## Water Quality 2022

### 7.1 Water Quality Objectives for EPCOR

2022

| Parameter | Approval Requirement | EPCOR Internal Limit | EPCOR Target |
|---|---|---|---|
| Turbidity (NTU) | | | |
| Individual Filters | <0.3 | <0.1 (2) | <0.08 |
| Distribution System | N/A | < 1 (1) | < 1 |
| Distribution System (Maintenance) | N/A | < 3 (1) | < 1 |
| Colour (TCU) | <15 (3) | <10 (1) | <3 |
| pH (25°C) | 6.5 - 8.5 | 7.3 - 8.3 (1) | 7.4 - 8.0 |
| Taste and Odour | Inoffensive (3) | Inoffensive (1) | Inoffensive |
| E.coli (PA/100 mL) | absent | absent (1) | absent |
| Total Coliforms (PA/100 mL) | absent | absent (1) | absent |
| Total Chlorine Residual (mg/L) | | | |
| Water Treatment Plant Effluent | >1.0 | 1.3 - 2.4 (2) | 1.9 - 2.2 |
| Reservoirs | >0.5 | 1.0 - 2.4 (1) | 1.2 - 2.2 |
| Distribution | >0.5 (4) | 1.0 - 2.4 (1) | 1.0 - 2.2 |
| Fluoride: (mg/L) | | | |
| Reservoir Effluent | 0.5 - 0.9 | 0.6 - 0.8 (1) | 0.6 - 0.8 |
| Trihalomethanes (mg/L) | | | |
| Reservoir Effluent | <0.100 | <0.050 (1) | <0.040 |
| Distribution System | <0.100 | <0.050 (1) | <0.040 |
| UV254 % Transmittance | | | |
| E.L. Smith | | >89% (2) | >90% |
| Rossdale | | >87% (2) | >88% |
| HAA (mg/L) | | | |
| Reservoir Effluent | < 0.080 | < 0.040 (1) | <0.035 |
| Distribution System | < 0.080 | < 0.040 (1) | <0.035 |
| NDMA (mg/L): | | | |
| Reservoir Effluent | < 0.000040 | < 0.000010 (1) | <0.000005 |
| Distribution System | < 0.000040 | < 0.000010 (1) | |
| Microoganism Log Removal at Water | | | |
| *Giardia* | ≥5.5 | ≥6.0 (2) | >6.5 |
| *Cryptosporidium* | ≥5.5 | ≥5.3 (2) | >6.0 |
| Virus | ≥4.0 | ≥4.5 (2) | >5.0 |

(1) Limit based on City of Edmonton Performance Based Rate (PBR) agreement
(2) Limit based on EPCOR Action Level
(3) Aesthetic Objective
(4) in 75% of samples collected in a day
All values are expressed in units of mg/L unless otherwise stated.
Based on March 2022 Summary of Epcor Edmonton Water Quality Standards.

## 7.2 SUMMARY OF MAJOR CHEMICALS, MICROBIOLOGICAL, AND PHYSICAL PARAMETERS OF EDMONTON DRINKING WATER PRODUCED AT WATER TREATMENT PLANTS

**2022**

| Parameter | Unit | MAC* | Average | Median | Min | Max | Count |
|---|---|---|---|---|---|---|---|
| Alkalinity Total | mg CaCO3/L | | 121 | 121 | 90 | 143 | 730 |
| Aluminum | mg/L | 2.9 | 0.082 | 0.082 | 0.018 | 0.176 | 25 |
| Arsenic | mg/L | 0.01 | 0.0002 | <0.0002 | <0.0002 | 0.0003 | 25 |
| Bromate Dissolved | mg/L | 0.01 | <0.005 | <0.005 | <0.005 | <0.005 | 107 |
| Bromodichloromethane | µg/L | | <0.5 | <0.5 | <0.5 | <0.5 | 726 |
| Cadmium | mg/L | 0.007 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 25 |
| Calcium Hardness | mg/L CaCO3 | | 112 | 111 | 93 | 198 | 730 |
| Chlorate Dissolved | mg/L | 1 | 0.128 | 0.129 | <0.100 | 0.264 | 107 |
| Chloride Dissolved | mg/L | (250) | 6.04 | 5.63 | 4.34 | 12.20 | 107 |
| Chlorite Dissolved | mg/L | 1 | <0.01 | <0.20 | <0.20 | <0.20 | 107 |
| Chromium | mg/L | 0.05 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 25 |
| Colour | TCU | (15) | 0.8 | 0.7 | <0.5 | 2.1 | 730 |
| Conductivity | µS/cm | (<1) | 382 | 372 | 320 | 527 | 105 |
| Copper | mg/L | 2 (1) | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 25 |
| Fluoride | mg/L | 1.5 | 0.68 | 0.68 | 0.59 | 0.77 | 730 |
| Haloacetic Acids, total (HAA5) | ug/L | 80 | 21.1 | 17.4 | 12.2 | 37.8 | 23 |
| Iron | mg/L | (0.3) | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 25 |
| Lead | mg/L | 0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 25 |
| Manganese | mg/L | 0.12 (0.02) | 0.0023 | <0.0020 | <0.0020 | 0.0070 | 25 |
| Mercury | mg/L | 0.001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 25 |
| Nitrate (as N) Dissolved | mg/L | 10 | 0.053 | 0.050 | <0.010 | 0.263 | 107 |
| Nitrite (as N) Dissolved | mg/L | 1 | <0.01 | <0.01 | <0.01 | <0.01 | 107 |
| pH | N/A | (7.0 - 10.5) | 7.8 | 7.8 | 7.4 | 8.2 | 730 |
| Potassium | mg/L | | 0.92 | 0.80 | 0.40 | 2.20 | 25 |
| Sodium | mg/L | (200) | 11.68 | 7.60 | 6.10 | 36.20 | 25 |
| Sulphate Dissolved | mg/L | (500) | 67.6 | 59.4 | 51.5 | 142.0 | 107 |
| Total Chlorine | mg/L | >1.0 | 2.06 | 2.07 | 1.18 | 2.32 | 730 |
| Total Dissolved Solids | mg/L | (500) | 223 | 220 | 186 | 279 | 25 |
| Total Hardness | mg/L CaCO3 | | 170 | 169 | 142 | 246 | 710 |
| Total Organic Carbon | mg/L C | | 1.6 | 1.2 | <0.6 | 9.9 | 105 |
| Trihalomethanes | µg/L | 100 | 14.4 | 11.0 | 3.1 | 42.1 | 726 |
| Turbidity | NTU | | 0.05 | 0.05 | <0.04 | 0.16 | 730 |
| Uranium | mg/L | 0.02 | 0.0005 | <0.0005 | <0.0005 | 0.0006 | 25 |
| Zinc | mg/L | (5.0) | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 25 |
| **Bacteriological Data** | | | | | | | |
| Coliforms, total | PA/100mL | | Absent | Absent | Absent | Absent | 729 |
| E. coli | PA/100mL | | Absent | Absent | Absent | Absent | 729 |

* Numbers with no brackets are Health Canada Guidelines for Canadian Drinking Water Quality (GCDWQ) Maximum Acceptable Concentrations (MAC) and/or a limit set out in the Alberta Environment and Parks (AEP) Operating Approval 638-04-00. Limits in brackets indicate Aesthetic Objectives or Operational Guidelines (OG) and are not Approval limits.

## 7.3 SUMMARY OF LABORATORY ANALYSIS - 2022

### DISTRIBUTION OF TESTING

### Drinking Water Testing

| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Water Treatment Plant | # Tests | 7,438 | 6,875 | 7,964 | 7,416 | 7,506 | 7,363 | 7,062 | 7,631 | 7,248 | 7,404 | 7,189 | 7,460 | 88,556 |
| | # Samples | 268 | 248 | 334 | 288 | 269 | 265 | 268 | 270 | 269 | 269 | 266 | 272 | 3,286 |
| Field Reservoirs | # Tests | 784 | 684 | 814 | 801 | 916 | 688 | 866 | 758 | 868 | 716 | 890 | 692 | 9,477 |
| | # Samples | 55 | 48 | 60 | 56 | 64 | 48 | 52 | 66 | 53 | 56 | 59 | 50 | 667 |
| Routine Distribution System | # Tests | 761 | 718 | 712 | 763 | 660 | 632 | 657 | 664 | 736 | 788 | 788 | 752 | 8,631 |
| | # Samples | 156 | 146 | 146 | 156 | 142 | 134 | 134 | 144 | 132 | 145 | 131 | 136 | 1,702 |
| System Depressurization/Repair | # Tests | 268 | 196 | 232 | 212 | 332 | 276 | 304 | 352 | 344 | 272 | 232 | 220 | 3,240 |
| | # Samples | 67 | 49 | 58 | 53 | 83 | 69 | 76 | 88 | 86 | 68 | 58 | 55 | 810 |
| Customer Complaints | # Tests | 296 | 706 | 888 | 586 | 814 | 665 | 888 | 370 | 592 | 666 | 370 | 370 | 7,211 |
| | # Samples | 4 | 10 | 12 | 9 | 11 | 9 | 12 | 5 | 8 | 9 | 5 | 5 | 99 |
| **Total** | # Tests | 9,547 | 9,179 | 10,610 | 9,778 | 10,228 | 9,624 | 9,777 | 9,775 | 9,788 | 9,846 | 9,469 | 9,494 | 117,115 |
| | # Samples | 550 | 501 | 610 | 562 | 569 | 525 | 542 | 573 | 548 | 547 | 519 | 518 | 6,564 |

### Additional Testing

| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| New Watermain Testing | # Tests | 95 | 0 | 20 | 10 | 155 | 175 | 205 | 115 | 122 | 355 | 655 | 195 | 2,102 |
| | # Samples | 19 | 0 | 4 | 2 | 31 | 35 | 41 | 23 | 25 | 71 | 131 | 39 | 421 |
| Water Treatment Plant Waste Discharge | # Tests | 155 | 63 | 79 | 80 | 87 | 104 | 127 | 77 | 56 | 73 | 51 | 178 | 1,130 |
| | # Samples | 44 | 40 | 49 | 41 | 46 | 49 | 42 | 37 | 41 | 32 | 41 | 44 | 506 |
| Quality Control | # Tests | 4,183 | 3,670 | 4,412 | 3,770 | 4,311 | 3,595 | 2,648 | 4,367 | 4,206 | 3,584 | 3,572 | 3,767 | 46,085 |
| | # Samples | 707 | 714 | 917 | 725 | 816 | 851 | 805 | 938 | 819 | 763 | 793 | 909 | 9,757 |
| Externally Contracted Analyses | # Tests | 104 | 113 | 174 | 114 | 130 | 128 | 136 | 172 | 110 | 118 | 156 | 108 | 1,563 |
| | # Samples | 52 | 58 | 69 | 57 | 65 | 64 | 68 | 74 | 55 | 59 | 66 | 54 | 741 |
| **Total** | # Tests | 4,537 | 3,846 | 4,685 | 3,974 | 4,683 | 4,002 | 3,116 | 4,731 | 4,494 | 4,130 | 4,434 | 4,248 | 50,880 |
| | # Samples | 822 | 812 | 1,039 | 825 | 958 | 999 | 956 | 1,072 | 940 | 925 | 1,031 | 1,046 | 11,425 |

| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | # Tests | 14,084 | 13,025 | 15,295 | 13,752 | 14,911 | 13,626 | 12,893 | 14,506 | 14,282 | 13,976 | 13,903 | 13,742 | 167,995 |
| | # Samples | 1,368 | 1,307 | 1,639 | 1,382 | 1,523 | 1,519 | 1,493 | 1,640 | 1,484 | 1,468 | 1,545 | 1,560 | 17,928 |

## 7.4 Bacteriological Data: Water Treatment Plants

## 2022

| | Coliforms, total | | | | | | E. coli | | | | | cATP (pg/mL) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Count | # +ve | % +ve | Mean | Min | Max | # +ve | % +ve | Mean | Min | Max | Count | Mean | Min | Max |
| **January** | | | | | | | | | | | | | | | |
| Rossdale Raw (MPN/100mL) | 32 | | | 81 | 1 | 387 | | | 9 | 1 | 51 | 1 | 10.7 | 10.7 | 10.7 |
| E.L. Smith Raw (MPN/100mL) | 5 | | | 44 | 31 | 68 | | | 1 | 1 | 2 | 1 | 15.0 | 15.0 | 15.0 |
| **Raw River Water Entering the Treatment Plants** | 37 | | | 76 | 1 | 387 | | | 8 | 1 | 51 | 2 | 12.9 | 10.7 | 15.0 |
| Rossdale Treated (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.61 | 0.03 | 1.00 |
| E.L. Smith Treated (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.43 | 0.03 | 1.00 |
| **Water Entering the Plant Reservoir** | 62 | 0 | 0.0 | | | | 0 | 0.0 | | | | 62 | 0.52 | 0.03 | 1.00 |
| Rossdale Reservoir (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.66 | 0.03 | 1.00 |
| E.L. Smith Reservoir (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.49 | 0.03 | 1.00 |
| **Treated Water Entering the Distribution System** | 62 | 0 | 0.0 | | | | 0 | 0.0 | | | | 62 | 0.58 | 0.03 | 1.00 |
| **February** | | | | | | | | | | | | | | | |
| Rossdale Raw (MPN/100mL) | 29 | | | 188 | 1 | 1,990 | | | 12 | 1 | 58 | 1 | 24.8 | 24.8 | 24.8 |
| E.L. Smith Raw (MPN/100mL) | 5 | | | 57 | 19 | 196 | | | 1 | 1 | 3 | 1 | 29.6 | 29.6 | 29.6 |
| **Raw River Water Entering the Treatment Plants** | 34 | | | 169 | 1 | 1,990 | | | 10 | 1 | 58 | 2 | 27.2 | 24.8 | 29.6 |
| Rossdale Treated (PA/100mL) | 28 | 0 | 0.0 | | | | 0 | 0.0 | | | | 28 | 0.48 | 0.03 | 1.00 |
| E.L. Smith Treated (PA/100mL) | 28 | 0 | 0.0 | | | | 0 | 0.0 | | | | 28 | 0.40 | 0.03 | 1.00 |
| **Water Entering the Plant Reservoir** | 56 | 0 | 0.0 | | | | 0 | 0.0 | | | | 56 | 0.44 | 0.03 | 1.00 |
| Rossdale Reservoir (PA/100mL) | 28 | 0 | 0.0 | | | | 0 | 0.0 | | | | 28 | 0.61 | 0.04 | 1.00 |
| E.L. Smith Reservoir (PA/100mL) | 29 | 0 | 0.0 | | | | 0 | 0.0 | | | | 29 | 0.22 | 0.03 | 1.00 |
| **Treated Water Entering the Distribution System** | 57 | 0 | 0.0 | | | | 0 | 0.0 | | | | 57 | 0.41 | 0.03 | 1.00 |

## 7.4 Bacteriological Data: Water Treatment Plants

## 2022

| | Coliforms, total | | | | | | E. coli | | | | | cATP (pg/mL) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Count | # +ve | % +ve | Mean | Min | Max | # +ve | % +ve | Mean | Min | Max | Count | Mean | Min | Max |
| **March** | | | | | | | | | | | | | | | |
| Rossdale Raw (MPN/100mL) | 32 | | | 1,105 | 1 | 7,310 | | | 40 | 1 | 161 | 1 | 11.5 | 11.5 | 11.5 |
| E.L. Smith Raw (MPN/100mL) | 5 | | | 240 | 8 | 722 | | | 5 | 1 | 20 | 1 | 15.2 | 15.2 | 15.2 |
| **Raw River Water Entering the Treatment Plants** | 37 | | | 988 | 1 | 7,310 | | | 35 | 1 | 161 | 2 | 13.3 | 11.5 | 15.2 |
| Rossdale Treated (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.70 | 0.03 | 1.00 |
| E.L. Smith Treated (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.62 | 0.03 | 1.00 |
| **Water Entering the Plant Reservoir** | 62 | 0 | 0.0 | | | | 0 | 0.0 | | | | 62 | 0.66 | 0.03 | 1.00 |
| Rossdale Reservoir (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.76 | 0.03 | 1.00 |
| E.L. Smith Reservoir (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.53 | 0.03 | 1.00 |
| **Treated Water Entering the Distribution System** | 62 | 0 | 0.0 | | | | 0 | 0.0 | | | | 62 | 0.64 | 0.03 | 1.00 |
| **April** | | | | | | | | | | | | | | | |
| Rossdale Raw (MPN/100mL) | 31 | | | 356 | 1 | 2,420 | | | 26 | 1 | 276 | 1 | 78.4 | 78.4 | 78.4 |
| E.L. Smith Raw (MPN/100mL) | 5 | | | 148 | 43 | 291 | | | 1 | 1 | 2 | 1 | 91.7 | 91.7 | 91.7 |
| **Raw River Water Entering the Treatment Plants** | 36 | | | 327 | 1 | 2,420 | | | 23 | 1 | 276 | 2 | 85.0 | 78.4 | 91.7 |
| Rossdale Treated (PA/100mL) | 30 | 0 | 0.0 | | | | 0 | 0.0 | | | | 30 | 0.75 | 0.03 | 1.00 |
| E.L. Smith Treated (PA/100mL) | 30 | 0 | 0.0 | | | | 0 | 0.0 | | | | 30 | 0.67 | 0.03 | 1.00 |
| **Water Entering the Plant Reservoir** | 60 | 0 | 0.0 | | | | 0 | 0.0 | | | | 60 | 0.71 | 0.03 | 1.00 |
| Rossdale Reservoir (PA/100mL) | 30 | 0 | 0.0 | | | | 0 | 0.0 | | | | 30 | 0.72 | 0.03 | 1.00 |
| E.L. Smith Reservoir (PA/100mL) | 30 | 0 | 0.0 | | | | 0 | 0.0 | | | | 30 | 0.75 | 0.03 | 1.00 |
| **Treated Water Entering the Distribution System** | 60 | 0 | 0.0 | | | | 0 | 0.0 | | | | 60 | 0.73 | 0.03 | 1.00 |

