NTU;
7. BMID's Ultraviolet Treatment Facility treated 1,842,887 m³ of water, none of which was Off-Spec (0.00%);
8. Regarding microbiological readings, BMID resumed withdrawing water from the upper elevation reservoirs in mid-summer. As upper elevation water temperature increases for the summer, there is an expected increase in microbiological readings;
9. *E.Coli* levels at Mission Creek's Point-of-Diversion (creek intake prior to WTP) had normal counts for August. The August 20th sample had the peak count of 93 *E.Coli* Coliforms. The average monthly *E.Coli* count was 29, based on 4 samples;
10. *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 a peak count of 6 coliforms on August 24th. The average monthly *E.Coli* count was 4.25 coliforms based on 4 samples. Reduction in *E.Coli* levels is due to the effectiveness of the Water Treatment Plant as well as the settling of particles as water passes through Stevens and Hadden Reservoirs;
11. 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 August;

1.0 FLOWS - AUGUST, 2024

The Maximum Daily Flow was on August 2nd at 25,613,530 US gallons (96.95 ML)

The Minimum Daily Flow was on August 28th, at 6,734,561 US gallons (25.49 ML)

Mission Creek provided just under 92% of domestic and irrigation flow supplied in August.

Figure 1.1 - Domestic Water System Flow

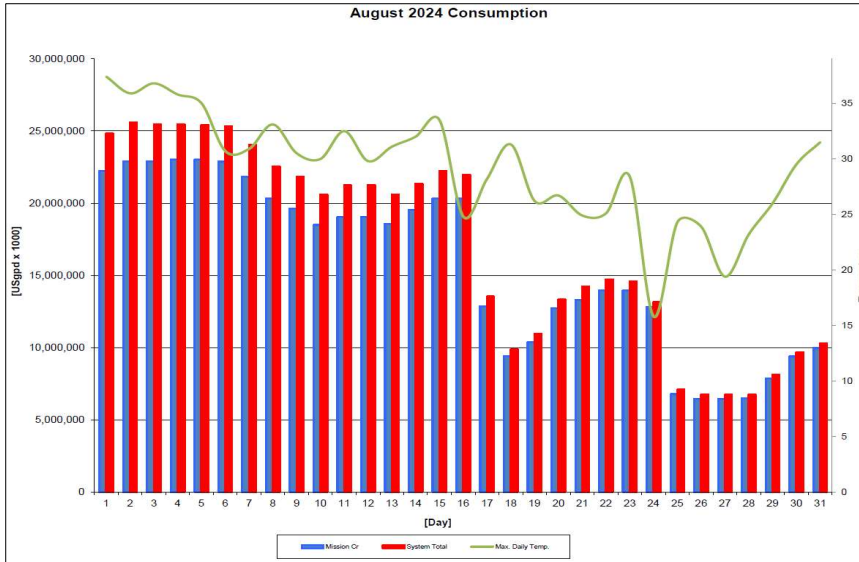


Table 1.2 - August 2024 - Daily Consumption Report

Year	Mission Cr	Well #4	Well #5	Well #6	Scotty Crk	System Total	System Total
2024	Usqpd	Usqpd	Usqpd	Usqpd	Usqpd	Usqpd	ML/Day
1-Aug	22,245,581	0	842,438	85,800	1,653,188	24,827,007	93.97
2-Aug	22,902,259	0	837,419	283,800	1,590,051	25,613,530	96.95
3-Aug	22,903,052	0	846,137	66,528	1,656,623	25,472,339	96.41
4-Aug	23,021,480	0	843,495	15,312	1,592,165	25,472,452	96.41
5-Aug	23,022,299	0	845,080	0	1,537,745	25,405,124	96.16
6-Aug	22,875,472	0	841,646	0	1,600,618	25,317,736	95.83
7-Aug	21,827,396	0	841,381	0	1,369,203	24,037,981	90.98
