



MONTHLY REPORTING PERIOD - OCTOBER, 2017

1. SUMMARY

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

| | October 2017 | |
|--------------------------------|-----------------|---------------------|
| Source | Total (US Gals) | Total (Mega Litres) |
| Mission Creek | 96,685,000 | 365.95 |
| Well 4 | 0 | 0 |
| Well 5 | 2,208,000 | 8.36 |
| Scotty Creek (Irrigation Only) | 0 | 0 |
| Total | 98,893,000 | 374.31 |

1. Turbidity levels at the Distribution Intake remained below 1.0 NTU for all of October. Peak turbidity at the Distribution Intake was 0.39 NTU on October 30 and 31, 2017;
2. The highest monthly turbidity level recorded at the first customer (Booster #1) was 0.57 NTU on October 23, 2017 and average monthly turbidity was 0.44 NTU;
3. Mission Creek experienced average flows for October as conditions in the watershed normalized after a prolonged dry period during the previous months;
4. BMID's Scotty Creek source, used for irrigation in the north end was shut-off for the season on September 10, 2017;
5. *E.Coli* levels at Mission Creek's Point of Diversion were average during October. The highest raw water *E.Coli* count was 11 on October 10, 2017;
6. *E.Coli* levels at the Distribution Intake had zero counts on all samples during October, 2017;
7. 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;
8. Well #5 was used until October 17, 2017 as a source for domestic and irrigation water in the north-end of the system in conjunction with Mission Creek system water as determined by usage and pressures in the area. The well has been temporarily shut down for after the October 17th to allow for construction of a new well on an adjacent location on the same property;
9. BMID's Water Treatment Plant was placed on stand-by on October 13. The WTP resumed operations on October 18-23 as water quality in Mission Creek was not of sufficient quality to by-pass treatment. The WTP was again placed on stand-by on October 23, remaining for the balance of October;

1.0 FLOWS - OCTOBER, 2017

Maximum est. Daily Flow was on October 1, 2017 at 10,235,000 US gallons (38.74 ML)

Minimum est. Daily Flow was on October 20, 2017 at 1,938,000 US gallons (7.34 ML)

Mission Creek provided 98% of domestic flow throughout October.