## 7.4 Bacteriological Data: Water Treatment Plants

## 2022

| | Coliforms, total | | | | | | E. coli | | | | | cATP (pg/mL) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Count | # +ve | % +ve | Mean | Min | Max | # +ve | % +ve | Mean | Min | Max | Count | Mean | Min | Max |
| **May** | | | | | | | | | | | | | | | |
| Rossdale Raw (MPN/100mL) | 31 | | | 344 | 55 | 2,670 | | | 26 | 2 | 158 | 1 | 269 | 269 | 269 |
| E.L. Smith Raw (MPN/100mL) | 4 | | | 91 | 71 | 121 | | | 2 | 1 | 2 | 1 | 78.2 | 78.2 | 78.2 |
| **Raw River Water Entering the Treatment Plants** | 35 | | | 315 | 55 | 2,670 | | | 23 | 1 | 158 | 2 | 174 | 78.2 | 269 |
| Rossdale Treated (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.76 | 0.03 | 1.00 |
| E.L. Smith Treated (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.61 | 0.02 | 1.00 |
| **Water Entering the Plant Reservoir** | 62 | 0 | 0.0 | | | | 0 | 0.0 | | | | 62 | 0.69 | 0.02 | 1.00 |
| Rossdale Reservoir (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.79 | 0.02 | 1.00 |
| E.L. Smith Reservoir (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.80 | 0.03 | 1.00 |
| **Treated Water Entering the Distribution System** | 62 | 0 | 0.0 | | | | 0 | 0.0 | | | | 62 | 0.79 | 0.02 | 1.00 |
| **June** | | | | | | | | | | | | | | | |
| Rossdale Raw (MPN/100mL) | 30 | | | 2,510 | 35 | 15,400 | | | 128 | 3 | 654 | 1 | 178 | 178 | 178 |
| E.L. Smith Raw (MPN/100mL) | 5 | | | 882 | 88 | 1,730 | | | 44 | 2 | 84 | 1 | 182 | 182 | 182 |
| **Raw River Water Entering the Treatment Plants** | 35 | | | 2,278 | 35 | 15,400 | | | 116 | 2 | 654 | 2 | 180 | 178 | 182 |
| Rossdale Treated (PA/100mL) | 30 | 0 | 0.0 | | | | 0 | 0.0 | | | | 30 | 0.82 | 0.07 | 1.00 |
| E.L. Smith Treated (PA/100mL) | 30 | 0 | 0.0 | | | | 0 | 0.0 | | | | 30 | 0.64 | 0.03 | 1.00 |
| **Water Entering the Plant Reservoir** | 60 | 0 | 0.0 | | | | 0 | 0.0 | | | | 60 | 0.73 | 0.03 | 1.00 |
| Rossdale Reservoir (PA/100mL) | 30 | 0 | 0.0 | | | | 0 | 0.0 | | | | 30 | 0.77 | 0.07 | 1.00 |
| E.L. Smith Reservoir (PA/100mL) | 30 | 0 | 0.0 | | | | 0 | 0.0 | | | | 30 | 0.82 | 0.03 | 1.00 |
| **Treated Water Entering the Distribution System** | 60 | 0 | 0.0 | | | | 0 | 0.0 | | | | 60 | 0.79 | 0.03 | 1.00 |

## 7.4 Bacteriological Data: Water Treatment Plants

## 2022

| | Coliforms, total | | | | | | E. coli | | | | | cATP (pg/mL) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Count | # +ve | % +ve | Mean | Min | Max | # +ve | % +ve | Mean | Min | Max | Count | Mean | Min | Max |
| **July** | | | | | | | | | | | | | | | |
| Rossdale Raw (MPN/100mL) | 31 | | | 4,014 | 186 | 48,400 | | | 232 | 4 | 3,720 | 1 | 268 | 268 | 268 |
| E.L. Smith Raw (MPN/100mL) | 4 | | | 1,617 | 727 | 4,200 | | | 57 | 7 | 150 | 0 | | | |
| **Raw River Water Entering the Treatment Plants** | 35 | | | 3,740 | 186 | 48,400 | | | 212 | 4 | 3,720 | 1 | 268 | 268 | 268 |
| Rossdale Treated (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.92 | 0.06 | 1.00 |
| E.L. Smith Treated (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.80 | 0.03 | 1.00 |
| **Water Entering the Plant Reservoir** | 62 | 0 | 0.0 | | | | 0 | 0.0 | | | | 62 | 0.86 | 0.03 | 1.00 |
| Rossdale Reservoir (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.88 | 0.03 | 1.00 |
| E.L. Smith Reservoir (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.88 | 0.05 | 1.00 |
| **Treated Water Entering the Distribution System** | 62 | 0 | 0.0 | | | | 0 | 0.0 | | | | 62 | 0.88 | 0.03 | 1.00 |
| **August** | | | | | | | | | | | | | | | |
| Rossdale Raw (MPN/100mL) | 31 | | | 466 | 75 | 4,370 | | | 24 | 3 | 170 | 1 | 49.2 | 49.2 | 49.2 |
| E.L. Smith Raw (MPN/100mL) | 5 | | | 324 | 172 | 613 | | | 10 | 5 | 14 | 1 | 55.4 | 55.4 | 55.4 |
| **Raw River Water Entering the Treatment Plants** | 36 | | | 446 | 75 | 4,370 | | | 22 | 3 | 170 | 2 | 52.3 | 49.2 | 55.4 |
| Rossdale Treated (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.70 | 0.03 | 1.00 |
| E.L. Smith Treated (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.86 | 0.08 | 1.00 |
| **Water Entering the Plant Reservoir** | 62 | 0 | 0.0 | | | | 0 | 0.0 | | | | 62 | 0.78 | 0.03 | 1.00 |
| Rossdale Reservoir (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.82 | 0.03 | 1.00 |
| E.L. Smith Reservoir (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.89 | 0.06 | 1.00 |
| **Treated Water Entering the Distribution System** | 62 | 0 | 0.0 | | | | 0 | 0.0 | | | | 62 | 0.85 | 0.03 | 1.00 |

## 7.4 Bacteriological Data: Water Treatment Plants

## 2022

| | Coliforms, total | | | | | | E. coli | | | | | cATP (pg/mL) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Count | # +ve | % +ve | Mean | Min | Max | # +ve | % +ve | Mean | Min | Max | Count | Mean | Min | Max |
| **September** | | | | | | | | | | | | | | | |
| Rossdale Raw (MPN/100mL) | 30 | | | 180 | 34 | 921 | | | 23 | 1 | 194 | 1 | 58.4 | 58.4 | 58.4 |
| E.L. Smith Raw (MPN/100mL) | 4 | | | 231 | 79 | 579 | | | 70 | 6 | 248 | 1 | 81.8 | 81.8 | 81.8 |
| **Raw River Water Entering the Treatment Plants** | 34 | | | 186 | 34 | 921 | | | 29 | 1 | 248 | 2 | 70.1 | 58.4 | 81.8 |
| Rossdale Treated (PA/100mL) | 30 | 0 | 0.0 | | | | 0 | 0.0 | | | | 30 | 0.68 | 0.15 | 1.00 |
| E.L. Smith Treated (PA/100mL) | 30 | 0 | 0.0 | | | | 0 | 0.0 | | | | 30 | 0.60 | 0.12 | 1.04 |
| **Water Entering the Plant Reservoir** | 60 | 0 | 0.0 | | | | 0 | 0.0 | | | | 60 | 0.64 | 0.12 | 1.04 |
| Rossdale Reservoir (PA/100mL) | 30 | 0 | 0.0 | | | | 0 | 0.0 | | | | 30 | 0.66 | 0.11 | 1.33 |
| E.L. Smith Reservoir (PA/100mL) | 30 | 0 | 0.0 | | | | 0 | 0.0 | | | | 30 | 0.76 | 0.15 | 1.17 |
| **Treated Water Entering the Distribution System** | 60 | 0 | 0.0 | | | | 0 | 0.0 | | | | 60 | 0.71 | 0.11 | 1.33 |
| **October** | | | | | | | | | | | | | | | |
| Rossdale Raw (MPN/100mL) | 31 | | | 193 | 62 | 1,990 | | | 57 | 1 | 1,550 | 1 | 45.3 | 45.3 | 45.3 |
| E.L. Smith Raw (MPN/100mL) | 4 | | | 206 | 172 | 248 | | | 10 | 2 | 21 | 1 | 57.5 | 57.5 | 57.5 |
| **Raw River Water Entering the Treatment Plants** | 35 | | | 194 | 62 | 1,990 | | | 52 | 1 | 1,550 | 2 | 51.4 | 45.3 | 57.5 |
| Rossdale Treated (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.90 | 0.16 | 1.00 |
| E.L. Smith Treated (PA/100mL) | 30 | 0 | 0.0 | | | | 0 | 0.0 | | | | 30 | 0.50 | 0.10 | 1.00 |
| **Water Entering the Plant Reservoir** | 61 | 0 | 0.0 | | | | 0 | 0.0 | | | | 61 | 0.70 | 0.10 | 1.00 |
| Rossdale Reservoir (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.92 | 0.15 | 1.00 |
| E.L. Smith Reservoir (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.61 | 0.11 | 1.00 |
| **Treated Water Entering the Distribution System** | 62 | 0 | 0.0 | | | | 0 | 0.0 | | | | 62 | 0.76 | 0.11 | 1.00 |

## 7.4 Bacteriological Data: Water Treatment Plants

## 2022

| | Coliforms, total | | | | | | E. coli | | | | | cATP (pg/mL) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Count | # +ve | % +ve | Mean | Min | Max | # +ve | % +ve | Mean | Min | Max | Count | Mean | Min | Max |
| **November** | | | | | | | | | | | | | | | |
| Rossdale Raw (MPN/100mL) | 29 | | | 272 | 75 | 921 | | | 23 | 1 | 126 | 1 | 23.1 | 23.1 | 23.1 |
| E.L. Smith Raw (MPN/100mL) | 4 | | | 209 | 166 | 261 | | | 9 | 5 | 15 | 0 | | | |
| **Raw River Water Entering the Treatment Plants** | 33 | | | 264 | 75 | 921 | | | 21 | 1 | 126 | 1 | 23.1 | 23.1 | 23.1 |
| Rossdale Treated (PA/100mL) | 29 | 0 | 0.0 | | | | 0 | 0.0 | | | | 29 | 0.73 | 0.11 | 1.48 |
| E.L. Smith Treated (PA/100mL) | 29 | 0 | 0.0 | | | | 0 | 0.0 | | | | 29 | 0.58 | 0.10 | 1.33 |
| **Water Entering the Plant Reservoir** | 58 | 0 | 0.0 | | | | 0 | 0.0 | | | | 58 | 0.66 | 0.10 | 1.48 |
| Rossdale Reservoir (PA/100mL) | 29 | 0 | 0.0 | | | | 0 | 0.0 | | | | 29 | 0.82 | 0.10 | 1.62 |
| E.L. Smith Reservoir (PA/100mL) | 29 | 0 | 0.0 | | | | 0 | 0.0 | | | | 29 | 0.55 | 0.10 | 1.63 |
| **Treated Water Entering the Distribution System** | 58 | 0 | 0.0 | | | | 0 | 0.0 | | | | 58 | 0.68 | 0.10 | 1.63 |
| **December** | | | | | | | | | | | | | | | |
| Rossdale Raw (MPN/100mL) | 31 | | | 176 | 75 | 548 | | | 6 | 1 | 18 | 2 | 24.2 | 21.0 | 27.3 |
| E.L. Smith Raw (MPN/100mL) | 5 | | | 201 | 108 | 261 | | | 6 | 1 | 17 | 1 | 36.4 | 36.4 | 36.4 |
| **Raw River Water Entering the Treatment Plants** | 36 | | | 180 | 75 | 548 | | | 6 | 1 | 18 | 3 | 28.2 | 21.0 | 36.4 |
| Rossdale Treated (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.81 | 0.10 | 1.00 |
| E.L. Smith Treated (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.64 | 0.10 | 1.00 |
| **Water Entering the Plant Reservoir** | 62 | 0 | 0.0 | | | | 0 | 0.0 | | | | 62 | 0.72 | 0.10 | 1.00 |
| Rossdale Reservoir (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.67 | 0.10 | 1.00 |
| E.L. Smith Reservoir (PA/100mL) | 31 | 0 | 0.0 | | | | 0 | 0.0 | | | | 31 | 0.41 | 0.10 | 1.00 |
| **Treated Water Entering the Distribution System** | 62 | 0 | 0.0 | | | | 0 | 0.0 | | | | 62 | 0.54 | 0.10 | 1.00 |

PA = present or absent, MPN = most probable number, cATP = cellular adenosine triphosphate

## 7.5 Bacteriological Data: Distribution System

## 2022

| | Coliforms, total (PA/100 mL) | | | E. coli (PA/100 mL) | | cATP (pg/mL) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Count | # +ve | % +ve | # +ve | % +ve | Count | Mean | Min | Max |
| **January** | | | | | | | | | |
| FIELD DISTRIBUTION | 91 | 0 | 0.0 | 0 | 0.0 | 60 | 0.09 | 0.03 | 0.37 |
| FIELD DISTRIBUTION - PLPH | 60 | 0 | 0.0 | 0 | 0.0 | | | | |
| FIELD RESERVOIR | 50 | 0 | 0.0 | 0 | 0.0 | 50 | 0.07 | 0.02 | 0.20 |
| FIELD RESERVOIR - PLPH (duplicate-not counted) | 48 | 0 | 0.0 | 0 | 0.0 | | | | |
| Monthly | 201 | 0 | 0.0 | 0 | 0.0 | 110 | 0.09 | 0.02 | 0.37 |
| **February** | | | | | | | | | |
| FIELD DISTRIBUTION | 89 | 0 | 0.0 | 0 | 0.0 | 57 | 0.09 | 0.03 | 0.28 |
| FIELD DISTRIBUTION - PLPH | 60 | 0 | 0.0 | 0 | 0.0 | 3 | 0.13 | 0.13 | 0.13 |
| FIELD RESERVOIR | 48 | 0 | 0.0 | 0 | 0.0 | 48 | 0.11 | 0.03 | 0.30 |
| FIELD RESERVOIR - PLPH (duplicate-not counted) | 48 | 0 | 0.0 | 0 | 0.0 | | | | |
| Monthly | 197 | 0 | 0.0 | 0 | 0.0 | 108 | 0.10 | 0.03 | 0.30 |
| **March** | | | | | | | | | |
| FIELD DISTRIBUTION | 85 | 0 | 0.0 | 0 | 0.0 | 61 | 0.09 | 0.03 | 0.37 |
| FIELD DISTRIBUTION - PLPH | 60 | 0 | 0.0 | 0 | 0.0 | | | | |
| FIELD RESERVOIR | 60 | 0 | 0.0 | 0 | 0.0 | 60 | 0.09 | 0.03 | 0.58 |
| FIELD RESERVOIR - PLPH (duplicate-not counted) | 59 | 0 | 0.0 | 0 | 0.0 | | | | |
| Monthly | 205 | 0 | 0.0 | 0 | 0.0 | 121 | 0.09 | 0.03 | 0.58 |
| **April** | | | | | | | | | |
| FIELD DISTRIBUTION | 94 | 0 | 0.0 | 0 | 0.0 | 61 | 0.18 | 0.03 | 1.26 |
| FIELD DISTRIBUTION - PLPH | 60 | 0 | 0.0 | 0 | 0.0 | | | | |
| FIELD RESERVOIR | 55 | 0 | 0.0 | 0 | 0.0 | 55 | 0.09 | 0.03 | 0.37 |
| FIELD RESERVOIR - PLPH (duplicate-not counted) | 52 | 0 | 0.0 | 0 | 0.0 | | | | |
| Monthly | 209 | 0 | 0.0 | 0 | 0.0 | 116 | 0.14 | 0.03 | 1.26 |

## 7.5 Bacteriological Data: Distribution System

## 2022

| | Coliforms, total (PA/100 mL) | | | E. coli (PA/100 mL) | | cATP (pg/mL) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Count | # +ve | % +ve | # +ve | % +ve | Count | Mean | Min | Max |
| **May** | | | | | | | | | |
| FIELD DISTRIBUTION | 98 | 0 | 0.0 | 0 | 0.0 | 58 | 0.09 | 0.03 | 0.24 |
| FIELD DISTRIBUTION - PLPH | 58 | 0 | 0.0 | 0 | 0.0 | | | | |
| FIELD RESERVOIR | 64 | 0 | 0.0 | 0 | 0.0 | 64 | 0.11 | 0.02 | 0.73 |
| FIELD RESERVOIR - PLPH (duplicate-not counted) | 61 | 0 | 0.0 | 0 | 0.0 | | | | |
| Monthly | 220 | 0 | 0.0 | 0 | 0.0 | 122 | 0.10 | 0.02 | 0.73 |
| **June** | | | | | | | | | |
| FIELD DISTRIBUTION | 88 | 0 | 0.0 | 0 | 0.0 | 56 | 0.12 | 0.03 | 0.87 |
| FIELD DISTRIBUTION - PLPH | 60 | 0 | 0.0 | 0 | 0.0 | | | | |
| FIELD RESERVOIR | 48 | 0 | 0.0 | 0 | 0.0 | 48 | 0.21 | 0.04 | 1.04 |
| FIELD RESERVOIR - PLPH (duplicate-not counted) | 59 | 0 | 0.0 | 0 | 0.0 | | | | |
| Monthly | 196 | 0 | 0.0 | 0 | 0.0 | 104 | 0.16 | 0.03 | 1.04 |
| **July** | | | | | | | | | |
| FIELD DISTRIBUTION | 87 | 0 | 0.0 | 0 | 0.0 | 56 | 0.39 | 0.03 | 1.66 |
| FIELD DISTRIBUTION - PLPH | 56 | 0 | 0.0 | 0 | 0.0 | | | | |
| FIELD RESERVOIR | 52 | 0 | 0.0 | 0 | 0.0 | 52 | 1.21 | 0.03 | 4.49 |
| FIELD RESERVOIR - PLPH (duplicate-not counted) | 63 | 0 | 0.0 | 0 | 0.0 | | | | |
| Monthly | 195 | 0 | 0.0 | 0 | 0.0 | 108 | 0.85 | 0.03 | 4.49 |
| **August** | | | | | | | | | |
| FIELD DISTRIBUTION | 96 | 1 | 1.0 | 0 | 0.0 | 58 | 0.29 | 0.03 | 1.08 |
| FIELD DISTRIBUTION - PLPH | 57 | 1 | 1.8 | 0 | 0.0 | | | | |
| FIELD RESERVOIR | 66 | 0 | 0.0 | 0 | 0.0 | 66 | 0.64 | 0.03 | 5.14 |
| FIELD RESERVOIR - PLPH (duplicate-not counted) | 65 | 1 | 1.5 | 0 | 0.0 | | | | |
| Monthly | 219 | 3 | 1.4 | 0 | 0.0 | 124 | 0.47 | 0.03 | 5.14 |