8-Aug	20,337,466	0	838,476	0	1,352,825	22,528,767	85.27
9-Aug	19,637,358	0	837,419	0	1,361,278	21,836,055	82.65
10-Aug	18,502,633	0	835,570	0	1,261,685	20,599,888	77.97
11-Aug	19,033,725	0	838,740	0	1,369,732	21,242,196	80.40
12-Aug	19,034,306	0	835,834	0	1,387,167	21,257,307	80.46
13-Aug	18,584,368	0	837,683	0	1,176,358	20,598,409	77.96
14-Aug	19,519,907	0	832,136	0	1,010,458	21,362,500	80.86
15-Aug	20,327,956	0	835,306	0	1,083,105	22,246,367	84.20
16-Aug	20,328,617	0	823,946	5,280	803,347	21,961,190	83.12
17-Aug	12,872,388	0	576,683	1,584	95,630	13,546,286	51.27
18-Aug	9,406,082	109,366	197,599	0	156,390	9,869,437	37.36
19-Aug	10,381,828	0	544,983	0	14,529	10,941,340	41.41
20-Aug	12,708,839	0	585,401	0	45,702	13,339,942	50.49
21-Aug	13,306,317	0	711,674	792	211,602	14,230,385	53.86
22-Aug	13,952,878	0	685,257	0	87,969	14,726,104	55.74
23-Aug	13,953,327	0	572,456	0	39,097	14,564,881	55.13
24-Aug	12,809,780	53,362	278,171	7,920	0	13,149,233	49.77
25-Aug	6,775,510	273,944	0	25,872	12,416	7,087,742	26.83
26-Aug	6,435,468	267,340	13,473	6,864	34,871	6,758,015	25.58
27-Aug	6,437,607	297,984	0	0	0	6,735,591	25.49
28-Aug	6,491,261	243,301	0	0	0	6,734,561	25.49
29-Aug	7,856,634	271,567	0	0	0	8,128,201	30.77
30-Aug	9,382,491	290,323	0	0	0	9,672,814	36.61
31-Aug	9,964,911	333,911	0	0	0	10,298,822	38.98
Totals Usqpd	486,839,197	2,141,098	17,578,400	499,752	22,503,756	529,562,203	2004.39
Totals ML	1,842.69	8.10	66.53	1.89	85.18		
Avg's	15,704,490	59.44				17,308,779	64.66
Max	23,022,299	87.14				25,613,530	96.95
Min	6,435,468	24.36				6,734,561	25.49

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 Mission Creek raw water intake, the outlet for Stevens Pond, and the point of disinfection at the end of Hadden Reservoir.

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

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) July 2024 - August 2024

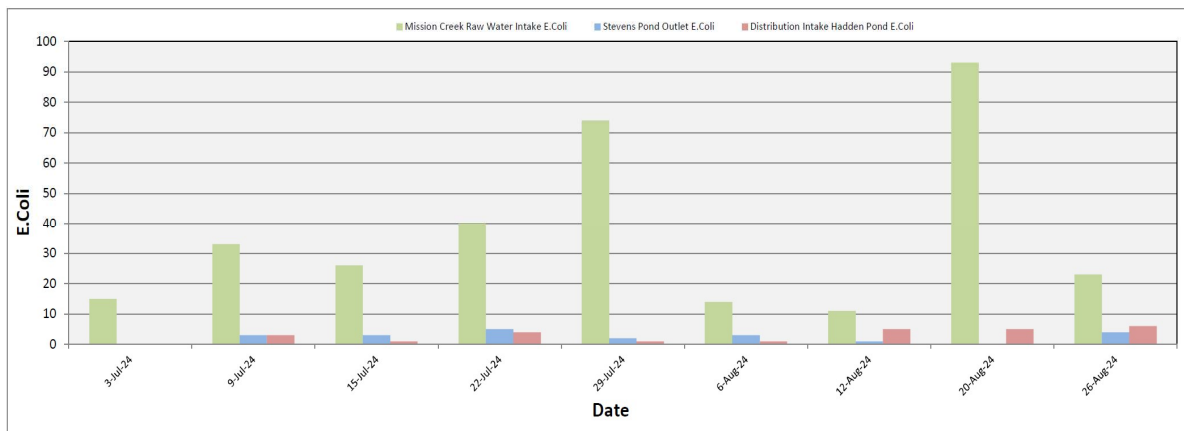


Table 2.1 - E.Coli Readings (CARO Labs)