Figure 1.1 - Domestic Water System Flow

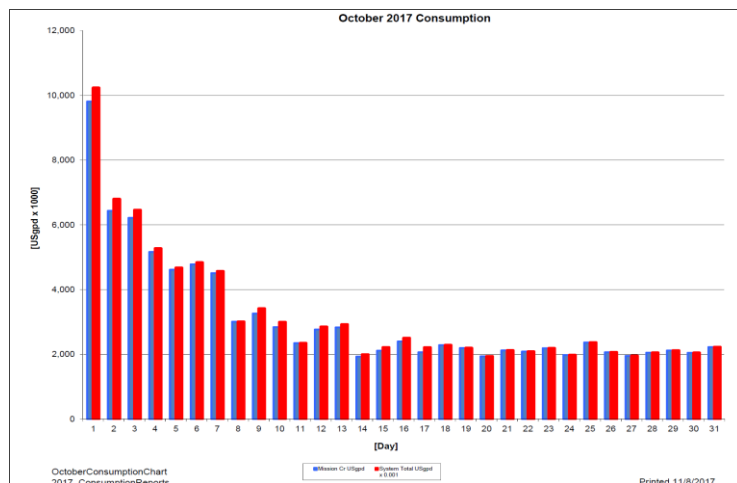


Table 1.2 - October, 2017 Daily Consumption Report

| Year | Mission Cr | Well #4 | Well #5 | System Total | System Total |
|--------------|------------|---------|-----------|--------------|--------------|
| 2017 | Usgpd | Usgpd | Usgpd | Usgpd | ML/Day |
| 1-Oct | 9,812,000 | 0 | 423,000.0 | 10,235,000 | 38.74 |
| 2-Oct | 6,436,000 | 0 | 362,000.0 | 6,798,000 | 25.73 |
| 3-Oct | 6,216,000 | 0 | 241,000.0 | 6,457,000 | 24.44 |
| 4-Oct | 5,165,000 | 0 | 103,000.0 | 5,268,000 | 19.94 |
| 5-Oct | 4,614,000 | 0 | 60,000.0 | 4,674,000 | 17.69 |
| 6-Oct | 4,780,000 | 0 | 57,000.0 | 4,837,000 | 18.31 |
| 7-Oct | 4,508,000 | 0 | 59,000.0 | 4,567,000 | 17.29 |
| 8-Oct | 3,007,000 | 0 | 0.0 | 3,007,000 | 11.38 |
| 9-Oct | 3,260,000 | 0 | 153,000.0 | 3,413,000 | 12.92 |
| 10-Oct | 2,840,000 | 0 | 153,000.0 | 2,993,000 | 11.33 |
| 11-Oct | 2,345,000 | 0 | 0.0 | 2,345,000 | 8.88 |
| 12-Oct | 2,767,000 | 0 | 82,000.0 | 2,849,000 | 10.78 |
| 13-Oct | 2,830,000 | 0 | 94,000.0 | 2,924,000 | 11.07 |
| 14-Oct | 1,927,000 | 0 | 65,000.0 | 1,992,000 | 7.54 |
| 15-Oct | 2,110,000 | 0 | 103,000.0 | 2,213,000 | 8.38 |
| 16-Oct | 2,396,000 | 0 | 106,000.0 | 2,502,000 | 9.47 |
| 17-Oct | 2,064,000 | 0 | 147,000.0 | 2,211,000 | 8.37 |
| 18-Oct | 2,284,000 | 0 | 0.0 | 2,284,000 | 8.64 |
| 19-Oct | 2,193,000 | 0 | 0.0 | 2,193,000 | 8.30 |
| 20-Oct | 1,938,000 | 0 | 0.0 | 1,938,000 | 7.34 |
| 21-Oct | 2,122,000 | 0 | 0.0 | 2,122,000 | 8.03 |
| 22-Oct | 2,087,000 | 0 | 0.0 | 2,087,000 | 7.90 |
| 23-Oct | 2,189,000 | 0 | 0.0 | 2,189,000 | 8.29 |
| 24-Oct | 1,976,000 | 0 | 0.0 | 1,976,000 | 7.48 |
| 25-Oct | 2,366,000 | 0 | 0.0 | 2,366,000 | 8.96 |
| 26-Oct | 2,064,000 | 0 | 0.0 | 2,064,000 | 7.81 |
| 27-Oct | 1,952,000 | 0 | 0.0 | 1,952,000 | 7.39 |
| 28-Oct | 2,051,000 | 0 | 0.0 | 2,051,000 | 7.76 |
| 29-Oct | 2,117,000 | 0 | 0.0 | 2,117,000 | 8.01 |
| 30-Oct | 2,046,000 | 0 | 0.0 | 2,046,000 | 7.74 |
| 31-Oct | 2,223,000 | 0 | 0.0 | 2,223,000 | 8.41 |
| Totals Usgpd | 96,685,000 | 0 | 2,208,000 | 98,893,000 | 374.31 |
| Totals ML | 365.95 | 0.00 | 8.36 | | |
| Avg's | 3,148,733 | 11.92 | | 3,222,333 | 12.20 |
| Max | 9,812,000 | 37.14 | | 10,235,000 | 38.74 |
| Min | 1,927,000 | 7.29 | | 1,938,000 | 7.34 |

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) September 2017 - October 2017