## 7.5 Bacteriological Data: Distribution System

## 2022

| | Coliforms, total (PA/100 mL) | | | E. coli (PA/100 mL) | | cATP (pg/mL) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Count | # +ve | % +ve | # +ve | % +ve | Count | Mean | Min | Max |
| **September** | | | | | | | | | |
| FIELD DISTRIBUTION | 145 | 0 | 0.0 | 0 | 0.0 | 56 | 0.66 | 0.14 | 3.92 |
| FIELD DISTRIBUTION - PLPH | 56 | 0 | 0.0 | 0 | 0.0 | | | | |
| FIELD RESERVOIR | 53 | 0 | 0.0 | 0 | 0.0 | 53 | 0.50 | 0.11 | 1.64 |
| FIELD RESERVOIR - PLPH (duplicate-not counted) | 51 | 0 | 0.0 | 0 | 0.0 | | | | |
| Monthly | 254 | 0 | 0.0 | 0 | 0.0 | 109 | 0.58 | 0.11 | 3.92 |
| **October** | | | | | | | | | |
| FIELD DISTRIBUTION | 154 | 0 | 0.0 | 0 | 0.0 | 56 | 0.22 | 0.11 | 0.63 |
| FIELD DISTRIBUTION - PLPH | 56 | 0 | 0.0 | 0 | 0.0 | | | | |
| FIELD RESERVOIR | 56 | 0 | 0.0 | 0 | 0.0 | 56 | 0.22 | 0.10 | 0.58 |
| FIELD RESERVOIR - PLPH (duplicate-not counted) | 55 | 0 | 0.0 | 0 | 0.0 | | | | |
| Monthly | 266 | 0 | 0.0 | 0 | 0.0 | 112 | 0.22 | 0.10 | 0.63 |
| **November** | | | | | | | | | |
| FIELD DISTRIBUTION | 139 | 0 | 0.0 | 0 | 0.0 | 56 | 0.42 | 0.10 | 1.49 |
| FIELD DISTRIBUTION - PLPH | 56 | 0 | 0.0 | 0 | 0.0 | | | | |
| FIELD RESERVOIR | 58 | 0 | 0.0 | 0 | 0.0 | 58 | 0.44 | 0.10 | 2.42 |
| FIELD RESERVOIR - PLPH (duplicate-not counted) | 57 | 0 | 0.0 | 0 | 0.0 | | | | |
| Monthly | 253 | 0 | 0.0 | 0 | 0.0 | 114 | 0.43 | 0.10 | 2.42 |
| **December** | | | | | | | | | |
| FIELD DISTRIBUTION | 137 | 0 | 0.0 | 0 | 0.0 | 56 | 0.49 | 0.11 | 3.26 |
| FIELD DISTRIBUTION - PLPH | 56 | 0 | 0.0 | 0 | 0.0 | | | | |
| FIELD RESERVOIR | 50 | 0 | 0.0 | 0 | 0.0 | 50 | 0.16 | 0.10 | 0.42 |
| FIELD RESERVOIR - PLPH (duplicate-not counted) | 50 | 0 | 0.0 | 0 | 0.0 | | | | |
| Monthly | 243 | 0 | 0.0 | 0 | 0.0 | 106 | 0.34 | 0.10 | 3.26 |
| Year to Date | 2,658 | 3 | 0.1 | 0 | 0.0 | 1,354 | 0.34 | 0.02 | 5.14 |

## 7.5 Bacteriological Data: Distribution System

## 2022

BACTERIOLOGICAL SAMPLING AND TESTING REQUIREMENTS:

Testing for bacteria (Total Coliform and *E.coli*) in the distribution system is an AEP Approval requirement. The approval states that grab samples in the quantity specified in the Guidelines for Canadian Drinking Water Quality be collected at regular intervals throughout the month. For a city the size of Edmonton (population 972,000 in 2019) the guidelines recommend a minimum of 190 bacteriological samples. At least 95 of the 190 samples must be tested at the Provincial Laboratory for Public Health (PLPH) each month according to the Operations Program. The remainder are tested at the EPCOR Water Laboratory (Accredited to ISO/IEC 17025: standard for water quality parameters). Samples collected weekly from the twelve field reservoirs and tested in the EPCOR Water Laboratory are included in the count. Duplicate samples from the twelve field reservoirs are collected on the same day and tested at the Provincial Laboratory for Public Health are not included in the count.

TABLE DEFINITIONS:

- PLPH - indicates that these tests were conducted by Provincial Laboratory for Public Health (ProvLAB). All other samples were tested at the EPCOR Water Laboratory (accredited to ISO/IEC17025)
- FIELD DISTRIBUTION - includes samples collected from recreation centres, other public facilities, convenience stores, dead end locations and EPCOR employee homes and tested at the EPCOR Water Laboratory.
- FIELD DISTRIBUTION - PLPH - includes samples collected from 30 Edmonton Fire Stations twice monthly and tested at PLPH
- FIELD RESERVOIR - includes weekly samples collected from the thirteen field reservoirs in the distribution system and tested at the EPCOR Water Laboratory
- FIELD RESERVOIR - includes duplicate weekly samples collected from the twelve field reservoirs in the distribution system and tested at PLPH

## 7.5 Bacteriological Data: Distribution System

**2022**

| | Coliforms, total (PA/100 mL) | | | E. coli (PA/100 mL) | | cATP (pg/mL) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Count | # +ve | % +ve | # +ve | % +ve | Count | Mean | Min | Max |
| **Samples from Complaints** | | | | | | | | | |
| **January** | 4 | 0 | 0.0 | 0 | 0.0 | 4 | 0.21 | 0.03 | 0.68 |
| **February** | 10 | 0 | 0.0 | 0 | 0.0 | 10 | 0.19 | 0.03 | 0.50 |
| **March** | 12 | 0 | 0.0 | 0 | 0.0 | 12 | 0.17 | 0.07 | 0.30 |
| **April** | 7 | 0 | 0.0 | 0 | 0.0 | 7 | 0.12 | 0.04 | 0.21 |
| **May** | 11 | 0 | 0.0 | 0 | 0.0 | 11 | 0.12 | 0.04 | 0.33 |
| **June** | 9 | 0 | 0.0 | 0 | 0.0 | 9 | 0.14 | 0.04 | 0.29 |
| **July** | 12 | 0 | 0.0 | 0 | 0.0 | 12 | 0.28 | 0.04 | 0.84 |
| **August** | 5 | 0 | 0.0 | 0 | 0.0 | 5 | 0.30 | 0.18 | 0.53 |
| **September** | 8 | 0 | 0.0 | 0 | 0.0 | 8 | 0.41 | 0.13 | 0.74 |
| **October** | 9 | 0 | 0.0 | 0 | 0.0 | 9 | 0.20 | 0.10 | 0.33 |
| **November** | 5 | 0 | 0.0 | 0 | 0.0 | 5 | 0.13 | 0.12 | 0.14 |
| **December** | 5 | 0 | 0.0 | 0 | 0.0 | 5 | | | |
| Year to Date | 97 | 0 | 0.0 | 0 | 0.0 | 97 | 0.21 | 0.03 | 0.84 |
| **Samples from Depressurizations** | | | | | | | | | |
| **January** | 67 | 0 | 0.0 | 0 | 0.0 | | | | |
| **February** | 49 | 0 | 0.0 | 0 | 0.0 | | | | |
| **March** | 58 | 0 | 0.0 | 0 | 0.0 | | | | |
| **April** | 53 | 0 | 0.0 | 0 | 0.0 | | | | |
| **May** | 83 | 0 | 0.0 | 0 | 0.0 | | | | |
| **June** | 69 | 0 | 0.0 | 0 | 0.0 | | | | |
| **July** | 78 | 1 | 1.3 | 0 | 0.0 | | | | |
| **August** | 88 | 0 | 0.0 | 0 | 0.0 | | | | |
| **September** | 86 | 0 | 0.0 | 0 | 0.0 | | | | |
| **October** | 68 | 0 | 0.0 | 0 | 0.0 | | | | |
| **November** | 58 | 0 | 0.0 | 0 | 0.0 | | | | |
| **December** | 55 | 0 | 0.0 | 0 | 0.0 | | | | |
| Year to Date | 812 | 1 | 0.1 | 0 | 0.0 | | | | |

## 7.6 Giardia and Cryptosporidium

## 2022

**Treated Water entering the distribution system**

| | Cryptosporidium oocysts/100L | | Giardia cysts/100L | |
|---|---|---|---|---|
| | E.L. Smith | Rossdale | E.L. Smith | Rossdale |
| 10 - Jan | <0.1 | | <0.1 | |
| 11 - Jan | | <0.1 | | <0.1 |
| 8 - Feb | | <0.1 | | <0.1 |
| 14 - Feb | <0.1 | | <0.1 | |
| 7 - Mar | <0.1 | | <0.1 | |
| 8 - Mar | | <0.1 | | <0.1 |
| 4 - Apr | <0.1 | | <0.1 | |
| 7 - Apr | | <0.1 | | <0.1 |
| 9 - May | | <0.1 | | <0.1 |
| 10 - May | <0.1 | | <0.1 | |
| 13 - Jun | | <0.1 | | <0.1 |
| 14 - Jun | <0.1 | | <0.1 | |
| 4 - Jul | | <0.1 | | <0.1 |
| 5 - Jul | 9.6 | | 9.6 | |
| 22 - Aug | | <0.1 | | <0.1 |
| 24 - Aug | <0.1 | | <0.1 | |
| 6 - Sep | <0.1 | | <0.1 | |
| 7 - Sep | | <0.1 | | <0.1 |
| 12 - Sep | | <0.1 | | <0.1 |
| 13 - Sep | <0.1 | | <0.1 | |
| 3 - Oct | <0.1 | | <0.1 | |
| 4 - Oct | | <0.1 | | <0.1 |
| 17 - Oct | <0.1 | | <0.1 | |
| 1 - Nov | <0.1 | | <0.1 | |
| 2 - Nov | | <0.1 | | <0.1 |
| 17 - Nov | | 0.1 | | <0.1 |
| | <0.1 | | <0.1 | |
| 21 - Nov | | <0.1 | | <0.1 |
| 27 - Nov | | <0.1 | | <0.1 |
| | <0.1 | | <0.1 | |
| 19 - Dec | <0.1 | | <0.1 | |
| 20 - Dec | | <0.1 | | <0.1 |

**Water entering plant reservoir**

| | Cryptosporidium oocysts/100L | Giardia cysts/100L |
|---|---|---|
| | Rossdale | Rossdale |
| 8 - Feb | <0.1 | <0.1 |
| 9 - May | <0.1 | <0.1 |
| 22 - Aug | <0.1 | <0.1 |

## 7.6 Giardia and Cryptosporidium

## 2022

**Raw Water**

| | Cryptosporidium oocysts/100L | | Giardia cysts/100L | |
|---|---|---|---|---|
| | **E.L. Smith** | **Rossdale** | **E.L. Smith** | **Rossdale** |
| **10 - Jan** | <1.0 | | 1.0 | |
| **11 - Jan** | | <1.0 | | 3.0 |
| **8 - Feb** | | <4.5 | | <4.5 |
| **14 - Feb** | <1.6 | | 1.6 | |
| **7 - Mar** | <1.2 | | 2.4 | |
| **8 - Mar** | | <3.3 | | 6.6 |
| **4 - Apr** | <9.4 | | 9.4 | |
| **7 - Apr** | | <15.0 | | 110.0 |
| **9 - May** | 16.0 | | 27.0 | |
| **10 - May** | | <6.7 | | 27.0 |
| **13 - Jun** | | <2.2 | | <2.2 |
| **14 - Jun** | <14.0 | | <14.0 | |
| **4 - Jul** | | <0.1 | | <0.1 |
| **5 - Jul** | <37.0 | | 37.0 | |
| **22 - Aug** | | <1.0 | | 1.0 |
| **24 - Aug** | <9.8 | | 39.0 | |
| **6 - Sep** | <2.3 | | <2.3 | |
| **7 - Sep** | | 1.0 | | 1.0 |
| **12 - Sep** | | 0.9 | | 23.0 |
| **13 - Sep** | 3.0 | | 12.0 | |
| **26 - Sep** | | 2.9 | | 64.0 |
| **3 - Oct** | <2.0 | | 39.0 | |
| **4 - Oct** | | 4.0 | | 77.0 |
| **17 - Oct** | <2.0 | | 120.0 | |
| **1 - Nov** | <1.6 | | 88.0 | |
| **2 - Nov** | | <1.2 | | 75.0 |
| **17 - Nov** | | <2.2 | | 11.0 |
| | <4.2 | | 38.0 | |
| **21 - Nov** | | 1.5 | | 19.0 |
| **27 - Nov** | | <1.6 | | 11.0 |
| | <4.3 | | 26.0 | |
| **19 - Dec** | <5.8 | | 23.0 | |
| **20 - Dec** | | <1.3 | | 6.7 |

## 7.7 ROSSDALE AND E.L. SMITH TREATED WATER ENTERING PLANT RESERVOIR

**2022**

| | ROSSDALE | | | | E.L. SMITH | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Microbiologicals** | | | | | | | | | | |
| Microcystin | <0.1 | <0.1 | <0.1 | 12 | <0.11 | <0.10 | 0.16 | 12 | 1.5 | |
| **Physical** | | | | | | | | | | |
| Colour (TCU) | 0.8 | <0.5 | 2.1 | 364 | 0.8 | <0.5 | 1.7 | 366 | (15) | 10 |
| Conductivity (uS/cm) | 378 | 320 | 454 | 52 | 385 | 326 | 527 | 53 | (<1) | <1 |
| FPA-Intensity (N/A) | 0.86 | 0.44 | 3.00 | 67 | 0.73 | 0.31 | 1.69 | 66 | | |
| pH (N/A) | 7.9 | 7.5 | 8.2 | 364 | 7.8 | 7.4 | 8.1 | 366 | (7.0 - 10.5) | 7.3-8.3 |
| Total Dissolved Solids (mg/L) | 221 | 186 | 255 | 12 | 224 | 186 | 279 | 13 | (500) | |
| Turbidity (NTU) | 0.05 | <0.04 | 0.10 | 364 | 0.05 | <0.04 | 0.16 | 366 | | 0.3 |
| **Primary Inorganics (mg/L)** | | | | | | | | | | |
| Antimony | <0.0002 | <0.0002 | 0.0002 | 12 | <0.0003 | <0.0002 | 0.0009 | 13 | 0.006 | |
| Arsenic | <0.0002 | <0.0002 | 0.0003 | 12 | <0.0002 | <0.0002 | 0.0003 | 13 | 0.01 | |
| Barium | 0.061 | 0.052 | 0.075 | 12 | 0.060 | 0.051 | 0.074 | 13 | 2 | |
| Boron | 0.010 | 0.007 | 0.014 | 12 | 0.009 | 0.007 | 0.013 | 13 | 2 | |
| Bromate Dissolved | <0.005 | <0.003 | <0.005 | 53 | <0.005 | <0.003 | <0.005 | 54 | 0.01 | |
| Cadmium | <0.0002 | <0.0002 | <0.0002 | 12 | <0.0002 | <0.0002 | <0.0002 | 13 | 0.007 | |
| Chlorate Dissolved | 0.16 | 0.10 | 0.26 | 53 | 0.11 | <0.05 | 0.20 | 54 | 1 | |
| Chlorite Dissolved | <0.009 | <0.005 | <0.200 | 53 | <0.009 | <0.005 | <0.200 | 54 | 1 | |
| Chromium | <0.0002 | <0.0002 | <0.0002 | 12 | <0.0002 | <0.0002 | <0.0002 | 13 | 0.05 | |
| Copper | <0.005 | <0.005 | <0.005 | 12 | <0.005 | <0.005 | <0.005 | 13 | 2 (1) | |
| Cyanide Dissolved | <0.002 | <0.002 | <0.002 | 12 | <0.002 | <0.002 | <0.002 | 13 | 0.2 | |
| Fluoride | 0.69 | 0.61 | 0.77 | 364 | 0.68 | 0.59 | 0.76 | 366 | 1.5 | 0.6–0.8 |
| Lead | <0.0002 | <0.0002 | <0.0002 | 12 | <0.0002 | <0.0002 | <0.0002 | 13 | 0.005 | |
| Manganese | <0.002 | <0.002 | <0.002 | 12 | <0.003 | <0.002 | 0.007 | 13 | 0.12 (0.02) | |
| Mercury | <0.0002 | <0.00001 | <0.0002 | 16 | <0.0002 | <0.00001 | <0.0002 | 17 | 0.001 | |
| Nitrate (as N) Dissolved | 0.05 | <0.01 | 0.25 | 53 | 0.05 | <0.01 | 0.26 | 54 | 10 | |
| Nitrite (as N) Dissolved | <0.010 | <0.005 | 0.010 | 53 | <0.010 | <0.005 | <0.010 | 54 | 1 | |
| Selenium | <0.0002 | <0.0002 | 0.0003 | 12 | 0.0002 | <0.0002 | 0.0003 | 13 | 0.05 | |
| Total Chlorine | 2.10 | 1.91 | 2.32 | 364 | 2.04 | 1.18 | 2.30 | 366 | >1.0 | >1.0 and <2.4 |
| Uranium | <0.0005 | <0.0005 | 0.0006 | 12 | <0.0005 | <0.0005 | 0.0006 | 13 | 0.02 | |