Date	Point of Diversion E.Coli	Stevens Outlet E.Coli	Distribution Intake E.Coli
3-Jul-24	15	0	0
9-Jul-24	33	3	3
15-Jul-24	26	3	1
22-Jul-24	40	5	4
29-Jul-24	74	2	1
6-Aug-24	14	3	1
12-Aug-24	11	1	5
20-Aug-24	93	0	5
26-Aug-24	23	4	6

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

Turbidity is measured online at four locations, Mission Creek raw water intake, the Distribution Intake, the UV treatment plant, and Booster#1. The first user of the of BMID system is located near Booster #1 . The highest turbidity level recorded at this location was 0.33 NTU on August 15th, 2024. The lowest turbidity level was 0.10 NTU and the average turbidity was 0.20 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 water makes its way through the reservoirs.

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

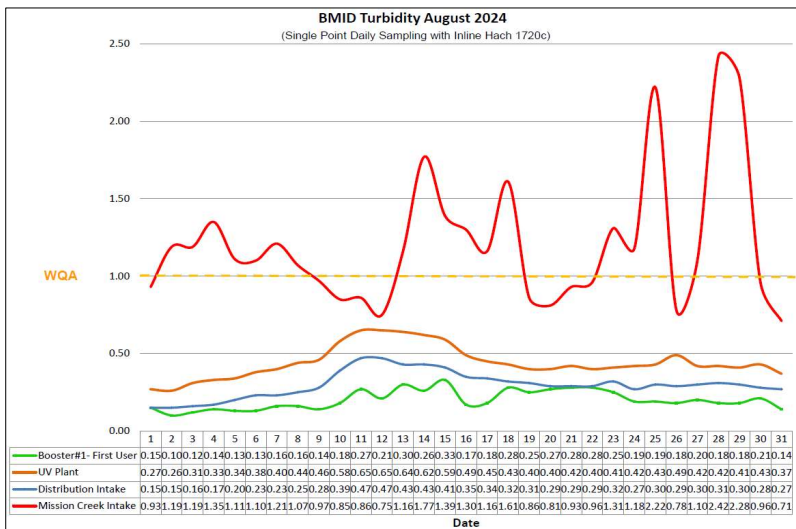


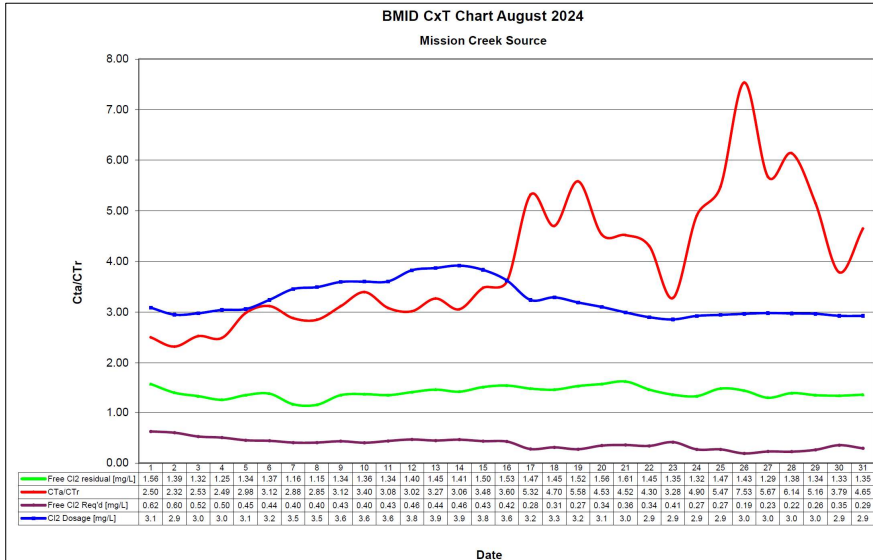
Table 3.1 - Daily Monitoring Record – Turbidity at On-Line Turbidity Analyzers