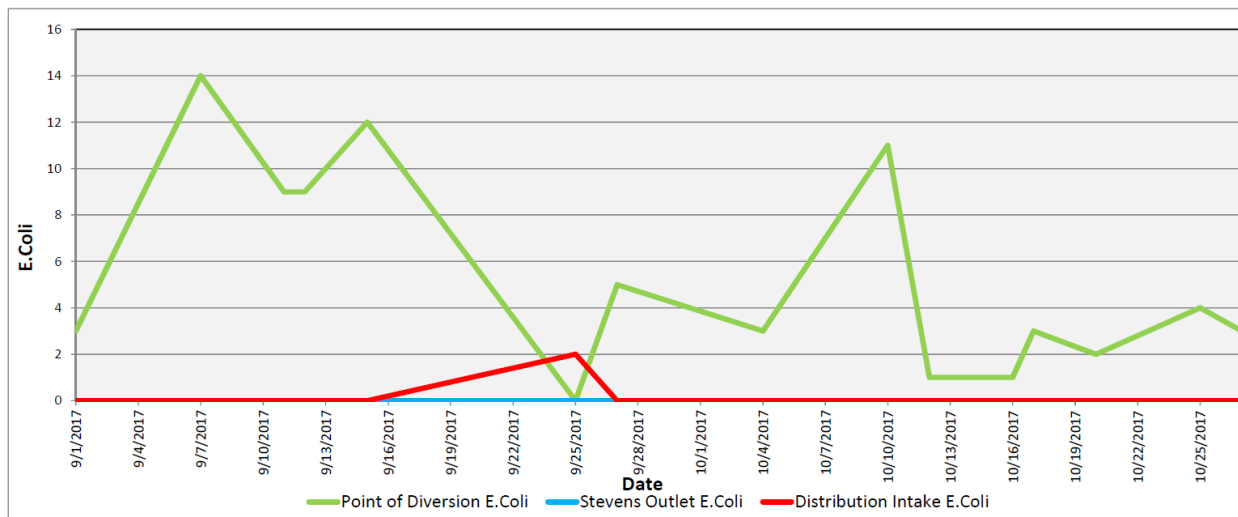


Table 2.2 - E.Coli Readings (CARO Labs)

| Date | Point of Diversion E.Coli | Stevens Outlet E.Coli | Distribution Intake E.Coli |
|-----------|---------------------------|-----------------------|----------------------------|
| 1-Sep-17 | 3 | 0 | 0 |
| 7-Sep-17 | 14 | 0 | 0 |
| 11-Sep-17 | 9 | 0 | 0 |
| 12-Sep-17 | 9 | 0 | 0 |
| 15-Sep-17 | 12 | 0 | 0 |
| 20-Sep-17 | 6 | 0 | 1 |
| 25-Sep-17 | 0 | 0 | 2 |
| 27-Sep-17 | 5 | 0 | 0 |
| 4-Oct-17 | 3 | 0 | 0 |
| 10-Oct-17 | 11 | 0 | 0 |
| 12-Oct-17 | 1 | 0 | 0 |
| 16-Oct-17 | 1 | 0 | 0 |
| 17-Oct-17 | 3 | 0 | 0 |
| 20-Oct-17 | 2 | 0 | 0 |
| 25-Oct-17 | 4 | 0 | 0 |
| 27-Oct-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 = 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 October 2017. The highest turbidity recorded at this location was 0.44 NTU on October 23, 2017.

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

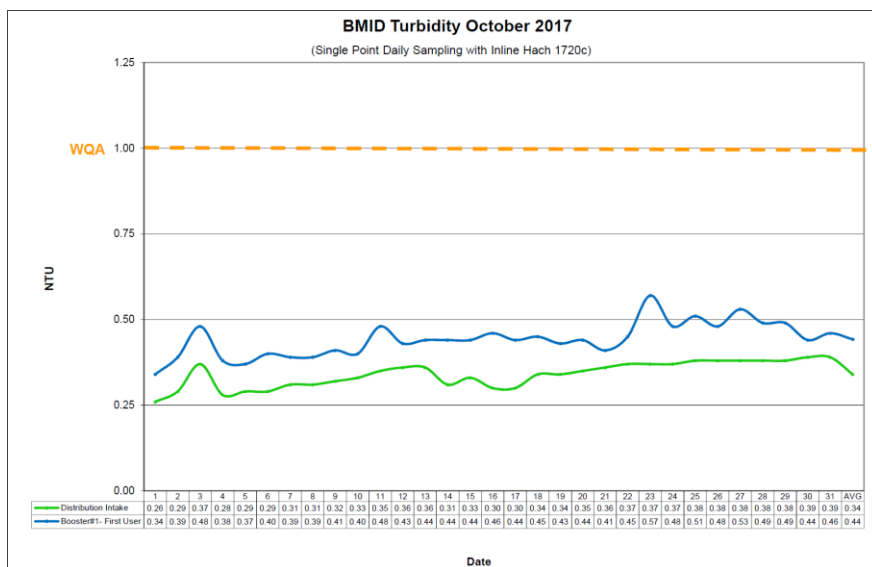


Table 3.2 - Daily Monitoring Record – Turbidity at Distribution Intake & Bst Stn 1