## 7.7 ROSSDALE AND E.L. SMITH TREATED WATER ENTERING PLANT RESERVOIR

**2022**

| | ROSSDALE | | | | E.L. SMITH | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Primary Organics (ug/L)** | | | | | | | | | | |
| 2,4-D | <2.54 | <0.05 | <10.00 | 4 | <2.65 | <0.05 | <10.00 | 4 | 100 | |
| Atrazine | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | 5 | |
| Benzene | <0.5 | <0.5 | <1.0 | 374 | <0.5 | <0.5 | <1.0 | 376 | 5 | |
| Benzo(a)pyrene | <0.005 | <0.005 | <0.005 | 4 | <0.005 | <0.005 | <0.005 | 4 | 0.04 | |
| Bromoxynil | <0.16 | <0.05 | <0.50 | 4 | <0.28 | <0.05 | <0.50 | 4 | 5 | |
| Carbon Tetrachloride | <1.0 | <0.5 | <1.0 | 373 | <1.0 | <0.5 | <1.0 | 375 | 2 | |
| Chlorobenzene | <0.513 | <0.001 | <1.000 | 377 | <0.513 | <0.001 | <1.000 | 379 | 80 (30) | |
| Chlorpyrifos | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | 90 | |
| Cyanazine | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | | |
| Diazinon | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | | |
| Dicamba | <3.1 | <0.1 | <12.0 | 4 | <3.3 | <0.1 | <12.0 | 4 | 110 | |
| Dichlorobenzene (1,2) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 364 | | |
| Dichlorobenzene (1,4) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 364 | 5 (1) | |
| Dichloroethylene (1,1) | <3 | <3 | <3 | 362 | <3 | <3 | <3 | 364 | 14 | |
| Dichlorophenol (2,4) | <0.3 | <0.3 | <0.3 | 4 | <0.3 | <0.3 | <0.3 | 4 | | |
| Diclofop-methyl | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | | |
| Dimethoate | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | 20 | |
| Diuron | <1 | <1 | <1 | 4 | <1 | <1 | <1 | 4 | | |
| Ethylbenzene | <0.5 | <0.5 | <1.0 | 374 | <0.5 | <0.5 | <1.0 | 376 | 140 (1.6) | |
| Glyphosate | <0.15 | <0.01 | <0.20 | 4 | <0.15 | <0.01 | <0.20 | 4 | 280 | |
| Haloacetic Acids, (HAA5) | 21.5 | 11.5 | 37.6 | 13 | 19.5 | 11.2 | 37.8 | 12 | 80 | 40 |
| Haloacetic Acids, total (HAA6) | 21.7 | <12.0 | 37.6 | 13 | 19.8 | <12.0 | 37.9 | 12 | | |
| Malathion | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | 190 | |
| MCPA | <0.16 | <0.05 | <0.50 | 4 | <0.28 | <0.05 | <0.50 | 4 | 100 | |
| Methylene Chloride | <0.6 | <0.5 | <5.0 | 373 | <0.6 | <0.5 | <5.0 | 375 | 50 | |
| Metolachlor | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | | |
| Metribuzin | <0.3 | <0.1 | <1.0 | 4 | <0.3 | <0.1 | <1.0 | 4 | 80 | |
| NDMA | <0.0010 | <0.0009 | <0.0018 | 13 | <0.0010 | <0.0009 | <0.0018 | 13 | 0.040 | 10 |
| NTA (mg/L) | <0.2 | <0.2 | <0.2 | 4 | <0.2 | <0.2 | <0.2 | 4 | 0.4 | |
| Pentachlorophenol | <1.9 | <0.5 | <6.0 | 4 | <1.9 | <0.5 | <6.0 | 4 | 60 (30) | |
| Perfluorooctane sulfonic acid (PFOS) | <0.01 | <0.01 | <0.01 | 4 | <0.01 | <0.01 | <0.01 | 4 | 0.6 | |
| Perfluorooctanoic acid (PFOA) | <0.01 | <0.01 | <0.01 | 4 | <0.01 | <0.01 | <0.01 | 4 | 0.0002 | |
| Phorate | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | | |
| Picloram | <4.8 | <0.1 | <19.0 | 4 | <5.1 | <0.1 | <19.0 | 4 | | |
| Simazine | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | | |
| Terbufos | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | | |
| Tetrachloroethylene | <0.5 | <0.5 | <0.5 | 363 | <0.5 | <0.5 | <0.5 | 365 | 10 | |
| Toluene | <0.5 | <0.5 | <1.0 | 374 | <0.5 | <0.5 | <1.0 | 376 | 60 (24) | |
| Total Xylenes | <2.5 | <2.5 | <2.5 | 362 | <2.5 | <2.5 | <2.5 | 364 | 90 | |
| Trichloroethylene | <0.5 | <0.5 | <0.5 | 363 | <0.5 | <0.5 | <0.5 | 365 | 5 | |
| Trifluralin | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | | |
| Trihalomethanes | 15.5 | 4.2 | 42.1 | 362 | 13.7 | 3.1 | 40.1 | 364 | 100 | 50 |
| Vinyl chloride | <0.833 | <0.001 | <1.000 | 15 | <0.833 | <0.001 | <1.000 | 15 | 2 | |
| **Radionuclides (Bq/L)** | | | | | | | | | | |
| Cesium-137 | <0.09 | <0.08 | <0.10 | 2 | <0.14 | <0.07 | 0.20 | 2 | 10 | |
| Gross Alpha | <0.14 | <0.12 | <0.15 | 2 | <0.14 | <0.11 | <0.16 | 2 | (0.5) | |
| Gross Beta | <0.08 | <0.06 | 0.10 | 2 | 0.12 | 0.07 | 0.17 | 2 | (1.0) | |
| Iodine-131 | <0.2 | <0.2 | <0.2 | 2 | <0.4 | <0.2 | <0.5 | 2 | 6 | |
| Lead-210 | <0.02 | <0.02 | <0.02 | 2 | <0.02 | <0.02 | <0.02 | 2 | 0.2 | |
| Radium-226 | <0.005 | <0.005 | <0.005 | 2 | <0.006 | <0.005 | 0.006 | 2 | 0.5 | |
| Strontium-90 | <0.05 | <0.05 | <0.05 | 2 | <0.05 | <0.05 | <0.05 | 2 | 5 | |
| Tritium | <40 | <40 | <40 | 2 | <40 | <40 | <40 | 2 | 7000 | |

## 7.7 ROSSDALE AND E.L. SMITH TREATED WATER ENTERING PLANT RESERVOIR

**2022**

| | ROSSDALE | | | | E.L. SMITH | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Secondary Inorganics (mg/L)** | | | | | | | | | | |
| Alkalinity Total (mg CaCO3/L) | 120 | 90 | 143 | 364 | 121 | 97 | 140 | 366 | | |
| Aluminum | 0.088 | 0.018 | 0.172 | 12 | 0.079 | 0.020 | 0.176 | 13 | 2.9 | 0.1/0.2 |
| Ammonia as NH3 | 0.11 | 0.07 | 0.18 | 67 | 0.10 | <0.05 | 0.18 | 68 | | |
| Beryllium | <0.0002 | <0.0002 | <0.0002 | 12 | <0.0002 | <0.0002 | <0.0002 | 13 | | |
| Bromide Dissolved | <0.01 | <0.01 | <0.05 | 53 | <0.01 | <0.01 | <0.05 | 54 | | |
| Calcium | 46.8 | 40.2 | 53.8 | 12 | 47.3 | 40.8 | 55.0 | 13 | | |
| Chloride Dissolved | 6.09 | 4.51 | 12.20 | 53 | 6.00 | 4.34 | 10.00 | 54 | (250) | |
| Cobalt | <0.0002 | <0.0002 | <0.0002 | 12 | <0.0002 | <0.0002 | 0.0004 | 13 | | |
| Free Chlorine | <0.03 | <0.03 | <0.03 | 12 | <0.03 | <0.03 | <0.03 | 13 | | |
| Hardness, Ca (mg CaCO3/L) | 113 | 93 | 198 | 364 | 111 | 94 | 186 | 366 | | |
| Iron | <0.005 | <0.005 | <0.005 | 12 | <0.005 | <0.005 | <0.005 | 13 | (0.3) | 0.3 |
| Lanthanum | <0.001 | <0.001 | <0.001 | 12 | <0.001 | <0.001 | <0.001 | 13 | | |
| Lithium | 0.0033 | 0.0026 | 0.0045 | 12 | 0.0031 | 0.0024 | 0.0041 | 13 | | |
| Magnesium | 13.9 | 11.6 | 16.2 | 12 | 14.0 | 11.7 | 16.1 | 13 | | |
| Molybdenum | 0.0007 | 0.0005 | 0.0009 | 12 | 0.0007 | 0.0005 | 0.0008 | 13 | | |
| Nickel | <0.0005 | <0.0005 | 0.0009 | 12 | <0.0006 | <0.0005 | 0.0008 | 13 | | |
| Phosphate,Ortho (as P) | <0.02 | <0.02 | <0.02 | 12 | <0.02 | <0.02 | <0.02 | 12 | | |
| Phosphorus | <0.02 | <0.02 | <0.02 | 12 | <0.02 | <0.02 | <0.02 | 13 | | |
| Potassium | 1.0 | 0.6 | 2.2 | 12 | 0.9 | 0.4 | 2.0 | 13 | | |
| Silicon | 1.97 | 1.46 | 3.16 | 12 | 1.95 | 1.44 | 3.04 | 13 | | |
| Silver | <0.0002 | <0.0002 | 0.0006 | 12 | <0.0002 | <0.0002 | <0.0002 | 13 | | |
| Sodium | 10.3 | 6.1 | 23.2 | 12 | 12.6 | 6.4 | 36.2 | 13 | (200) | |
| Strontium | 0.415 | 0.296 | 0.485 | 12 | 0.417 | 0.298 | 0.480 | 13 | 7.0 | |
| Sulphate Dissolved | 65.5 | 51.5 | 118.0 | 53 | 69.0 | 52.3 | 142.0 | 54 | (500) | |
| Sulphide | <0.002 | <0.002 | 0.002 | 12 | <0.002 | <0.002 | 0.004 | 13 | (0.05) | |
| Thallium | <0.0005 | <0.0005 | <0.0005 | 12 | <0.0005 | <0.0005 | <0.0005 | 13 | | |
| Tin | <0.0005 | <0.0005 | <0.0005 | 12 | <0.0005 | <0.0005 | <0.0005 | 13 | | |
| Titanium | <0.0005 | <0.0005 | <0.0005 | 12 | <0.0005 | <0.0005 | <0.0005 | 13 | | |
| Total Hardness (mg/L CaCO3) | 171 | 142 | 246 | 364 | 170 | 145 | 241 | 366 | | |
| Vanadium | <0.0005 | <0.0005 | <0.0005 | 12 | <0.0005 | <0.0005 | <0.0005 | 13 | | |
| Zinc | <0.005 | <0.005 | <0.005 | 12 | <0.005 | <0.005 | <0.005 | 13 | (5.0) | |
| Zirconium | <0.001 | <0.001 | <0.001 | 12 | <0.001 | <0.001 | <0.001 | 13 | | |

## 7.7 ROSSDALE AND E.L. SMITH TREATED WATER ENTERING PLANT RESERVOIR

**2022**

| | ROSSDALE | | | | E.L. SMITH | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Secondary Organics (ug/L)** | | | | | | | | | | |
| Aldicarb | <1.0 | <0.9 | <1.0 | 4 | <1.0 | <0.9 | <1.0 | 4 | | |
| Aldrin | <0.008 | <0.008 | <0.008 | 4 | <0.008 | <0.008 | <0.008 | 4 | | |
| Azinphos-methyl | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | | |
| Bromobenzene | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Bromochloroacetic acid | <1 | <1 | <2 | 13 | <1 | <1 | <2 | 12 | | |
| Bromodichloromethane | <0.5 | <0.5 | 2.0 | 374 | <0.5 | <0.5 | 1.0 | 376 | | 16 |
| Bromoform | <1.0 | <0.5 | <1.0 | 374 | <1.0 | <0.5 | <1.0 | 376 | | |
| Bromomethane | <9.2 | <0.5 | <10.0 | 12 | <9.2 | <0.5 | <10.0 | 12 | | |
| Carbaryl | <0.3 | <0.2 | <0.5 | 4 | <0.3 | <0.2 | <0.5 | 4 | | |
| Carbofuran | <0.3 | <0.2 | <0.5 | 4 | <0.3 | <0.2 | <0.5 | 4 | | |
| Chloroethane | <9.2 | <0.5 | <10.0 | 12 | <9.2 | <0.5 | <10.0 | 12 | | |
| Chloroform | 16.4 | <0.01 | 69.2 | 377 | 14.5 | <0.01 | 53.8 | 379 | | |
| Chloromethane | <10 | <5 | <10 | 12 | <10 | <5 | <10 | 12 | | |
| Dibromoacetic acid | <1 | <1 | <2 | 13 | <1 | <1 | <2 | 12 | | |
| Dibromochloromethane | <0.51 | <0.01 | <1.00 | 377 | <0.51 | <0.01 | <1.00 | 379 | | |
| Dibromomethane | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Dichloroacetic acid | 8.8 | 4.8 | 14.7 | 13 | 8.3 | 4.4 | 15.7 | 12 | | |
| Dichlorobenzene (1,3) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 364 | | |
| Dichloroethylene, cis (1,2) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 364 | | |
| Dichloroethylene, trans (1,2) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 364 | | |
| Dichloropropane (1,2) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 364 | | |
| Dieldrin | <0.008 | <0.008 | <0.008 | 4 | <0.008 | <0.008 | <0.008 | 4 | | |
| Hexachlorobutadiene | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Hexachloroethane | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Methyl t-Butyl Ether (MTBE) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 364 | (15) | |
| MIBK | <1 | <1 | <1 | 362 | <1 | <1 | <1 | 364 | | |
| Monobromoacetic acid | <1 | <1 | <2 | 13 | <1 | <1 | <2 | 12 | | |
| Monochloroacetic acid | <4.8 | <2.0 | 5.6 | 13 | <4.9 | <2.0 | 6.2 | 12 | | |
| n-Butylbenzene | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| n-Propylbenzene | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Parathion | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | | |
| Perfluorobutanoic acid (PFBA) | <0.6 | <0.1 | <0.8 | 4 | <0.6 | <0.1 | <0.8 | 4 | | |
| Perfluoroheptanoic acid (PFHpA) | <0.02 | <0.01 | <0.02 | 4 | <0.02 | <0.01 | <0.02 | 4 | | |
| Perfluorohexane sulfonic acid (PFHxS) | <0.02 | <0.01 | <0.02 | 4 | <0.02 | <0.01 | <0.02 | 4 | | |
| Perfluorohexanoic acid (PFHxA) | <0.02 | <0.01 | <0.02 | 4 | <0.02 | <0.01 | <0.02 | 4 | | |
| Perfluorononanoic acid (PFNA) | <0.02 | <0.01 | <0.02 | 4 | <0.02 | <0.01 | <0.02 | 4 | | |
| Perfluoropentanoic acid (PFPeA) | <0.02 | <0.01 | <0.02 | 4 | <0.02 | <0.01 | <0.02 | 4 | | |
| p-Isopropyltoluene | <5 | <5 | <5 | 11 | <5 | <5 | <5 | 11 | | |
| sec-Butylbenzene | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Styrene | <0.5 | <0.5 | <1.0 | 374 | <0.5 | <0.5 | <1.0 | 376 | | |
| tert-Butylbenzene | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Tetrachloroethane (1,1,2,2) | <1 | <1 | <1 | 362 | <1 | <1 | <1 | 364 | | |
| Total Organic Carbon | 1.7 | 0.9 | 9.9 | 52 | 1.5 | <0.6 | 3.3 | 53 | | |
| Total Volatile Organics (NonTHM) | <1 | <1 | <1 | 362 | <1 | <1 | <1 | 364 | | |
| Total Volatile Organics (Unknown) | <1.0 | <1.0 | 4.8 | 362 | <1.0 | <1.0 | 5.4 | 364 | | |
| Triallate | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 | | |
| Trichloroacetic acid | 10.1 | 5.8 | 17.3 | 13 | 8.7 | 5.2 | 15.8 | 12 | | |
| Trichlorobenzene (1,2,4) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 364 | | |
| Trichloroethane (1,1,1) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 364 | | |
| Trichlorofluoromethane | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Xylene (1,2) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 364 | | |
| Xylene (1,4) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 364 | | |

TABLE EXPLANATIONS:

* Numbers with no brackets are Health Canada Guidelines for Canadian Drinking Water Quality (GCDWQ) Maximum Acceptable Concentrations (MAC) and/or a limit set out in the Alberta Environment and Parks (AEP) Operating Approval 638-04-00. Limits in brackets indicate Aesthetic Objectives or Operational Guidelines (OG) and are not Approval limits. The EPCOR limits are internal limits set by EPCOR in the Operations Program.

** Primary parameters are those that have health-based limits (MACs) according the AEP Operating Approval 638-04-(

*** Secondary parameters do not have health-based limits but may have aesthetic or operational objectives

## 7.8 Treated Water Entering the Distribution System: Physical, Inorganic, and Organic

### 2022

| | ROSSDALE | | | | E.L. SMITH | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Physical** | | | | | | | | | | |
| FPA-Intensity (N/A) | 1.25 | 1.06 | 1.44 | 2 | | | | 0 | | |
| Turbidity (NTU) | 0.05 | <0.04 | 0.10 | 364 | 0.05 | <0.04 | 0.19 | 364 | | 0.3 |
| UV 254 %T **** | <94.7 | <87.0 | <97.4 | 364 | <94.9 | <89.8 | <98.1 | 366 | | |
| **Primary Inorganics (mg/L)** | | | | | | | | | | |
| Bromate Dissolved | <0.005 | <0.003 | <0.005 | 53 | <0.005 | <0.003 | 0.006 | 53 | 0.01 | |
| Chlorate Dissolved | 0.16 | 0.10 | 0.25 | 53 | 0.11 | <0.05 | 0.21 | 53 | 1 | |
| Chlorite Dissolved | <0.009 | <0.005 | <0.200 | 53 | <0.009 | <0.005 | <0.200 | 53 | 1 | |
| Nitrate (as N) Dissolved | 0.05 | <0.01 | 0.29 | 53 | 0.05 | <0.01 | 0.29 | 53 | 10 | |
| Nitrite (as N) Dissolved | <0.010 | <0.005 | 0.010 | 53 | <0.010 | <0.005 | <0.010 | 53 | 1 | |
| **Primary Organics (ug/L)** | | | | | | | | | | |
| Benzene | <0.5 | <0.5 | <1.0 | 373 | <0.5 | <0.5 | <1.0 | 373 | 5 | |
| Carbon Tetrachloride | <1.0 | <0.5 | <1.0 | 373 | <1.0 | <0.5 | <1.0 | 373 | 2 | |
| Chlorobenzene | <0.5 | <0.5 | <1.0 | 373 | <0.5 | <0.5 | <1.0 | 373 | 80 (30) | |
| Dichlorobenzene (1,2) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 362 | | |
| Dichlorobenzene (1,4) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 362 | 5 (1) | |
| Dichloroethylene (1,1) | <3 | <3 | <3 | 362 | <3 | <3 | <3 | 362 | 14 | |
| Ethylbenzene | <0.5 | <0.5 | <1.0 | 373 | <0.5 | <0.5 | <1.0 | 373 | 140 (1.6) | |
| Methylene Chloride | <0.6 | <0.5 | <5.0 | 373 | <0.6 | <0.5 | <5.0 | 373 | 50 | |
| Tetrachloroethylene | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 362 | 10 | |
| Toluene | <0.5 | <0.5 | <1.0 | 373 | <0.5 | <0.5 | <1.0 | 373 | 60 (24) | |
| Total Xylenes | <2.5 | <2.5 | <2.5 | 362 | <2.5 | <2.5 | <2.5 | 362 | 90 | |
| Trichloroethylene | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 362 | 5 | |
| Trihalomethanes | 12.7 | 3.4 | 34.7 | 362 | 10.6 | 2.6 | 29.6 | 362 | 100 | 50 |
| Vinyl Chloride | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | 2 | |
| **Secondary Inorganics (mg/L)** | | | | | | | | | | |
| Ammonia as NH3 | 0.11 | 0.06 | 0.20 | 67 | 0.10 | <0.05 | 0.18 | 67 | | |
| Bromide Dissolved | <0.01 | <0.01 | <0.05 | 53 | <0.01 | <0.01 | <0.05 | 53 | | |
| Chloride Dissolved | 6.21 | 4.56 | 13.30 | 53 | 5.96 | 4.31 | 10.30 | 53 | (250) | |
| Sulphate Dissolved | 65.3 | 51.1 | 115.0 | 53 | 68.7 | 52.3 | 129.0 | 53 | (500) | |