Turbidity Point Sampling for August 2024				
Date	Mission Creek Intake Daily Average [NTU]	Distribution Intake Daily Average [NTU]	UV Plant Daily Average [NTU]	Booster#1- First User Daily Average [NTU]
1	0.93	0.15	0.27	0.15
2	1.19	0.15	0.26	0.10
3	1.19	0.16	0.31	0.12
4	1.35	0.17	0.33	0.14
5	1.11	0.20	0.34	0.13
6	1.10	0.23	0.38	0.13
7	1.21	0.23	0.40	0.16
8	1.07	0.25	0.44	0.16
9	0.97	0.28	0.46	0.14
10	0.85	0.39	0.58	0.18
11	0.86	0.47	0.65	0.27
12	0.75	0.47	0.65	0.21
13	1.16	0.43	0.64	0.30
14	1.77	0.43	0.62	0.26
15	1.39	0.41	0.59	0.33
16	1.30	0.35	0.49	0.17
17	1.16	0.34	0.45	0.18
18	1.61	0.32	0.43	0.28
19	0.86	0.31	0.40	0.25
20	0.81	0.29	0.40	0.27
21	0.93	0.29	0.42	0.28
22	0.96	0.29	0.40	0.28
23	1.31	0.32	0.41	0.25
24	1.18	0.27	0.42	0.19
25	2.22	0.30	0.43	0.19
26	0.78	0.29	0.49	0.18
27	1.10	0.30	0.42	0.20
28	2.42	0.31	0.42	0.18
29	2.28	0.30	0.41	0.18
30	0.96	0.28	0.43	0.21
31	0.71	0.27	0.37	0.14
AVG	1.21	0.30	0.44	0.20

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 August, 2024.

Figure 4.1 - CT Trending – BMID Mission Creek Source – August 2024



CTa – CT achieved
CTr – CT Required

The minimum CT that BMID achieved was 2.32 X that of what was required

Table 4.2 - CT Table – Mission Creek Source

BMID August 2024													
Mission Creek Source													
DATE	pH	TEMP	PEAK	Free Cl ₂	CT	CT	CT _a /CT _r	Free Cl ₂	Cl ₂	VOLUME	TIME	FLOW	CL ₂ DOSAGE
	(Average)	(Present)	FLOW	residual	achieved	req'd		Req'd	Dosage	TOTAL	[mins]	Daily Average	Average
August		[°C]	[USgpm]	[mg/L]				[mg/L]	[mg/L]	[USgal]		[USGPM]	[PPD]
1	8.02	20.0	19,056	1.56	216.9	86.7	2.50	0.62	3.1	2649600	139	15,839	588
2	8.01	20.6	19,495	1.39	188.9	81.5	2.32	0.60	2.9	2649600	136	16,210	575
3	7.90	21.0	18,278	1.32	191.4	75.8	2.53	0.52	3.0	2649600	145	15,617	559
4	7.70	21.5	19,635	1.25	168.7	67.7	2.49	0.50	3.0	2649600	135	16,328	597
5	7.58	21.5	18,137	1.34	195.8	65.6	2.98	0.45	3.1	2649600	146	16,236	597
6	7.52	21.5	18,060	1.37	201.0	64.4	3.12	0.44	3.2	2649600	147	15,482	603
7	7.44	21.5	17,469	1.16	175.9	61.1	2.88	0.40	3.5	2649600	152	14,405	598
8	7.44	21.2	17,178	1.15	177.4	62.3	2.85	0.40	3.5	2649600	154	13,906	584
9	7.44	20.0	16,448	1.34	215.9	69.3	3.12	0.43	3.6	2649600	161	12,445	538
10	7.40	20.0	15,512	1.36	232.3	68.4	3.40	0.40	3.6	2649600	171	13,111	568
11	7.38	19.8	16,770	1.34	211.7	68.7	3.08	0.43	3.6	2649600	158	13,485	584
12	7.34	19.0	17,070	1.40	217.3	72.0	3.02	0.46	3.8	2649600	155	12,928	595
13	7.27	19.1	16,770	1.45	229.1	70.1	3.27	0.44	3.9	2649600	158	13,175	613
14	7.26	19.1	17,581	1.41	212.5	69.5	3.06	0.46	3.9	2649600	151	13,853	653
15	7.22	19.3	16,748	1.50	237.3	68.2	3.48	0.43	3.8	2649600	158	14,411	664
16	7.20	18.7	15,894	1.53	255.1	70.8	3.60	0.42	3.6	2649600	167	9,091	396
17	7.20	19.1	10,702	1.47	363.9	68.4	5.32	0.28	3.2	2649600	248	6,434	251
18	7.21	19.2	12,003	1.45	320.1	68.1	4.70	0.31	3.3	2649600	221	6,667	264
19	7.21	19.4	10,670	1.52	377.4	67.6	5.58	0.27	3.2	2649600	248	7,377	283
20	7.26	18.4	12,304	1.56	335.9	74.1	4.53	0.34	3.1	2649600	215	9,008	336
21	7.29	18.1	12,274	1.61	347.6	76.9	4.52	0.36	3.0	2649600	216	9,451	340
22	7.31	17.9	11,549	1.45	332.7	77.3	4.30	0.34	2.9	2649600	229	9,911	345
23	7.37	17.7	13,755	1.35	260.1	79.3	3.28	0.41	2.9	2649600	193	9,060	311
24	7.36	16.9	8,573	1.32	407.9	83.2	4.90	0.27	2.9	2649600	309	4,815	169
25	7.30	17.1	8,722	1.47	446.6	81.6	5.47	0.27	2.9	2649600	304	4,557	161
26	7.28	17.1	6,237	1.43	607.5	80.6	7.53	0.19	3.0	2649600	425	4,081	146
27	7.29	16.6	7,304	1.29	468.0	82.5	5.67	0.23	3.0	2649600	363	4,530	162
28	7.23	16.2	7,107	1.38	514.5	83.8	6.14	0.22	3.0	2649600	373	4,624	165
29	7.24	16.2	8,223	1.34	431.8	83.8	5.16	0.26	3.0	2649600	322	5,554	198
30	7.23	16.1	11,087	1.33	317.8	83.9	3.79	0.35	2.9	2649600	239	6,656	234
31	7.21	16.0	9,153	1.35	390.8	84.1	4.65	0.29	2.9	2649600	289	7,063	248
Averages	7.39	18.90	13863	1.39	298.38	74.11	3.98	0.38	3.24	2649600	214	10,526	417