| Turbidity Point Sampling for October 2017 | | | | |
|---|---------------------|-------|-----------------------|-------|
| Date | Distribution Intake | | Booster#1- First User | |
| | Sample Time | [NTU] | Sample Time | [NTU] |
| 1 | 12:04 PM | 0.26 | 11:37 AM | 0.34 |
| 2 | 8:49 AM | 0.29 | 8:03 AM | 0.39 |
| 3 | 8:42 AM | 0.37 | 8:08 AM | 0.48 |
| 4 | 8:32 AM | 0.28 | 7:54 AM | 0.38 |
| 5 | 9:42 AM | 0.29 | 8:01 AM | 0.37 |
| 6 | 8:36 AM | 0.29 | 7:56 AM | 0.40 |
| 7 | 10:42 AM | 0.31 | 10:01 AM | 0.39 |
| 8 | 8:39 AM | 0.31 | 8:09 AM | 0.39 |
| 9 | 10:50 AM | 0.32 | 10:10 AM | 0.41 |
| 10 | 9:40 AM | 0.33 | 9:11 AM | 0.40 |
| 11 | 9:04 AM | 0.35 | 8:22 AM | 0.48 |
| 12 | 8:50 AM | 0.36 | 7:55 AM | 0.43 |
| 13 | 10:16 AM | 0.36 | 9:34 AM | 0.44 |
| 14 | 9:05 AM | 0.31 | 8:40 AM | 0.44 |
| 15 | 8:08 AM | 0.33 | 7:30 AM | 0.44 |
| 16 | 8:25 AM | 0.30 | 7:55 AM | 0.46 |
| 17 | 8:20 AM | 0.30 | 7:44 AM | 0.44 |
| 18 | 8:30 AM | 0.34 | 7:54 AM | 0.45 |
| 19 | 8:14 AM | 0.34 | 7:41 AM | 0.43 |
| 20 | 9:17 AM | 0.35 | 8:12 AM | 0.44 |
| 21 | 9:40 AM | 0.36 | 8:20 AM | 0.41 |
| 22 | 8:59 AM | 0.37 | 8:28 AM | 0.45 |
| 23 | 8:29 AM | 0.37 | 7:55 AM | 0.57 |
| 24 | 8:23 AM | 0.37 | 7:48 AM | 0.48 |
| 25 | 8:37 AM | 0.38 | 7:59 AM | 0.51 |
| 26 | 8:21 AM | 0.38 | 7:46 AM | 0.48 |
| 27 | 7:22 AM | 0.38 | 7:56 AM | 0.53 |
| 28 | 8:50 AM | 0.38 | 8:19 AM | 0.49 |
| 29 | 9:19 AM | 0.38 | 8:57 AM | 0.49 |
| 30 | 8:42 AM | 0.39 | 8:03 AM | 0.44 |
| 31 | 8:25 AM | 0.39 | 7:47 AM | 0.46 |
| AVG | | 0.34 | | 0.44 |

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 Lambli*a throughout the month of October, 2017.