## 7.8 Treated Water Entering the Distribution System: Physical, Inorganic, and Organic

**2022**

| | ROSSDALE | | | | E.L. SMITH | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| Secondary Organics (ug/L) | | | | | | | | | | |
| Bromobenzene | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Bromodichloromethane | <0.5 | <0.5 | 2.0 | 373 | <0.5 | <0.5 | 1.0 | 373 | | 16 |
| Bromoform | <1 | <1 | <1 | 373 | <1 | <1 | <1 | 373 | | |
| Bromomethane | <10 | <10 | <10 | 11 | <10 | <10 | <10 | 11 | | |
| Chloroethane | <10 | <10 | <10 | 11 | <10 | <10 | <10 | 11 | | |
| Chloroform | 13.5 | 3.40 | 52.0 | 373 | 11.3 | 2.60 | 39.7 | 373 | | |
| Chloromethane | <10 | <10 | <10 | 11 | <10 | <10 | <10 | 11 | | |
| Dibromochloromethane | <0.5 | <0.5 | <1.0 | 373 | <0.5 | <0.5 | <1.0 | 373 | | |
| Dibromomethane | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Dichlorobenzene (1,3) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 362 | | |
| Dichloroethylene, cis (1,2) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 362 | | |
| Dichloroethylene, trans (1,2) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 362 | | |
| Dichloropropane (1,2) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 362 | | |
| Hexachlorobutadiene | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Hexachloroethane | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Methyl t-Butyl Ether (MTBE) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 362 | (15) | |
| MIBK | <1 | <1 | <1 | 362 | <1 | <1 | <1 | 362 | | |
| n-Butylbenzene | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| n-Propylbenzene | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| p-Isopropyltoluene | <5 | <5 | <5 | 11 | <5 | <5 | <5 | 11 | | |
| sec-Butylbenzene | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Styrene | <0.5 | <0.5 | <1.0 | 373 | <0.5 | <0.5 | <1.0 | 373 | | |
| tert-Butylbenzene | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Tetrachloroethane (1,1,2,2) | <1 | <1 | <1 | 362 | <1 | <1 | <1 | 362 | | |
| Total Volatile Organics (NonTHM) | <1 | <1 | <1 | 362 | <1 | <1 | <1 | 362 | | |
| Total Volatile Organics (Unknown) | <1.0 | <1.0 | 5.5 | 362 | <1.0 | <1.0 | 4.4 | 362 | | |
| Trichlorobenzene (1,2,4) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 362 | | |
| Trichloroethane (1,1,1) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 362 | | |
| Trichlorofluoromethane | <1 | <1 | <1 | 11 | <1 | <1 | <1 | 11 | | |
| Xylene (1,2) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 362 | | |
| Xylene (1,4) | <0.5 | <0.5 | <0.5 | 362 | <0.5 | <0.5 | <0.5 | 362 | | |

TABLE EXPLANATIONS:

* Numbers with no brackets are Health Canada Guidelines for Canadian Drinking Water Quality (GCDWQ) Maximum Acceptable Concentrations (MAC) and/or a limit set out in the Alberta Environment and Parks (AEP) Operating Approval 638-04-00. Limits in brackets indicate Aesthetic Objectives or Operational Guidelines (OG) and are not Approval Limits The EPCOR limits are internal limits set by EPCOR in the Operations Program.

** Primary parameters are those that have health-based limits (MACs) according the AEP Operating Approval 638-04-0

*** Secondary parameters do not have health-based limits but may have aesthetic or operational objectives

**** UV 254 %T for Rossdale based on a sample collected daily from one of the nine filters selected randomly. For E.L. Smith it is based on a daily sample of Combined Filter Effluent

## 7.9.a Routine Distribution System (does not include Field Reservoirs)

2022

| | | | | | Limits | |
|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Microbiological** | | | | | | |
| Microcystin | <0.1 | <0.1 | <0.1 | 6 | 1.5 | |
| **Physical** | | | | | | |
| Colour (TCU) | 0.9 | <0.5 | 1.7 | 4 | (15) | 10 |
| pH (N/A) | 7.9 | 7.7 | 8.1 | 29 | (7.0 - 10.5) | 7.3 - 8.3 |
| Total Dissolved Solids (mg/L) | 267 | 200 | 409 | 4 | (500) | |
| Turbidity (NTU) | 0.13 | <0.04 | 3.06 | 1696 | | 1.0 |
| UV 254 %T | <93.1 | <88.8 | <94.5 | 4 | | |
| **Primary Inorganics (mg/L) **** | | | | | | |
| Antimony | <0.0002 | <0.0002 | <0.0002 | 5 | 0.006 | |
| Arsenic | <0.0002 | <0.0002 | <0.0002 | 5 | 0.01 | |
| Barium | 0.058 | 0.050 | 0.067 | 5 | 2 | |
| Boron | 0.011 | 0.007 | 0.022 | 5 | 2 | |
| Bromate Dissolved | <0.005 | <0.005 | <0.005 | 27 | 0.01 | |
| Cadmium | <0.0002 | <0.0002 | <0.0002 | 5 | 0.007 | |
| Chlorate Dissolved | 0.14 | 0.08 | 0.19 | 27 | 1 | |
| Chlorite Dissolved | <0.005 | <0.005 | <0.005 | 27 | 1 | |
| Chromium | <0.0002 | <0.0002 | <0.0002 | 5 | 0.05 | |
| Copper | 0.007 | <0.005 | 0.012 | 5 | 2 (1) | |
| Cyanide Dissolved | <0.002 | <0.002 | <0.002 | 4 | 0.2 | |
| Fluoride | 0.67 | 0.64 | 0.71 | 4 | 1.5 | 0.6 - 0.8 |
| Lead | <0.0002 | <0.0002 | <0.0002 | 5 | 0.005 | |
| Manganese | <0.002 | <0.002 | <0.002 | 5 | 0.12 (0.02) | |
| Mercury | <0.00010 | <0.00001 | <0.00020 | 9 | 0.001 | |
| Nitrate (as N) Dissolved | 0.06 | <0.01 | 0.19 | 27 | 10 | |
| Nitrite (as N) Dissolved | <0.01 | <0.01 | <0.01 | 27 | 1 | |
| Selenium | 0.0003 | <0.0002 | 0.0003 | 5 | 0.05 | |
| Strontium | 0.404 | 0.314 | 0.491 | 5 | 7.0 | |
| Total Chlorine | 1.77 | 0.96 | 2.20 | 1695 | >0.5 and <3.0 | >1.0 and <2.4 |
| Uranium | 0.0005 | <0.0005 | 0.0006 | 5 | 0.02 | |

## 7.9.a Routine Distribution System (does not include Field Reservoirs)

2022

| | | | | | Limits | |
|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Primary Organics (ug/L) **** | | | | | | |
| 2,4-D | <2.54 | <0.05 | <10.00 | 4 | 100 | |
| Atrazine | <0.1 | <0.1 | <0.1 | 4 | 5 | |
| Atrazine+N-Dealkylated Metabolites | <0.2 | <0.2 | <0.2 | 4 | 0.005 | |
| Azinphos-methyl | <0.1 | <0.1 | <0.1 | 4 | 0.02 | |
| Benzene | <0.5 | <0.5 | <0.5 | 74 | 5 | |
| Benzo(a)pyrene | <0.005 | <0.005 | <0.005 | 4 | 0.04 | |
| Bromoxynil | <0.16 | <0.05 | <0.50 | 4 | 5 | |
| Carbon Tetrachloride | <0.9675 | <0.0005 | <1.0000 | 77 | 2 | |
| Chlorobenzene | <0.494 | <0.001 | <0.500 | 77 | 80 (30) | |
| Chlorpyrifos | <0.1 | <0.1 | <0.1 | 4 | 90 | |
| Cyanazine | <0.1 | <0.1 | <0.1 | 4 | | |
| Diazinon | <0.1 | <0.1 | <0.1 | 4 | | |
| Dicamba | <3.1 | <0.1 | <12.0 | 4 | 110 | |
| Dichlorobenzene (1,2) | <0.4935 | <0.0005 | <0.5000 | 77 | | |
| Dichlorobenzene (1,4) | <0.494 | <0.001 | <0.500 | 77 | 5 (1) | |
| Dichloroethane (1,2) | <0.375 | <0.001 | <0.500 | 4 | 5 | |
| Dichloroethene (1,1) | <0.334 | <0.001 | <0.500 | 3 | 14 | |
| Dichloroethylene (1,1) | <3 | <3 | <3 | 73 | 14 | |
| Dichlorophenol (2,4) | <0.3 | <0.3 | <0.3 | 4 | | |
| Diclofop-methyl | <0.1 | <0.1 | <0.1 | 4 | | |
| Dimethoate | <0.1 | <0.1 | <0.1 | 4 | 20 | |
| Diquat | <1 | <1 | <1 | 4 | 0.05 | |
| Diuron | <1 | <1 | <1 | 4 | | |
| Ethylbenzene | <0.5 | <0.5 | <0.5 | 74 | 140 (1.6) | |
| Glyphosate | <0.15 | <0.01 | <0.20 | 4 | 280 | |
| Malathion | <0.1 | <0.1 | <0.1 | 4 | 190 | |
| MCPA | <0.16 | <0.05 | <0.50 | 4 | 100 | |
| Methylene Chloride | <0.5 | <0.5 | <0.5 | 73 | 50 | |
| Metolachlor | <0.1 | <0.1 | <0.1 | 4 | | |
| Metribuzin | <0.3 | <0.1 | <1.0 | 4 | 80 | |
| Nitrilotriacetic acid | <0.2 | <0.2 | <0.2 | 4 | 0.4 | |
| Paraquat | <1 | <1 | <1 | 4 | 0.07 | |
| Pentachlorophenol | <1.9 | <0.5 | <6.0 | 4 | 60 (30) | |
| Perfluorooctane sulfonic acid (PFOS) | <0.01 | <0.01 | <0.01 | 4 | 0.0006 | |
| Perfluorooctanoic acid (PFOA) | <0.01 | <0.01 | <0.01 | 4 | 0.0002 | |
| Phorate | <0.1 | <0.1 | <0.1 | 4 | | |
| Picloram | <4.8 | <0.1 | <19.0 | 4 | | |
| Simazine | <0.1 | <0.1 | <0.1 | 4 | | |
| Terbufos | <0.1 | <0.1 | <0.1 | 4 | | |

## 7.9.a Routine Distribution System (does not include Field Reservoirs)

2022

| | | | | | Limits | |
|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Primary Organics (ug/L) **** | | | | | | |
| Tetrachloroethene | <0.334 | <0.001 | <0.500 | 3 | 0.01 | |
| Tetrachloroethylene | <0.5 | <0.5 | <0.5 | 74 | 10 | |
| Tetrachlorophenol (2,3,4,6) | <0.6 | <0.5 | <1.0 | 4 | 100 (1) | |
| Toluene | <0.5 | <0.5 | <0.5 | 74 | 60 (24) | |
| Total Xylenes | <2.5 | <2.5 | <2.5 | 73 | 90 | |
| Trichloroethene | <0.334 | <0.001 | <0.500 | 3 | 0.005 | |
| Trichloroethylene | <0.5 | <0.5 | <0.5 | 74 | 5 | |
| Trichlorophenol (2,4,6) | <0.5 | <0.5 | <0.5 | 4 | 5 (2) | |
| Trifluralin | <0.1 | <0.1 | <0.1 | 4 | | |

## 7.9.a Routine Distribution System (does not include Field Reservoirs)

2022

| | | | | | Limits | |
|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Secondary Inorganics (mg/L) *** ** | | | | | | |
| Alkalinity Total | 112 | 96 | 123 | 4 | | |
| Alkalinity, PHP (mg CaCO3/L) | <3 | <1 | <3 | 4 | | |
| Aluminum | 0.067 | 0.023 | 0.126 | 5 | 2.9 | 0.1/0.2 |
| Ammonia as N | 0.12 | 0.09 | 0.18 | 29 | | |
| Beryllium | <0.0002 | <0.0002 | <0.0002 | 5 | | |
| Bromide Dissolved | <0.01 | <0.01 | <0.01 | 27 | | |
| Calcium | 46.0 | 40.3 | 51.4 | 5 | | |
| Chloride Dissolved | 6.1 | 4.1 | 9.4 | 27 | (250) | |
| Cobalt | <0.0002 | <0.0002 | <0.0002 | 5 | | |
| Free Chlorine | <0.03 | <0.03 | <0.03 | 4 | | |
| Iron | 0.007 | <0.005 | 0.017 | 5 | (0.3) | 0.3 |
| Lanthanum | <0.001 | <0.001 | <0.001 | 5 | | |
| Lithium | 0.0029 | 0.0026 | 0.0032 | 5 | | |
| Magnesium | 13.6 | 11.9 | 16.1 | 5 | | |
| Molybdenum | 0.0007 | 0.0006 | 0.0008 | 5 | | |
| Nickel | 0.0005 | <0.0005 | 0.0006 | 5 | | |
| Phosphorus | <0.02 | <0.02 | <0.02 | 5 | | |
| Potassium | 1.1 | 0.6 | 2.5 | 5 | | |
| Silicon | 2.16 | 1.63 | 2.88 | 5 | | |
| Silver | <0.0002 | <0.0002 | <0.0002 | 5 | | |
| Sodium | 12.1 | 6.1 | 23.2 | 5 | (200) | |
| Sulphate Dissolved | 66.7 | 49.8 | 99.5 | 27 | (500) | |
| Sulphide | <0.002 | <0.002 | <0.002 | 4 | (0.05) | |
| Thallium | <0.0005 | <0.0005 | <0.0005 | 5 | | |
| Tin | <0.0005 | <0.0005 | <0.0005 | 5 | | |
| Titanium | <0.0005 | <0.0005 | <0.0005 | 5 | | |
| Total Hardness (mg/L CaCO3) | 161 | 145 | 170 | 4 | | |
| Total Kjeldahl Nitrogen | 0.5 | 0.3 | 0.6 | 4 | | |
| Vanadium | <0.0005 | <0.0005 | <0.0005 | 5 | | |
| Zinc | <0.005 | <0.005 | <0.005 | 5 | (5.0) | |
| Zirconium | <0.001 | <0.001 | <0.001 | 5 | | |

## 7.9.a Routine Distribution System (does not include Field Reservoirs)

2022

| | | | | | Limits | |
|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Secondary Organics (ug/L) *** ** | | | | | | |
| 2,4,5-T | <7.04 | <0.05 | <28.00 | 4 | | |
| 6:2 Fluorotelomer sulfonic acid(6:2 FTS) | <0.01 | <0.01 | <0.01 | 4 | | |
| 8:2 Fluorotelomer sulfonic acid(8:2 FTS) | <0.01 | <0.01 | <0.01 | 4 | | |
| a-chlordane | <0.008 | <0.008 | <0.008 | 4 | | |
| Alachlor | <0.1 | <0.1 | <0.1 | 4 | | |
| Aldicarb | <1.0 | <0.9 | <1.0 | 4 | | |
| Aldrin | <0.008 | <0.008 | <0.008 | 4 | | |
| Ametryn | <0.1 | <0.1 | <0.1 | 3 | | |
| Atrazine Desethyl | <0.1 | <0.1 | <0.1 | 4 | | |
| Bendiocarb | <0.5 | <0.5 | <0.5 | 4 | | |
| Bromochloroacetic acid | <1 | <1 | <2 | 72 | | |
| Bromodichloromethane | 0.51 | <0.50 | 0.87 | 74 | | 16 |
| Bromoform | <1.0 | <0.5 | <1.0 | 74 | | |
| Carbaryl | <0.3 | <0.2 | <0.5 | 4 | | |
| Carbofuran | <0.3 | <0.2 | <0.5 | 4 | | |
| Chloroform | 16.982 | <0.016 | 40.800 | 77 | | |
| Dibromoacetic acid | <1 | <1 | <2 | 72 | | |
| Dibromochloromethane | <0.49 | <0.01 | <0.50 | 77 | | |
| Dibromoethane (1,2) | <0.5 | <0.5 | <0.5 | 1 | | |
| Dichloroacetic acid | 9.3 | 4.8 | 21.5 | 72 | | |
| Dichlorobenzene (1,3) | <0.5 | <0.5 | <0.5 | 73 | | |
| Dichloroethylene, cis (1,2) | <0.5 | <0.5 | <0.5 | 73 | | |
| Dichloroethylene, trans (1,2) | <0.5 | <0.5 | <0.5 | 73 | | |
| Dichloropropane (1,2) | <0.5 | <0.5 | <0.5 | 73 | | |
| Dieldrin | <0.008 | <0.008 | <0.008 | 4 | | |
| Dinoseb | <0.29 | <0.05 | <1.00 | 4 | | |
| gamma-hexachlorocyclohexane | <0.008 | <0.008 | <0.008 | 4 | | |
| g-chlordane | <0.008 | <0.008 | <0.008 | 4 | | |
| Heptachlor | <0.008 | <0.008 | <0.008 | 4 | | |
| Heptachlor Epoxide | <0.008 | <0.008 | <0.008 | 4 | | |
| Methoxychlor | <22.506 | <0.008 | <90.000 | 4 | | |
| Methyl Parathion | <0.1 | <0.1 | <0.1 | 3 | | |
| Methyl t-Butyl Ether (MTBE) | <0.5 | <0.5 | <0.5 | 73 | (15) | |
| Methylene chloride | <0.67 | <0.01 | <1.00 | 3 | | |
| MIBK | <1 | <1 | <1 | 73 | | |
| Monobromoacetic acid | <1 | <1 | <2 | 72 | | |
| Monochloroacetic acid | <5 | <2 | <5 | 72 | | |
| op-DDT | <0.004 | <0.004 | <0.004 | 4 | | |
| Oxychlordane | <0.008 | <0.008 | <0.008 | 4 | | |

## 7.9.a Routine Distribution System (does not include Field Reservoirs)

2022

| | | | | | Limits | |
|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Secondary Organics (ug/L) *** ** | | | | | | |
| Parathion | <0.1 | <0.1 | <0.1 | 4 | | |
| Perfluorobutane sulfonic acid (PFBS) | <0.02 | <0.01 | <0.02 | 4 | | |
| Perfluorobutanoic acid (PFBA) | <0.6 | <0.1 | <0.8 | 4 | | |
| Perfluoroheptanoic acid (PFHpA) | <0.02 | <0.01 | <0.02 | 4 | | |
| Perfluorohexane sulfonic acid (PFHxS) | <0.02 | <0.01 | <0.02 | 4 | | |
| Perfluorohexanoic acid (PFHxA) | <0.02 | <0.01 | <0.02 | 4 | | |
| Perfluorononanoic acid (PFNA) | <0.02 | <0.01 | <0.02 | 4 | | |
| Perfluoropentanoic acid (PFPeA) | <0.02 | <0.01 | <0.02 | 4 | | |
| pp-DDD | <0.004 | <0.004 | <0.004 | 4 | | |
| pp-DDE | <0.004 | <0.004 | <0.004 | 4 | | |
| pp-DDT | <0.004 | <0.004 | <0.004 | 4 | | |
| Prometon | <0.1 | <0.1 | <0.1 | 3 | | |
| Prometryne | <0.1 | <0.1 | <0.1 | 4 | | |
| Propazine | <0.1 | <0.1 | <0.1 | 3 | | |
| Styrene | <0.5 | <0.5 | <0.5 | 74 | | |
| Temephos | <1 | <1 | <1 | 4 | | |
| Terbutryn | <0.1 | <0.1 | <0.1 | 3 | | |
| Tetrachloroethane (1,1,2,2) | <1 | <1 | <1 | 73 | | |
| Total Organic Carbon | 1.4 | 0.9 | 2.8 | 4 | | |
| Total Volatile Organics (NonTHM) | <1 | <1 | <1 | 73 | | |
| Total Volatile Organics (Unknown) | <1 | <1 | <1 | 73 | | |
| Triallate | <0.1 | <0.1 | <0.1 | 4 | | |
| Trichloroacetic acid | 8.7 | 4.7 | 17.8 | 72 | | |
| Trichlorobenzene (1,2,4) | <0.488 | <0.001 | <0.500 | 81 | | |
| Trichloroethane (1,1,1) | <0.5 | <0.5 | <0.5 | 73 | | |
| Trichloroethane (1,1,2) | <0.5 | <0.5 | <0.5 | 1 | | |
| Trichloropropane (1,2,3) | <0.5 | <0.5 | <0.5 | 1 | | |
| Xylene (1,2) | <0.5 | <0.5 | <0.5 | 73 | | |
| Xylene (1,4) | <0.5 | <0.5 | <0.5 | 73 | | |

TABLE EXPLANATIONS:

* Numbers with no brackets are Health Canada Guidelines for Canadian Drinking Water Quality (GCDWQ) Maximu Acceptable Concentrations (MAC) and/or a limit set out in the Alberta Environment and Parks (AEP) Operating Approval 638-04-00. Limits in brackets indicate Aesthetic Objectives or Operational Guidelines (OG) and are not Approval limits. The EPCOR limits are internal limits set by EPCOR in the Operations Program.