5.0 ULTRAVIOLET DISINFECTION

Total Water Treated:	1,842,887 m ³	100.00%
On-Spec Water:	1,842,887 m ³	100.00%
Off-Spec Water:	0.00 m ³	0.00%

Average monthly chlorine residual before UV Treatment was 1.48 mg/L
The average monthly chlorine residual after UV treatment and re-chlorination was 1.50 mg/L.

Figure 5.1 - UV Disinfection – BMID Mission Creek Source – August 2024

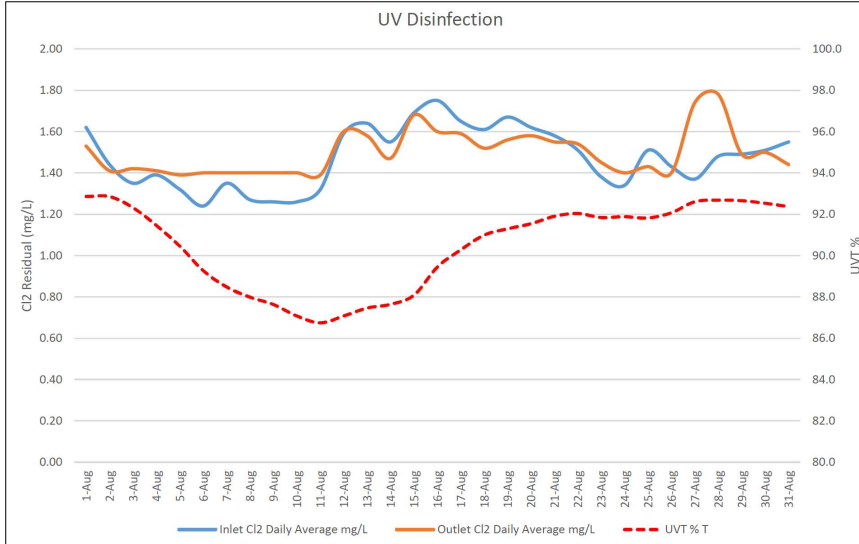


Table 5.2 - UV Disinfection Table – Mission Creek Source

Date	Inlet Cl2	Outlet Cl2	UVT	Turbidity	In Spec Water Volume	Off Spec Water	Off Spec % of Water
	Daily	Daily					
	mg/L	mg/L	% T	NTU	Cubic Meters	Cubic Meters	Percentage
1-Aug	1.62	1.53	92.9	0.27	84,209	0	0.00%
2-Aug	1.44	1.41	92.9	0.26	86,695	0	0.00%
3-Aug	1.35	1.42	92.3	0.31	86,698	0	0.00%
4-Aug	1.39	1.41	91.5	0.33	87,146	0	0.00%
5-Aug	1.32	1.39	90.5	0.34	87,149	0	0.00%
6-Aug	1.24	1.40	89.3	0.38	86,593	0	0.00%
7-Aug	1.35	1.40	88.5	0.40	82,626	0	0.00%
8-Aug	1.27	1.40	88.0	0.44	76,986	0	0.00%
9-Aug	1.26	1.40	87.6	0.46	74,336	0	0.00%
10-Aug	1.26	1.40	87.1	0.58	70,040	0	0.00%
11-Aug	1.32	1.39	86.7	0.65	72,051	0	0.00%
12-Aug	1.59	1.60	87.1	0.65	72,053	0	0.00%
13-Aug	1.64	1.58	87.5	0.64	70,350	0	0.00%
14-Aug	1.55	1.47	87.6	0.62	73,891	0	0.00%
15-Aug	1.69	1.68	88.1	0.59	76,950	0	0.00%
16-Aug	1.75	1.60	89.4	0.49	76,952	0	0.00%
17-Aug	1.65	1.59	90.3	0.45	48,727	0	0.00%
18-Aug	1.61	1.52	91.0	0.43	35,606	0	0.00%
19-Aug	1.67	1.56	91.3	0.40	39,300	0	0.00%
20-Aug	1.62	1.58	91.5	0.40	48,108	0	0.00%
21-Aug	1.58	1.55	91.9	0.42	50,370	0	0.00%
22-Aug	1.51	1.54	92.0	0.40	52,817	0	0.00%
23-Aug	1.38	1.45	91.8	0.41	52,819	0	0.00%
24-Aug	1.34	1.40	91.9	0.42	48,490	0	0.00%
25-Aug	1.51	1.43	91.8	0.43	25,648	0	0.00%
26-Aug	1.43	1.40	92.1	0.49	24,361	0	0.00%
27-Aug	1.37	1.74	92.6	0.42	24,369	0	0.00%
28-Aug	1.48	1.78	92.7	0.42	24,572	0	0.00%
29-Aug	1.49	1.49	92.7	0.41	29,741	0	0.00%
30-Aug	1.51	1.50	92.5	0.43	35,517	0	0.00%
31-Aug	1.55	1.44	92.4	0.37	37,721	0	0.00%