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

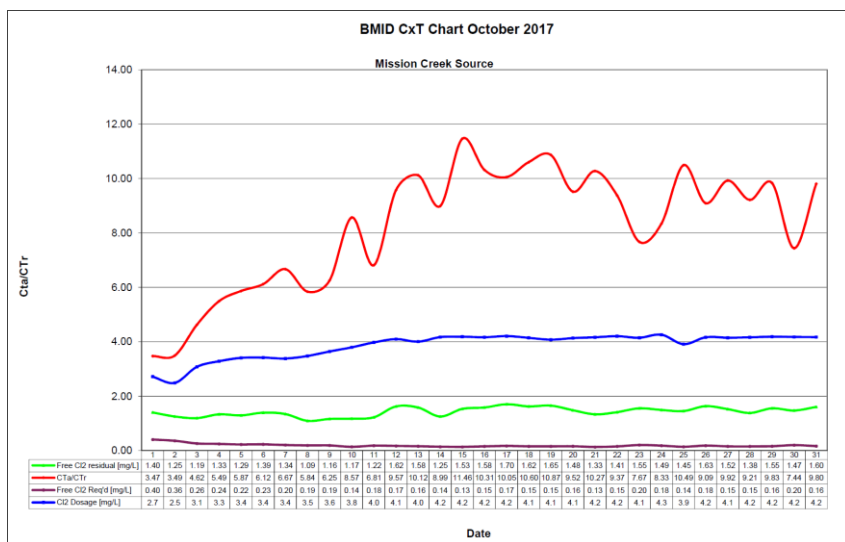


Table 4.2 - CT Table – Mission Creek Source

| BMID October 2017 | | | | | | | | | | | | | |
|----------------------|-----------------|------------------|--------------|----------------------------------|----------------|-------------|---------|-------------------------------|---------------------------|-----------------|--------|-----------------|-----------------------------------|
| Mission Creek Source | | | | | | | | | | | | | |
| DATE | pH (highest) | TEMP (lowest) | PEAK FLOW | Free Cl ₂ residual | CT achieved | CT req'd | CTa/CTr | Free Cl ₂ Req'd | Cl ₂ Dosage | VOLUME TOTAL | TIME | FLOW PRESENT | CL ₂ DOSAGE PRESENT |
| October | | [°C] | [USgpm] | [mg/L] | | | | [mg/L] | [mg/L] | [USgal] | [mins] | [USGPM] | [PPD] |
| 1 | 7.48 | 12.1 | 8741 | 1.40 | 424.4 | 122.3 | 3.47 | 0.40 | 2.7 | 2649600 | 303 | 6134 | 200 |
| 2 | 7.47 | 12.0 | 7865 | 1.25 | 421.1 | 120.7 | 3.49 | 0.36 | 2.5 | 2649600 | 337 | 3749 | 112 |
| 3 | 7.49 | 11.7 | 5538 | 1.19 | 569.3 | 123.2 | 4.62 | 0.26 | 3.1 | 2649600 | 478 | 4600 | 170 |
| 4 | 7.51 | 11.2 | 4917 | 1.33 | 716.7 | 130.6 | 5.49 | 0.24 | 3.3 | 2649600 | 539 | 4616 | 182 |
| 5 | 7.54 | 10.7 | 4284 | 1.29 | 797.8 | 136.0 | 5.87 | 0.22 | 3.4 | 2649600 | 618 | 3617 | 148 |
| 6 | 7.54 | 10.4 | 4287 | 1.39 | 859.1 | 140.5 | 6.12 | 0.23 | 3.4 | 2649600 | 618 | 3727 | 153 |
| 7 | 7.56 | 10.1 | 3707 | 1.34 | 957.8 | 143.6 | 6.67 | 0.20 | 3.4 | 2649600 | 715 | 3445 | 140 |
| 8 | 7.57 | 10.3 | 3589 | 1.09 | 804.7 | 137.8 | 5.84 | 0.19 | 3.5 | 2649600 | 738 | 3353 | 140 |
| 9 | 7.58 | 9.8 | 3402 | 1.16 | 903.4 | 144.5 | 6.25 | 0.19 | 3.6 | 2649600 | 779 | 2697 | 118 |
| 10 | 7.58 | 9.9 | 2518 | 1.17 | 1231.1 | 143.7 | 8.57 | 0.14 | 3.8 | 2649600 | 1052 | 1536 | 70 |
| 11 | 7.56 | 9.3 | 3170 | 1.22 | 1019.7 | 149.7 | 6.81 | 0.18 | 4.0 | 2649600 | 836 | 2493 | 119 |
| 12 | 7.56 | 9.1 | 2831 | 1.62 | 1516.2 | 158.4 | 9.57 | 0.17 | 4.1 | 2649600 | 936 | 1402 | 69 |
| 13 | 7.55 | 8.9 | 2595 | 1.58 | 1613.2 | 159.4 | 10.12 | 0.16 | 4.0 | 2649600 | 1021 | 1996 | 96 |
| 14 | 7.57 | 8.9 | 2377 | 1.25 | 1393.4 | 155.0 | 8.99 | 0.14 | 4.2 | 2649600 | 1115 | 2196 | 110 |
| 15 | 7.57 | 8.8 | 2198 | 1.53 | 1844.4 | 160.9 | 11.46 | 0.13 | 4.2 | 2649600 | 1205 | 1333 | 67 |
| 16 | 7.56 | 8.3 | 2433 | 1.58 | 1720.7 | 166.8 | 10.31 | 0.15 | 4.2 | 2649600 | 1089 | 1919 | 96 |
| 17 | 7.56 | 8.3 | 2657 | 1.70 | 1695.3 | 168.7 | 10.05 | 0.17 | 4.2 | 2649600 | 997 | 1820 | 92 |
| 18 | 7.57 | 8.3 | 2403 | 1.62 | 1786.2 | 168.5 | 10.60 | 0.15 | 4.1 | 2649600 | 1103 | 1306 | 65 |
| 19 | 7.57 | 8.4 | 2401 | 1.65 | 1820.8 | 167.6 | 10.87 | 0.15 | 4.1 | 2649600 | 1104 | 2083 | 102 |
| 20 | 7.58 | 8.2 | 2455 | 1.48 | 1597.3 | 167.9 | 9.52 | 0.16 | 4.1 | 2649600 | 1079 | 2034 | 101 |
| 21 | 7.59 | 8.2 | 2076 | 1.33 | 1697.5 | 165.2 | 10.27 | 0.13 | 4.2 | 2649600 | 1276 | 1400 | 70 |
| 22 | 7.59 | 8.2 | 2388 | 1.41 | 1564.5 | 166.9 | 9.37 | 0.15 | 4.2 | 2649600 | 1110 | 2079 | 105 |
| 23 | 7.57 | 7.9 | 3122 | 1.55 | 1315.5 | 171.5 | 7.67 | 0.20 | 4.1 | 2649600 | 849 | 1847 | 92 |
| 24 | 7.58 | 7.9 | 2763 | 1.49 | 1428.8 | 171.5 | 8.33 | 0.18 | 4.3 | 2649600 | 959 | 2131 | 109 |
| 25 | 7.60 | 7.5 | 2080 | 1.45 | 1847.1 | 176.1 | 10.49 | 0.14 | 3.9 | 2649600 | 1274 | 1146 | 67 |
| 26 | 7.57 | 7.5 | 2670 | 1.63 | 1617.5 | 177.9 | 9.09 | 0.18 | 4.2 | 2649600 | 992 | 2140 | 107 |
| 27 | 7.60 | 7.4 | 2260 | 1.52 | 1782.0 | 179.6 | 9.92 | 0.15 | 4.1 | 2649600 | 1172 | 1646 | 82 |
| 28 | 7.60 | 7.2 | 2221 | 1.38 | 1646.3 | 178.7 | 9.21 | 0.15 | 4.2 | 2649600 | 1193 | 1960 | 98 |
| 29 | 7.59 | 7.0 | 2262 | 1.55 | 1815.6 | 184.6 | 9.83 | 0.16 | 4.2 | 2649600 | 1171 | 1949 | 98 |
| 30 | 7.60 | 6.6 | 2772 | 1.47 | 1405.1 | 189.0 | 7.44 | 0.20 | 4.2 | 2649600 | 956 | 1276 | 64 |
| 31 | 7.61 | 6.4 | 2231 | 1.60 | 1900.2 | 193.8 | 9.80 | 0.16 | 4.2 | 2649600 | 1188 | 1357 | 68 |
| Averages | 7.56 | 8.91 | 3265 | 1.43 | 1345.58 | 158.73 | 8.26 | 0.19 | 3.85 | | | | |