** Primary parameters are those that have health-based limits (MACs) according the AEP Operating Approval 638-0 00

*** Secondary parameters do not have health-based limits but may have aesthetic or operational objectives

Schedule 4 Testing:

- As per AEP Approval 638-04-00 requirements 2 grab samples per annum and these were collected from two location in the distribution system during December and February (sampled February 7, 2022) and June to August (sampled July 4, 2022) and tested for all Schedule 4 parameters. Two additional samples were collected from two locations in the distribution system (on April 4, 2022 and November 7, 2022) and tested for all Schedule 4 parameters.

Microcystin Testing:

- As per AEP Approval 638-04-00, one sample was collected from the distribution system between August 1 an 16 (sampled August 2, 2022) and between September 1 and September 16 (sampled Sept 6, 2022) and teste for total microcystin.

## 7.9.b Additional Distribution System Samples Collected from Water Quality Complaint Investigations

2022

| | | | | | Limits | |
|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Physical** | | | | | | |
| Colour (TCU) | 1.0 | <0.5 | 4.3 | 97 | (15) | 10 |
| pH (N/A) | 7.9 | 7.6 | 8.3 | 96 | (7.0 - 10.5) | 7.3 - 8.3 |
| Turbidity (NTU) | 0.41 | <0.04 | 2.51 | 97 | | 1.0 |
| **Primary Inorganics (mg/L) **** | | | | | | |
| Antimony | <0.0002 | <0.0002 | <0.0002 | 98 | 0.006 | |
| Arsenic | <0.0002 | <0.0002 | <0.0002 | 98 | 0.01 | |
| Barium | 0.061 | <0.002 | 0.119 | 98 | 2 | |
| Boron | 0.012 | 0.006 | 0.043 | 98 | 2 | |
| Cadmium | <0.0002 | <0.0002 | <0.0002 | 98 | 0.007 | |
| Chromium | <0.0002 | <0.0002 | <0.0002 | 98 | 0.05 | |
| Copper | 0.011 | <0.005 | 0.340 | 98 | 2 (1) | |
| Lead | 0.0003 | <0.0002 | 0.0054 | 98 | 0.005 | |
| Manganese | 0.003 | <0.002 | 0.050 | 98 | 0.12 (0.02) | |
| Mercury | <0.00020 | <0.00020 | <0.00020 | 98 | 0.001 | |
| Selenium | 0.0002 | <0.0002 | 0.0003 | 98 | 0.05 | |
| Strontium | 0.409 | <0.002 | 0.489 | 98 | 7.0 | |
| Total Chlorine | 1.71 | 0.94 | 2.16 | 97 | >0.5 and <3.0 | >1.0 and <2.4 |
| Uranium | 0.0005 | <0.0005 | 0.0006 | 98 | 0.02 | |
| **Primary Organics (ug/L) **** | | | | | | |
| Benzene | <0.5 | <0.5 | <1.0 | 101 | 5 | |
| Carbon Tetrachloride | <1.0 | <0.5 | <1.0 | 101 | 2 | |
| Chlorobenzene | <0.5 | <0.5 | <1.0 | 101 | 80 (30) | |
| Dichlorobenzene (1,2) | <0.5 | <0.5 | <0.6 | 101 | | |
| Dichlorobenzene (1,4) | <0.5 | <0.5 | <1.0 | 101 | 5 (1) | |
| Dichloroethane (1,2) | <1 | <1 | <1 | 4 | 5 | |
| Dichloroethene (1,1) | <1 | <1 | <1 | 4 | 14 | |
| Dichloroethylene (1,1) | <3 | <3 | <3 | 97 | 14 | |
| Ethylbenzene | <0.5 | <0.5 | <1.0 | 101 | 140 (1.6) | |
| Methylene Chloride | <0.7 | <0.5 | <5.0 | 101 | 50 | |
| Tetrachloroethene | <1 | <1 | <1 | 4 | 0.01 | |
| Tetrachloroethylene | <0.5 | <0.5 | <0.5 | 97 | 10 | |
| Toluene | <0.5 | <0.5 | <1.0 | 101 | 60 (24) | |
| Total Xylenes | <2.5 | <2.5 | <2.5 | 97 | 90 | |
| Trichloroethene | <1 | <1 | <1 | 4 | 0.005 | |
| Trichloroethylene | <0.5 | <0.5 | <0.5 | 97 | 5 | |
| Vinyl Chloride | <1 | <1 | <1 | 4 | 2 | |

## 7.9.b Additional Distribution System Samples Collected from Water Quality Complaint Investigations

2022

| | | | | | Limits | |
|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Secondary Inorganics (mg/L) *** ** | | | | | | |
| Aluminum | 0.072 | 0.006 | 0.276 | 98 | 2.9 | 0.1/0.2 |
| Beryllium | <0.0002 | <0.0002 | <0.0002 | 98 | | |
| Calcium | 46.4 | <0.1 | 63.6 | 98 | | |
| Cobalt | 0.0002 | <0.0002 | 0.0010 | 98 | | |
| Iron | 0.059 | <0.005 | 0.338 | 98 | (0.3) | 0.3 |
| Lanthanum | <0.001 | <0.001 | <0.001 | 98 | | |
| Lithium | 0.0033 | <0.0002 | 0.0045 | 98 | | |
| Magnesium | 13.7 | <0.1 | 16.5 | 98 | | |
| Molybdenum | 0.0007 | 0.0005 | 0.0010 | 98 | | |
| Nickel | 0.0009 | <0.0005 | 0.0284 | 98 | | |
| Phosphorus | <0.02 | <0.02 | <0.02 | 98 | | |
| Potassium | 1.0 | 0.5 | 3.2 | 98 | | |
| Silicon | 2.04 | 1.48 | 3.28 | 98 | | |
| Silver | <0.0002 | <0.0002 | <0.0002 | 98 | | |
| Sodium | 14.6 | 6.1 | 87.8 | 98 | (200) | |
| Thallium | <0.0005 | <0.0005 | <0.0005 | 98 | | |
| Tin | <0.0005 | <0.0005 | <0.0005 | 98 | | |
| Titanium | <0.0005 | <0.0005 | <0.0005 | 98 | | |
| Total Hardness | 166 | <2 | 201 | 97 | | |
| Vanadium | <0.0005 | <0.0005 | <0.0005 | 98 | | |
| Zinc | 0.012 | <0.005 | 0.589 | 98 | (5.0) | |
| Zirconium | <0.001 | <0.001 | <0.001 | 98 | | |

## 7.9.b Additional Distribution System Samples Collected from Water Quality Complaint Investigations

2022

| | | | | | Limits | |
|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Secondary Organics (ug/L) *** ** | | | | | | |
| Bromodichloromethane | <0.5 | <0.5 | 2.1 | 101 | | 16 |
| Bromoform | <1 | <1 | <1 | 101 | | |
| Chloroform | 19.8 | 5.3 | 58.7 | 101 | | |
| Dibromo-3-Chloropropane (1,2) | <1 | <1 | <1 | 4 | | |
| Dibromochloromethane | <0.5 | <0.5 | <1.0 | 101 | | |
| Dibromoethane (1,2) | <1 | <1 | <1 | 4 | | |
| Dichlorobenzene (1,3) | <0.5 | <0.5 | <0.5 | 97 | | |
| Dichloroethylene, cis (1,2) | <0.5 | <0.5 | <0.5 | 97 | | |
| Dichloroethylene, trans (1,2) | <0.5 | <0.5 | <0.5 | 97 | | |
| Dichloropropane (1,2) | <0.5 | <0.5 | <0.5 | 97 | | |
| Dichloropropane (1,3) | <1 | <1 | <1 | 4 | | |
| Methyl t-Butyl Ether (MTBE) | <0.5 | <0.5 | <0.5 | 97 | (15) | |
| MIBK | <1 | <1 | <1 | 97 | | |
| Styrene | <0.5 | <0.5 | <1.0 | 101 | | |
| Tetrachloroethane (1,1,1,2) | <1 | <1 | <1 | 4 | | |
| Tetrachloroethane (1,1,2,2) | <1 | <1 | <1 | 97 | | |
| Total Volatile Organics (NonTHM) | <1 | <1 | <1 | 97 | | |
| Total Volatile Organics (Unknown) | 1.2 | <1.0 | 9.2 | 97 | | |
| Trichlorobenzene (1,2,4) | <0.5 | <0.5 | <1.0 | 105 | | |
| Trichloroethane (1,1,1) | <0.5 | <0.5 | <0.5 | 97 | | |
| Trichloroethane (1,1,2) | <1 | <1 | <1 | 4 | | |
| Trichloropropane (1,2,3) | <1 | <1 | <1 | 4 | | |
| Trimethylbenzene (1,2,4) | <1 | <1 | <1 | 4 | | |
| Trimethylbenzene (1,3,5) | <1 | <1 | <1 | 4 | | |
| Xylene (1,2) | <0.5 | <0.5 | <0.5 | 97 | | |
| Xylene (1,4) | <0.5 | <0.5 | <0.5 | 97 | | |

## 7.9.b Additional Distribution System Samples Collected from Water Quality Complaint Investigations

2022

TABLE EXPLANATIONS:

* Numbers with no brackets are Health Canada Guidelines for Canadian Drinking Water Quality (GCDWQ) Maximum Acceptable Concentrations (MAC) and/or a limit set out in the Alberta Environment and Parks (AEP) Operating Approval 638-04-00. Limits in brackets indicate Aesthet Objectives or Operational Guidelines (OG) and are not Approval Limits The EPCOR limits are internal limits set by EPCOR in the Operations Program.

** Primary parameters are those that have health-based limits (MACs) according the AEP Operating Approval 638-04-00

*** Secondary parameters do not have health-based limits but may have aesthetic or operational objectives

## 7.10 Castledowns, Clareview and Discovery Park Reservoirs
## 2022

| Parameter | Castledowns | | | | Clareview | | | | Discovery Park | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Physical** | | | | | | | | | | | | | | |
| Colour (TCU) | 0.6 | <0.5 | 0.8 | 4 | 0.9 | <0.5 | 1.3 | 3 | 0.8 | 0.5 | 1.3 | 5 | (15) | 10 |
| Conductivity (uS/cm) | 393 | 356 | 439 | 4 | 407 | 365 | 509 | 20 | 397 | 364 | 479 | 5 | | |
| Odour | Inoff | Inoff | Inoff | 4 | Inoff | Inoff | Inoff | 3 | Inoff | Inoff | Inoff | 5 | | |
| pH (N/A) | 8.0 | 7.9 | 8.1 | 4 | 7.9 | 7.9 | 7.9 | 3 | 8.1 | 8.0 | 8.2 | 5 | (7.0 - 10.5) | 7.3 - 8.3 |
| Turbidity (NTU) | 0.07 | 0.04 | 0.11 | 36 | 0.18 | 0.08 | 0.42 | 24 | 0.09 | 0.04 | 0.24 | 38 | | 1 |
| **Primary Inorganics (mg/L) **** | | | | | | | | | | | | | | |
| Aluminum | 0.060 | 0.026 | 0.082 | 4 | 0.042 | 0.034 | 0.050 | 3 | 0.050 | 0.031 | 0.084 | 5 | 2.9 | 0.1/0.2 |
| Antimony | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 3 | <0.0002 | <0.0002 | 0.0003 | 5 | 0.006 | |
| Arsenic | <0.0002 | <0.0002 | 0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 3 | <0.0002 | <0.0002 | <0.0002 | 5 | 0.01 | |
| Barium | 0.064 | 0.057 | 0.074 | 4 | 0.064 | 0.058 | 0.071 | 3 | 0.060 | 0.056 | 0.076 | 5 | 2 | |
| Boron | 0.014 | 0.007 | 0.029 | 4 | 0.016 | 0.010 | 0.028 | 3 | 0.008 | 0.006 | 0.010 | 5 | 5 | |
| Bromate Dissolved | <0.005 | <0.005 | <0.005 | 8 | <0.005 | <0.005 | <0.005 | 6 | <0.005 | <0.005 | <0.005 | 10 | 0.01 | |
| Cadmium | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 3 | <0.0002 | <0.0002 | <0.0002 | 5 | 0.005 | |
| Chlorate Dissolved | 0.127 | 0.090 | 0.156 | 8 | 0.191 | 0.144 | 0.265 | 6 | 0.094 | 0.080 | 0.132 | 10 | 1 | |
| Chlorite Dissolved | <0.005 | <0.005 | <0.005 | 8 | <0.005 | <0.005 | <0.005 | 6 | <0.005 | <0.005 | <0.005 | 10 | 1 | |
| Chromium | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 3 | <0.0002 | <0.0002 | <0.0002 | 5 | 0.05 | |
| Copper | <0.005 | <0.005 | <0.005 | 4 | <0.005 | <0.005 | <0.005 | 3 | <0.005 | <0.005 | <0.005 | 5 | (1) | |
| Fluoride | 0.68 | 0.64 | 0.71 | 4 | 0.69 | 0.68 | 0.70 | 3 | 0.67 | 0.66 | 0.68 | 5 | 1.5 | 0.6 - 0.8 |
| Lead | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 3 | <0.0002 | <0.0002 | <0.0002 | 5 | 0.005 | |
| Manganese | <0.002 | <0.002 | <0.002 | 4 | <0.002 | <0.002 | <0.002 | 3 | 0.004 | <0.002 | 0.010 | 5 | 0.12 (0.02) | |
| Mercury | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 3 | <0.0002 | <0.0002 | <0.0002 | 5 | 0.001 | |
| Nitrate (as N) Dissolved | 0.074 | 0.010 | 0.164 | 8 | 0.085 | 0.020 | 0.176 | 6 | 0.064 | 0.040 | 0.100 | 10 | 10 | |
| Nitrite (as N) Dissolved | <0.010 | <0.010 | <0.010 | 8 | <0.010 | <0.010 | <0.010 | 6 | <0.010 | <0.010 | <0.010 | 10 | 1 | |
| Selenium | <0.0002 | <0.0002 | 0.0003 | 4 | 0.0002 | <0.0002 | 0.0003 | 3 | <0.0002 | <0.0002 | 0.0003 | 5 | 0.05 | |
| Strontium | 0.413 | 0.373 | 0.476 | 4 | 0.396 | 0.321 | 0.437 | 3 | 0.418 | 0.315 | 0.451 | 5 | 7.0 | |
| Total Chlorine | 1.78 | 1.50 | 1.98 | 36 | 1.67 | 1.40 | 1.97 | 24 | 1.32 | 1.08 | 1.59 | 38 | >0.5 and <3.0 | >1.0 and <2.4 |
| Uranium | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 3 | <0.0005 | <0.0005 | 0.0005 | 5 | 0.02 | |
| **Primary Organics (ug/L) **** | | | | | | | | | | | | | | |
| Benzene | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 3 | <0.5 | <0.5 | <0.5 | 5 | 5 | |
| Carbon Tetrachloride | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 3 | <1.0 | <1.0 | <1.0 | 5 | 2 | |
| Chlorobenzene | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 3 | <0.50 | <0.50 | <0.50 | 5 | 80 (30) | |
| Dichlorobenzene (1,2) | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 3 | <0.50 | <0.50 | <0.50 | 5 | 200 (3) | |
| Dichlorobenzene (1,4) | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 3 | <0.5 | <0.5 | <0.5 | 5 | 5 (1) | |
| Dichloroethylene (1,1) | <3.0 | <3.0 | <3.0 | 4 | <3.0 | <3.0 | <3.0 | 3 | <3.0 | <3.0 | <3.0 | 5 | 14 | |
| Ethylbenzene | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 3 | <0.50 | <0.50 | <0.50 | 5 | 140 (1.6) | |
| Methylene Chloride | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 3 | <0.5 | <0.5 | <0.5 | 5 | 50 | |
| Tetrachloroethylene | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 3 | <0.5 | <0.5 | <0.5 | 5 | 10 | |