Average	1.48	1.50	90.49	0.44	Total 1,842,887.20	0	0.000%

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
- 24 samples were found to be absent of Coliforms.
- 24 samples were found to be absent of *E. Coli*.

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

Date	2021 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-Jul-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9-Jul-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-Jul-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22-Jul-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-Jul-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-Aug-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-Aug-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20-Aug-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-Aug-24	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 9 samples were found to be absent of both *Total Coliforms* and *E. Coli*.

Table 6.2 - BMID In-house Testing – Presence Absence

Location	8/6/2024				8/12/2024				8/20/2024				8/26/2024			
	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.
Sylvania Cres									1.10	24.6	-	X				
170 Kneller Rd									1.05	23.6	-	X				
2105 Morrison	1.17	23.6	-	X									0.77	20.6	-	X
Staymen Rd	0.95	22.8	-	X									0.66	19.6	-	X
260 Campion Rd					0.00	23.2	-	X								
Fenwick Rd					0.28	24.1	-	X								
Solly Ct									1.10	22.4	-	X				

7.0 WELL #6 POTENTIAL POTABILITY TESTING

- BMID will take monthly bacterial samples on the raw water at Well #6 to determine the potential potability of the source. Results are as follows:

Table 7.1 - Well 6 Monthly Bacterial Testing

Well 6 Bacterial Testing		
Date	Total Coliforms	E.Coli Coliforms
24-Jun-24	0	0
29-Jul-24	0	0
26-Aug-24	0	0

- 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) = 9
- Total tests sampled by BMID and tested by Caro Labs 24
- Total tests sampled in BMID treated distribution system = 33
- 0 Positive *E.Coli* and Total Coliform Samples