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

| Date | PRV 7 | | Booster 1 | | Elison Blow-Off | | Elison School | | 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 | Coliforms | E.coli |
| 7-Sep-17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12-Sep-17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20-Sep-17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27-Sep-17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4-Oct-17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12-Oct-17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17-Oct-17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25-Oct-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 | 10/2/2017 | | | | 10/10/2017 | | | | 10/16/2017 | | | | 10/23/2017 | | | | 10/30/2017 | | | |
|---------------------|-----------|-------|-------|------|------------|-------|-------|------|------------|-------|-------|------|------------|-------|-------|------|------------|-------|-------|------|
| | Cl2 | Temp. | Pres. | Abs. | Cl2 | Temp. | Pres. | Abs. | Cl2 | Temp. | Pres. | Abs. | Cl2 | Temp. | Pres. | Abs. | Cl2 | Temp. | Pres. | Abs. |
| 2670 Enterprise Way | 0.93 | 10.0 | - | X | | | | | | | | | 0.96 | 14.0 | - | X | | | | |
| #5 217 Franklin Rd | | | | | | | | | 0.77 | / | - | X | | | | | | | | |
| 2105 Morrison | 0.97 | 11.0 | - | X | | | | | | | | | 0.38 | 14.0 | - | X | | | | |
| Pearson School | | | | | 0.76 | 8.8 | - | X | | | | | | | | | 1.13 | 11.0 | - | X |
| 800 Galbraith Ct | | | | | | | | | 0.62 | / | - | X | | | | | | | | |
| Staymen Rd | | | | | | | | | | | | | 0.84 | 11.0 | - | X | | | | |
| PRV #10 | 0.74 | 7.5 | - | X | | | | | | | | | | | | | | | | |
| 260 Campion Rd | | | | | 0.05 | 14.0 | - | X | | | | | | | | | 0.47 | 15.0 | - | X |
| Fenwick Rd | | | | | | | | | 1.04 | / | - | X | | | | | | | | |
| 2931 Belgo Rd | | | | | 0.56 | 12.0 | - | X | | | | | | | | | 0.52 | 12.4 | - | 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)