## 7.10 Castledowns, Clareview and Discovery Park Reservoirs
## 2022

| Parameter | Castledowns | | | | Clareview | | | | Discovery Park | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| Toluene | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 3 | <0.50 | <0.50 | <0.50 | 5 | 60 (24) | |
| Total Xylenes | <3 | <3 | <3 | 4 | <3 | <3 | <3 | 3 | <3 | <3 | <3 | 5 | 90 | |
| Trichloroethylene | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 3 | <0.50 | <0.50 | <0.50 | 5 | 5 | |
| **Secondary Inorganics (mg/L) ***** | | | | | | | | | | | | | | |
| Alkalinity Total | 120 | 101 | 139 | 4 | 110 | 109 | 111 | 3 | 118 | 112 | 126 | 5 | | |
| Beryllium | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 3 | <0.0002 | <0.0002 | <0.0002 | 5 | | |
| Bromide Dissolved | <0.010 | <0.010 | <0.010 | 8 | <0.010 | <0.010 | <0.010 | 6 | <0.010 | <0.010 | <0.010 | 10 | | |
| Calcium | 46.8 | 41.3 | 54.0 | 4 | 47.0 | 45.1 | 49.4 | 3 | 47.3 | 46.3 | 49.5 | 5 | | |
| Calcium Hardness | 113 | 98 | 126 | 4 | 111 | 106 | 118 | 3 | 111 | 109 | 117 | 5 | | |
| Chloride Dissolved | 7.0 | 5.6 | 9.2 | 8 | 9.3 | 6.9 | 12.8 | 6 | 6.5 | 5.8 | 7.5 | 10 | (250) | |
| Cobalt | <0.0002 | <0.0002 | 0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 3 | <0.0002 | <0.0002 | <0.0002 | 5 | | |
| Iron | <0.005 | <0.005 | <0.005 | 4 | 0.023 | 0.017 | 0.032 | 3 | <0.006 | <0.005 | 0.010 | 5 | (0.3) | 0.3 |
| Lanthanum | <Inoff | <Inoff | <Inoff | 4 | <Inoff | <Inoff | <Inoff | 3 | <0 | <0 | <0 | 5 | | |
| Lithium | 0.0032 | 0.0027 | 0.0040 | 4 | 0.0033 | 0.0027 | 0.0037 | 3 | 0.0030 | 0.0026 | 0.0031 | 5 | | |
| Magnesium | 13.7 | 11.8 | 16.0 | 4 | 13.0 | 12.5 | 13.3 | 3 | 13.6 | 12.1 | 14.4 | 5 | | |
| Molybdenum | 0.0008 | 0.0006 | 0.0008 | 4 | 0.0007 | 0.0007 | 0.0007 | 3 | 0.0007 | 0.0007 | 0.0007 | 5 | | |
| Nickel | <0.0005 | <0.0005 | 0.0006 | 4 | 0.0006 | <0.0005 | 0.0009 | 3 | <0.0006 | <0.0005 | 0.0008 | 5 | | |
| Phosphorus | <0.02 | <0.02 | <0.02 | 4 | <0.02 | <0.02 | <0.02 | 3 | <0.02 | <0.02 | <0.02 | 5 | | |
| Potassium | 1.15 | 0.40 | 2.40 | 4 | 1.60 | 1.10 | 2.40 | 3 | 0.92 | 0.50 | 1.20 | 5 | | |
| Silicon | 1.90 | 1.66 | 2.16 | 4 | 2.19 | 1.71 | 2.88 | 3 | 1.99 | 1.59 | 2.98 | 5 | | |
| Silver | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 3 | <0.0002 | <0.0002 | <0.0002 | 5 | | |
| Sodium | 14.1 | 6.9 | 21.6 | 4 | 18.3 | 14.5 | 21.2 | 3 | 15.4 | 7.4 | 34.6 | 5 | (200) | |
| Sulphate Dissolved | 74 | 60 | 85 | 8 | 84 | 77 | 92 | 6 | 77 | 56 | 118 | 10 | (500) | |
| Thallium | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 3 | <0.0005 | <0.0005 | <0.0005 | 5 | | |
| Tin | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 3 | <0.0005 | <0.0005 | <0.0005 | 5 | | |
| Titanium | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 3 | <0.0005 | <0.0005 | <0.0005 | 5 | | |
| Total Hardness (mg/L CaCO3) | 171 | 147 | 194 | 4 | 166 | 158 | 171 | 3 | 169 | 164 | 179 | 5 | | |
| Vanadium | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 3 | <0.0005 | <0.0005 | <0.0005 | 5 | | |
| Zinc | <0.005 | <0.005 | <0.005 | 4 | <0.005 | <0.005 | <0.005 | 3 | <0.005 | <0.005 | <0.005 | 5 | (5.0) | |
| Zirconium | <0.0010 | <0.0010 | <0.0010 | 4 | <0.0010 | <0.0010 | <0.0010 | 3 | <0.0010 | <0.0010 | <0.0010 | 5 | | |
| **Secondary Organics (ug/L) ***** | | | | | | | | | | | | | | |
| Bromodichloromethane | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 3 | <0.5 | <0.5 | <0.5 | 5 | | 16 |
| Bromoform | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 3 | <1.0 | <1.0 | <1.0 | 5 | | |
| Chloroform | 19.9 | 7.2 | 32.0 | 4 | 21.7 | 10.1 | 37.0 | 3 | 14.1 | 6.3 | 31.8 | 5 | | |
| Dibromochloromethane | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 3 | <0.50 | <0.50 | <0.50 | 5 | | |
| Dichlorobenzene (1,3) | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 3 | <0.50 | <0.50 | <0.50 | 5 | | |
| Dichloroethylene, cis (1,2) | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 3 | <0.50 | <0.50 | <0.50 | 5 | | |
| Dichloroethylene, trans (1,2) | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 3 | <0.50 | <0.50 | <0.50 | 5 | | |

**7.10 Castledowns, Clareview and Discovery Park Reservoirs**
**2022**

| Parameter | Castledowns | | | | Clareview | | | | Discovery Park | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| Dichloropropane (1,2) | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 3 | <0.5 | <0.5 | <0.5 | 5 | | |
| Methyl t-Butyl Ether (MTBE) | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 3 | <0.5 | <0.5 | <0.5 | 5 | (15) | |
| MIBK | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 3 | <1.0 | <1.0 | <1.0 | 5 | | |
| Styrene | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 3 | <0.50 | <0.50 | <0.50 | 5 | | |
| Tetrachloroethane (1,1,2,2) | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 3 | <1.0 | <1.0 | <1.0 | 5 | | |
| Total Organic Carbon | 1.5 | 1.0 | 1.9 | 4 | 2.1 | 1.6 | 3.0 | 3 | 1.4 | 0.9 | 3.0 | 5 | | |
| Total Volatile Organics (NonTHM) | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 3 | <1.0 | <1.0 | <1.0 | 5 | | |
| Total Volatile Organics (Unknown) | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 3 | <1.0 | <1.0 | <1.0 | 5 | | |
| Trichlorobenzene (1,2,4) | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 3 | <0.5 | <0.5 | <0.5 | 5 | | |
| Trichloroethane (1,1,1) | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 3 | <0.5 | <0.5 | <0.5 | 5 | | |
| Xylene (1,2) | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 3 | <0.5 | <0.5 | <0.5 | 5 | | |
| Xylene (1,4) | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 3 | <0.5 | <0.5 | <0.5 | 5 | | |

TABLE EXPLANATIONS:

* Numbers with no brackets are Health Canada Guidelines for Canadian Drinking Water Quality (GCDWQ) Maximum Acceptable Concentrations (MAC) and/or a limit set out in the Alberta Environment and Parks (AEP) Operating Approval 638-04-00. Limits in brackets indicate Aesthetic Objectives or Operational Guidelines (OG) and are not Approval limits. The EPCOR limits are internal limits set by EPCOR in the Operations Program.

** Primary parameters are those that have health-based limits (MACs) according the AEP Operating Approval 638-04-00

*** Secondary parameters do not have health-based limits but may have aesthetic or operational objectives

## 7.11 Kaskitayo, Londonderry, Millwoods Reservoirs
## 2022

| Parameter | Kaskitayo | | | | Londonderry | | | | Millwoods | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Physical** | | | | | | | | | | | | | | |
| Colour (TCU) | 1.0 | 0.8 | 1.1 | 4 | 1.0 | 0.7 | 1.4 | 5 | 0.6 | 0.5 | 0.8 | 4 | (15) | 10 |
| Conductivity (uS/cm) | 419 | 380 | 470 | 4 | 383 | 360 | 426 | 5 | 393 | 357 | 440 | 4 | | |
| Odour | Inoff | Inoff | Inoff | 4 | Inoff | Inoff | Inoff | 5 | Inoff | Inoff | Inoff | 4 | | |
| pH (N/A) | 8.0 | 7.9 | 8.2 | 4 | 7.9 | 7.8 | 8.0 | 5 | 7.8 | 7.7 | 8.0 | 4 | (7.0 - 10.5) | 7.3 - 8.3 |
| Turbidity (NTU) | 0.07 | <0.04 | 0.24 | 34 | 0.07 | 0.04 | 0.18 | 37 | 0.09 | <0.04 | 0.75 | 34 | | 1 |
| **Primary Inorganics (mg/L) **** | | | | | | | | | | | | | | |
| Aluminum | 0.058 | 0.025 | 0.087 | 4 | 0.063 | 0.022 | 0.118 | 5 | 0.058 | 0.021 | 0.076 | 4 | 2.9 | 0.1/0.2 |
| Antimony | 0.0003 | <0.0002 | 0.0005 | 4 | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | 0.006 | |
| Arsenic | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | 0.0003 | 5 | <0.0002 | <0.0002 | 0.0003 | 4 | 0.01 | |
| Barium | 0.061 | 0.056 | 0.066 | 4 | 0.064 | 0.059 | 0.074 | 5 | 0.063 | 0.057 | 0.073 | 4 | 2 | |
| Boron | 0.009 | 0.008 | 0.010 | 4 | 0.015 | 0.008 | 0.024 | 5 | 0.011 | 0.008 | 0.017 | 4 | 5 | |
| Bromate Dissolved | <0.005 | <0.005 | <0.005 | 8 | <0.005 | <0.005 | <0.005 | 10 | <0.005 | <0.005 | <0.005 | 8 | 0.01 | |
| Cadmium | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | 0.005 | |
| Chlorate Dissolved | 0.106 | 0.080 | 0.131 | 8 | 0.179 | 0.148 | 0.209 | 10 | 0.114 | 0.080 | 0.139 | 8 | 1 | |
| Chlorite Dissolved | <0.005 | <0.005 | <0.005 | 8 | <0.005 | <0.005 | <0.005 | 10 | <0.005 | <0.005 | <0.005 | 8 | 1 | |
| Chromium | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | 0.05 | |
| Copper | <0.005 | <0.005 | 0.006 | 4 | <0.005 | <0.005 | <0.005 | 5 | 0.012 | <0.005 | 0.033 | 4 | (1) | |
| Fluoride | 0.67 | 0.64 | 0.68 | 4 | 0.70 | 0.69 | 0.71 | 5 | 0.69 | 0.63 | 0.72 | 4 | 1.5 | 0.6 - 0.8 |
| Lead | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | 0.0003 | 4 | 0.005 | |
| Manganese | 0.003 | <0.002 | 0.005 | 4 | <0.002 | <0.002 | <0.002 | 5 | <0.002 | <0.002 | 0.003 | 4 | 0.12 (0.02) | |
| Mercury | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | 0.001 | |
| Nitrate (as N) Dissolved | 0.060 | 0.010 | 0.090 | 8 | 0.096 | 0.010 | 0.176 | 10 | 0.058 | 0.010 | 0.090 | 8 | 10 | |
| Nitrite (as N) Dissolved | <0.010 | <0.010 | <0.010 | 8 | <0.010 | <0.010 | <0.010 | 10 | <0.010 | <0.010 | <0.010 | 8 | 1 | |
| Selenium | 0.0003 | <0.0002 | 0.0003 | 4 | <0.0002 | <0.0002 | 0.0003 | 5 | 0.0003 | <0.0002 | 0.0003 | 4 | 0.05 | |
| Strontium | 0.411 | 0.282 | 0.483 | 4 | 0.411 | 0.376 | 0.478 | 5 | 0.418 | 0.374 | 0.474 | 4 | 7.0 | |
| Total Chlorine | 1.88 | 1.58 | 2.05 | 34 | 1.82 | 1.52 | 2.04 | 37 | 1.81 | 0.89 | 2.02 | 34 | >0.5 and <3.0 | >1.0 and <2.4 |
| Uranium | <0.0005 | <0.0005 | 0.0006 | 4 | <0.0005 | <0.0005 | 0.0005 | 5 | <0.0005 | <0.0005 | <0.0005 | 4 | 0.02 | |
| **Primary Organics (ug/L) **** | | | | | | | | | | | | | | |
| Benzene | <0.5 | <0.5 | <0.5 | 5 | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | 5 | |
| Carbon Tetrachloride | <1.0 | <1.0 | <1.0 | 5 | <1.0 | <1.0 | <1.0 | 6 | <1.0 | <1.0 | <1.0 | 4 | 2 | |
| Chlorobenzene | <0.50 | <0.50 | <0.50 | 5 | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | 80 (30) | |
| Dichlorobenzene (1,2) | <0.50 | <0.50 | <0.50 | 5 | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | 200 (3) | |
| Dichlorobenzene (1,4) | <0.5 | <0.5 | <0.5 | 5 | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | 5 (1) | |
| Dichloroethylene (1,1) | <3.0 | <3.0 | <3.0 | 5 | <3.0 | <3.0 | <3.0 | 6 | <3.0 | <3.0 | <3.0 | 4 | 14 | |
| Ethylbenzene | <0.50 | <0.50 | <0.50 | 5 | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | 140 (1.6) | |
| Methylene Chloride | <0.5 | <0.5 | <0.5 | 5 | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | 50 | |
| Tetrachloroethylene | <0.5 | <0.5 | <0.5 | 5 | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | 10 | |

## 7.11 Kaskitayo, Londonderry, Millwoods Reservoirs
## 2022

| Parameter | Kaskitayo | | | | Londonderry | | | | Millwoods | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| Toluene | <0.50 | <0.50 | <0.50 | 5 | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | 60 (24) | |
| Total Xylenes | <3 | <3 | <3 | 5 | <3 | <3 | <3 | 6 | <3 | <3 | <3 | 4 | 90 | |
| Trichloroethylene | <0.50 | <0.50 | <0.50 | 5 | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | 5 | |
| **Secondary Inorganics (mg/L) *** ** | | | | | | | | | | | | | | |
| Alkalinity Total | 124 | 110 | 139 | 4 | 115 | 98 | 135 | 5 | 118 | 100 | 135 | 4 | | |
| Beryllium | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | | |
| Bromide Dissolved | <0.010 | <0.010 | <0.010 | 8 | <0.010 | <0.010 | <0.010 | 10 | <0.010 | <0.010 | <0.010 | 8 | | |
| Calcium | 48.8 | 46.7 | 52.8 | 4 | 45.9 | 41.2 | 53.3 | 5 | 47.0 | 41.4 | 52.8 | 4 | | |
| Calcium Hardness | 117 | 110 | 128 | 4 | 110 | 100 | 126 | 5 | 112 | 98 | 125 | 4 | | |
| Chloride Dissolved | 6.8 | 5.6 | 7.6 | 8 | 7.4 | 6.0 | 9.4 | 10 | 6.6 | 5.4 | 7.6 | 8 | (250) | |
| Cobalt | <0.0002 | <0.0002 | 0.0003 | 4 | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | 0.0002 | 4 | | |
| Iron | 0.014 | <0.005 | 0.039 | 4 | <0.005 | <0.005 | 0.006 | 5 | <0.005 | <0.005 | <0.005 | 4 | (0.3) | 0.3 |
| Lanthanum | <Inoff | <Inoff | <Inoff | 4 | <Inoff | <Inoff | <Inoff | 5 | <0 | <0 | <0 | 4 | | |
| Lithium | 0.0032 | 0.0026 | 0.0034 | 4 | 0.0036 | 0.0032 | 0.0044 | 5 | 0.0032 | 0.0026 | 0.0040 | 4 | | |
| Magnesium | 14.2 | 12.2 | 16.2 | 4 | 13.5 | 11.9 | 15.9 | 5 | 13.9 | 11.9 | 15.8 | 4 | | |
| Molybdenum | 0.0008 | 0.0006 | 0.0009 | 4 | 0.0008 | 0.0007 | 0.0008 | 5 | 0.0007 | 0.0006 | 0.0008 | 4 | | |
| Nickel | <0.0006 | <0.0005 | 0.0007 | 4 | <0.0005 | <0.0005 | 0.0006 | 5 | <0.0005 | <0.0005 | 0.0006 | 4 | | |
| Phosphorus | <0.02 | <0.02 | <0.02 | 4 | <0.02 | <0.02 | <0.02 | 5 | <0.02 | <0.02 | <0.02 | 4 | | |
| Potassium | 0.93 | 0.50 | 1.30 | 4 | 1.52 | 0.70 | 2.50 | 5 | 1.10 | 0.60 | 2.10 | 4 | | |
| Silicon | 2.25 | 1.69 | 2.99 | 4 | 1.97 | 1.71 | 2.19 | 5 | 1.93 | 1.69 | 2.17 | 4 | | |
| Silver | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | | |
| Sodium | 16.9 | 7.4 | 31.5 | 4 | 12.9 | 7.5 | 17.7 | 5 | 13.8 | 7.0 | 22.0 | 4 | (200) | |
| Sulphate Dissolved | 81 | 63 | 115 | 8 | 71 | 59 | 79 | 10 | 71 | 60 | 82 | 8 | (500) | |
| Thallium | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 5 | <0.0005 | <0.0005 | <0.0005 | 4 | | |
| Tin | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 5 | <0.0005 | <0.0005 | <0.0005 | 4 | | |
| Titanium | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 5 | <0.0005 | <0.0005 | <0.0005 | 4 | | |
| Total Hardness (mg/L CaCO3) | 177 | 168 | 193 | 4 | 165 | 142 | 193 | 5 | 170 | 145 | 189 | 4 | | |
| Vanadium | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 5 | <0.0005 | <0.0005 | <0.0005 | 4 | | |
| Zinc | <0.006 | <0.005 | 0.008 | 4 | <0.005 | <0.005 | <0.005 | 5 | 0.007 | <0.005 | 0.014 | 4 | (5.0) | |
| Zirconium | <0.0010 | <0.0010 | <0.0010 | 4 | <0.0010 | <0.0010 | <0.0010 | 5 | <0.0010 | <0.0010 | <0.0010 | 4 | | |
| **Secondary Organics (ug/L) *** ** | | | | | | | | | | | | | | |
| Bromodichloromethane | <0.5 | <0.5 | <0.5 | 5 | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | | 16 |
| Bromoform | <1.0 | <1.0 | <1.0 | 5 | <1.0 | <1.0 | <1.0 | 6 | <1.0 | <1.0 | <1.0 | 4 | | |
| Chloroform | 14.2 | <0.5 | 29.8 | 5 | 16.9 | <0.5 | 35.2 | 6 | 18.5 | 7.1 | 28.7 | 4 | | |
| Dibromochloromethane | <0.50 | <0.50 | <0.50 | 5 | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | | |
| Dichlorobenzene (1,3) | <0.50 | <0.50 | <0.50 | 5 | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | | |
| Dichloroethylene, cis (1,2) | <0.50 | <0.50 | <0.50 | 5 | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | | |
| Dichloroethylene, trans (1,2) | <0.50 | <0.50 | <0.50 | 5 | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | | |

**7.11 Kaskitayo, Londonderry, Millwoods Reservoirs**
**2022**

| Parameter | Kaskitayo | | | | Londonderry | | | | Millwoods | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| Dichloropropane (1,2) | <0.5 | <0.5 | <0.5 | 5 | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | | |
| Methyl t-Butyl Ether (MTBE) | <0.5 | <0.5 | <0.5 | 5 | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | (15) | |
| MIBK | <1.0 | <1.0 | <1.0 | 5 | <1.0 | <1.0 | <1.0 | 6 | <1.0 | <1.0 | <1.0 | 4 | | |
| Styrene | <0.50 | <0.50 | <0.50 | 5 | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | | |
| Tetrachloroethane (1,1,2,2) | <1.0 | <1.0 | <1.0 | 5 | <1.0 | <1.0 | <1.0 | 6 | <1.0 | <1.0 | <1.0 | 4 | | |
| Total Organic Carbon | 1.8 | 1.1 | 2.9 | 4 | 1.6 | 1.1 | 1.9 | 5 | 1.4 | 0.9 | 1.8 | 4 | | |
| Total Volatile Organics (NonTHM) | <1.0 | <1.0 | <1.0 | 5 | <1.0 | <1.0 | <1.0 | 6 | <1.0 | <1.0 | <1.0 | 4 | | |
| Total Volatile Organics (Unknown) | <1.0 | <1.0 | <1.0 | 5 | <1.0 | <1.0 | <1.0 | 6 | <1.0 | <1.0 | <1.0 | 4 | | |
| Trichlorobenzene (1,2,4) | <0.5 | <0.5 | <0.5 | 5 | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | | |
| Trichloroethane (1,1,1) | <0.5 | <0.5 | <0.5 | 5 | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | | |
| Xylene (1,2) | <0.5 | <0.5 | <0.5 | 5 | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | | |
| Xylene (1,4) | <0.5 | <0.5 | <0.5 | 5 | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | | |

TABLE EXPLANATIONS:

* Numbers with no brackets are Health Canada Guidelines for Canadian Drinking Water Quality (GCDWQ) Maximum Acceptable Concentrations (MAC) and/or a limit set out in the Alberta Environment and Parks (AEP) Operating Approval 638-04-00. Limits in brackets indicate Aesthetic Objectives or Operational Guidelines (OG) and are not Approval limits. The EPCOR limits are internal limits set by EPCOR in the Operations Program.

** Primary parameters are those that have health-based limits (MACs) according the AEP Operating Approval 638-04-00

*** Secondary parameters do not have health-based limits but may have aesthetic or operational objectives

## 7.12 North Jasper Place, Ormsby, Papaschase 1 Reservoirs
## 2022

| Parameter | North Jasper Place | | | | Ormsby | | | | Papaschase 1 | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Physical** | | | | | | | | | | | | | | |
| Colour (TCU) | 0.9 | 0.7 | 1.3 | 5 | 0.7 | <0.5 | 1.2 | 5 | 0.6 | <0.5 | 0.7 | 4 | (15) | 10 |
| Conductivity (uS/cm) | 403 | 367 | 478 | 5 | 387 | 356 | 438 | 5 | 383 | 355 | 426 | 4 | | |
| Odour | Inoff | Inoff | Inoff | 5 | Inoff | Inoff | Inoff | 5 | Inoff | Inoff | Inoff | 4 | | |
| pH (N/A) | 8.0 | 7.9 | 8.1 | 5 | 7.9 | 7.7 | 8.0 | 5 | 7.9 | 7.7 | 8.0 | 4 | (7.0 - 10.5) | 7.3 - 8.3 |
| Turbidity (NTU) | 0.10 | 0.05 | 0.14 | 38 | 0.35 | 0.05 | 8.82 | 36 | 0.13 | 0.08 | 0.56 | 35 | | 1 |
| **Primary Inorganics (mg/L) **** | | | | | | | | | | | | | | |
| Aluminum | 0.059 | 0.034 | 0.078 | 5 | 0.152 | 0.030 | 0.434 | 4 | 0.070 | 0.037 | 0.108 | 4 | 2.9 | 0.1/0.2 |
| Antimony | 0.0006 | <0.0002 | 0.0017 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | 0.006 | |
| Arsenic | <0.0002 | <0.0002 | 0.0002 | 5 | <0.0002 | <0.0002 | 0.0003 | 4 | <0.0002 | <0.0002 | 0.0003 | 4 | 0.01 | |
| Barium | 0.061 | 0.056 | 0.073 | 5 | 0.064 | 0.057 | 0.075 | 4 | 0.064 | 0.059 | 0.073 | 4 | 2 | |
| Boron | 0.009 | 0.008 | 0.011 | 5 | 0.014 | 0.008 | 0.026 | 4 | 0.014 | 0.008 | 0.028 | 4 | 5 | |
| Bromate Dissolved | <0.005 | <0.005 | <0.005 | 10 | <0.005 | <0.005 | <0.005 | 8 | <0.005 | <0.005 | <0.005 | 8 | 0.01 | |
| Cadmium | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | 0.005 | |
| Chlorate Dissolved | 0.110 | 0.100 | 0.137 | 10 | 0.115 | 0.080 | 0.145 | 8 | 0.153 | 0.130 | 0.174 | 8 | 1 | |
| Chlorite Dissolved | <0.005 | <0.005 | <0.005 | 10 | <0.005 | <0.005 | <0.005 | 8 | <0.005 | <0.005 | <0.005 | 8 | 1 | |
| Chromium | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | 0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | 0.05 | |
| Copper | <0.005 | <0.005 | <0.005 | 5 | <0.006 | <0.005 | 0.009 | 4 | <0.005 | <0.005 | <0.005 | 4 | (1) | |
| Fluoride | 0.67 | 0.64 | 0.70 | 5 | 0.67 | 0.63 | 0.71 | 5 | 0.69 | 0.66 | 0.72 | 4 | 1.5 | 0.6 - 0.8 |
| Lead | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | 0.005 | |
| Manganese | 0.003 | <0.002 | 0.007 | 5 | 0.010 | <0.002 | 0.034 | 4 | <0.002 | <0.002 | <0.002 | 4 | 0.12 (0.02) | |
| Mercury | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | 0.001 | |
| Nitrate (as N) Dissolved | 0.074 | 0.050 | 0.090 | 10 | 0.062 | 0.010 | 0.107 | 8 | 0.067 | 0.020 | 0.116 | 8 | 10 | |
| Nitrite (as N) Dissolved | <0.010 | <0.010 | <0.010 | 10 | <0.010 | <0.010 | <0.010 | 8 | <0.010 | <0.010 | <0.010 | 8 | 1 | |
| Selenium | 0.0003 | <0.0002 | 0.0003 | 5 | 0.0003 | 0.0002 | 0.0003 | 4 | 0.0003 | 0.0002 | 0.0003 | 4 | 0.05 | |
| Strontium | 0.418 | 0.305 | 0.465 | 5 | 0.419 | 0.385 | 0.474 | 4 | 0.429 | 0.386 | 0.469 | 4 | 7.0 | |
| Total Chlorine | 1.56 | 1.27 | 1.98 | 38 | 1.79 | 1.42 | 2.04 | 36 | 1.65 | 1.17 | 2.03 | 35 | >0.5 and <3.0 | >1.0 and <2.4 |
| Uranium | <0.0005 | <0.0005 | 0.0005 | 5 | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 4 | 0.02 | |
| **Primary Organics (ug/L) **** | | | | | | | | | | | | | | |
| Benzene | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 5 | 5 | |
| Carbon Tetrachloride | <1.0 | <1.0 | <1.0 | 6 | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 5 | 2 | |
| Chlorobenzene | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 5 | 80 (30) | |
| Dichlorobenzene (1,2) | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 5 | 200 (3) | |
| Dichlorobenzene (1,4) | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 5 | 5 (1) | |
| Dichloroethylene (1,1) | <3.0 | <3.0 | <3.0 | 6 | <3.0 | <3.0 | <3.0 | 4 | <3.0 | <3.0 | <3.0 | 5 | 14 | |
| Ethylbenzene | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 5 | 140 (1.6) | |
| Methylene Chloride | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 5 | 50 | |
| Tetrachloroethylene | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 5 | 10 | |

## 7.12 North Jasper Place, Ormsby, Papaschase 1 Reservoirs
## 2022

| Parameter | North Jasper Place | | | | Ormsby | | | | Papaschase 1 | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| Toluene | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 5 | 60 (24) | |
| Total Xylenes | <3 | <3 | <3 | 6 | <3 | <3 | <3 | 4 | <3 | <3 | <3 | 5 | 90 | |
| Trichloroethylene | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 5 | 5 | |
| **Secondary Inorganics (mg/L) ***** | | | | | | | | | | | | | | |
| Alkalinity Total | 122 | 112 | 130 | 5 | 119 | 98 | 137 | 5 | 120 | 109 | 132 | 4 | | |
| Beryllium | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | | |
| Bromide Dissolved | <0.010 | <0.010 | <0.010 | 10 | <0.010 | <0.010 | <0.010 | 8 | <0.010 | <0.010 | <0.010 | 8 | | |
| Calcium | 48.1 | 46.7 | 49.7 | 5 | 46.8 | 41.3 | 53.7 | 4 | 47.8 | 44.5 | 52.0 | 4 | | |
| Calcium Hardness | 115 | 110 | 118 | 5 | 113 | 98 | 126 | 5 | 114 | 106 | 122 | 4 | | |
| Chloride Dissolved | 6.5 | 5.9 | 7.4 | 10 | 6.6 | 5.4 | 7.8 | 8 | 6.6 | 5.8 | 7.7 | 8 | (250) | |
| Cobalt | <0.0002 | <0.0002 | <0.0002 | 5 | 0.0003 | <0.0002 | 0.0004 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | | |
| Iron | 0.008 | <0.005 | 0.011 | 5 | 0.013 | <0.005 | 0.035 | 4 | 0.012 | 0.010 | 0.015 | 4 | (0.3) | 0.3 |
| Lanthanum | <Inoff | <Inoff | <Inoff | 5 | <Inoff | <Inoff | <Inoff | 4 | <0 | <0 | <0 | 4 | | |
| Lithium | 0.0031 | 0.0026 | 0.0033 | 5 | 0.0033 | 0.0028 | 0.0040 | 4 | 0.0036 | 0.0032 | 0.0044 | 4 | | |
| Magnesium | 13.9 | 12.1 | 15.1 | 5 | 13.8 | 12.0 | 15.8 | 4 | 14.1 | 12.9 | 15.4 | 4 | | |
| Molybdenum | 0.0007 | 0.0007 | 0.0008 | 5 | 0.0008 | 0.0007 | 0.0008 | 4 | 0.0007 | 0.0007 | 0.0008 | 4 | | |
| Nickel | <0.0005 | <0.0005 | 0.0007 | 5 | <0.0006 | <0.0005 | 0.0008 | 4 | <0.0005 | <0.0005 | <0.0005 | 4 | | |
| Phosphorus | <0.02 | <0.02 | <0.02 | 5 | <0.02 | <0.02 | <0.02 | 4 | <0.02 | <0.02 | <0.02 | 4 | | |
| Potassium | 0.94 | 0.70 | 1.30 | 5 | 1.15 | 0.60 | 2.30 | 4 | 1.08 | 0.70 | 1.80 | 4 | | |
| Silicon | 2.15 | 1.75 | 3.09 | 5 | 1.96 | 1.70 | 2.32 | 4 | 1.96 | 1.76 | 2.20 | 4 | | |
| Silver | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | | |
| Sodium | 15.5 | 7.3 | 36.1 | 5 | 14.0 | 6.9 | 21.9 | 4 | 11.5 | 7.4 | 16.4 | 4 | (200) | |
| Sulphate Dissolved | 74 | 57 | 120 | 10 | 72 | 60 | 82 | 8 | 69 | 60 | 79 | 8 | (500) | |
| Thallium | <0.0005 | <0.0005 | <0.0005 | 5 | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 4 | | |
| Tin | <0.0005 | <0.0005 | <0.0005 | 5 | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 4 | | |
| Titanium | <0.0005 | <0.0005 | <0.0005 | 5 | 0.0027 | <0.0005 | 0.0083 | 4 | <0.0005 | <0.0005 | <0.0005 | 4 | | |
| Total Hardness (mg/L CaCO3) | 173 | 167 | 180 | 5 | 171 | 145 | 189 | 5 | 173 | 158 | 184 | 4 | | |
| Vanadium | <0.0005 | <0.0005 | <0.0005 | 5 | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 4 | | |
| Zinc | <0.005 | <0.005 | <0.005 | 5 | <0.005 | <0.005 | <0.005 | 4 | <0.005 | <0.005 | <0.005 | 4 | (5.0) | |
| Zirconium | <0.0010 | <0.0010 | <0.0010 | 5 | <0.0010 | <0.0010 | <0.0010 | 4 | <0.0010 | <0.0010 | <0.0010 | 4 | | |
| **Secondary Organics (ug/L) ***** | | | | | | | | | | | | | | |
| Bromodichloromethane | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 5 | | 16 |
| Bromoform | <1.0 | <1.0 | <1.0 | 6 | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 5 | | |
| Chloroform | 13.5 | <0.5 | 29.4 | 6 | 19.4 | 7.5 | 30.3 | 4 | 17.8 | <0.5 | 33.3 | 5 | | |
| Dibromochloromethane | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 5 | | |
| Dichlorobenzene (1,3) | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 5 | | |
| Dichloroethylene, cis (1,2) | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 5 | | |
| Dichloroethylene, trans (1,2) | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 5 | | |

**7.12 North Jasper Place, Ormsby, Papaschase 1 Reservoirs**
**2022**

| Parameter | North Jasper Place | | | | Ormsby | | | | Papaschase 1 | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| Dichloropropane (1,2) | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 5 | | |
| Methyl t-Butyl Ether (MTBE) | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 5 | (15) | |
| MIBK | <1.0 | <1.0 | <1.0 | 6 | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 5 | | |
| Styrene | <0.50 | <0.50 | <0.50 | 6 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 5 | | |
| Tetrachloroethane (1,1,2,2) | <1.0 | <1.0 | <1.0 | 6 | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 5 | | |
| Total Organic Carbon | 1.4 | 0.8 | 3.0 | 5 | 1.4 | 0.9 | 1.8 | 4 | 1.4 | 1.0 | 1.9 | 4 | | |
| Total Volatile Organics (NonTHM) | <1.0 | <1.0 | <1.0 | 6 | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 5 | | |
| Total Volatile Organics (Unknown) | <1.0 | <1.0 | <1.0 | 6 | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 5 | | |
| Trichlorobenzene (1,2,4) | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 5 | | |
| Trichloroethane (1,1,1) | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 5 | | |
| Xylene (1,2) | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 5 | | |
| Xylene (1,4) | <0.5 | <0.5 | <0.5 | 6 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 5 | | |

TABLE EXPLANATIONS:

* Numbers with no brackets are Health Canada Guidelines for Canadian Drinking Water Quality (GCDWQ) Maximum Acceptable Concentrations (MAC) and/or a limit set out in the Alberta Environment and Parks (AEP) Operating Approval 638-04-00. Limits in brackets indicate Aesthetic Objectives or Operational Guidelines (OG) and are not Approval limits. The EPCOR limits are internal limits set by EPCOR in the Operations Program.

** Primary parameters are those that have health-based limits (MACs) according the AEP Operating Approval 638-04-00

*** Secondary parameters do not have health-based limits but may have aesthetic or operational objectives

## 7.13 Papaschase 2, Rosslyn 1, Rosslyn 2 Reservoirs
## 2022

| Parameter | Papaschase 2 | | | | Rosslyn 1 | | | | Rosslyn 2 | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Physical** | | | | | | | | | | | | | | |
| Colour (TCU) | 1.0 | <0.5 | 1.4 | 5 | 0.9 | 0.6 | 1.1 | 4 | 1.1 | 0.9 | 1.6 | 4 | (15) | 10 |
| Conductivity (uS/cm) | 412 | 377 | 438 | 5 | 389 | 366 | 423 | 4 | 390 | 368 | 423 | 4 | | |
| Odour | Inoff | Inoff | Inoff | 5 | Inoff | Inoff | Inoff | 4 | Inoff | Inoff | Inoff | 4 | | |
| pH (N/A) | 8.0 | 7.8 | 8.2 | 5 | 7.9 | 7.9 | 8.0 | 4 | 7.9 | 7.8 | 8.1 | 4 | (7.0 - 10.5) | 7.3 - 8.3 |
| Turbidity (NTU) | 0.08 | <0.04 | 0.37 | 36 | 0.08 | 0.05 | 0.17 | 35 | 0.08 | 0.05 | 0.15 | 31 | | 1 |
| **Primary Inorganics (mg/L) **** | | | | | | | | | | | | | | |
| Aluminum | 0.049 | 0.026 | 0.085 | 5 | 0.070 | 0.027 | 0.118 | 4 | 0.055 | 0.021 | 0.086 | 4 | 2.9 | 0.1/0.2 |
| Antimony | <0.0003 | <0.0002 | 0.0005 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | 0.0004 | <0.0002 | 0.0011 | 4 | 0.006 | |
| Arsenic | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | 0.0002 | 4 | <0.0002 | <0.0002 | 0.0002 | 4 | 0.01 | |
| Barium | 0.065 | 0.057 | 0.074 | 5 | 0.066 | 0.062 | 0.071 | 4 | 0.062 | 0.056 | 0.074 | 4 | 2 | |
| Boron | 0.009 | 0.008 | 0.010 | 5 | 0.015 | 0.009 | 0.027 | 4 | 0.009 | 0.007 | 0.011 | 4 | 5 | |
| Bromate Dissolved | <0.005 | <0.005 | <0.005 | 10 | <0.005 | <0.005 | <0.005 | 8 | <0.005 | <0.005 | <0.005 | 8 | 0.01 | |
| Cadmium | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | 0.005 | |
| Chlorate Dissolved | 0.130 | 0.080 | 0.160 | 10 | 0.169 | 0.145 | 0.222 | 8 | 0.155 | 0.134 | 0.199 | 8 | 1 | |
| Chlorite Dissolved | <0.005 | <0.005 | <0.005 | 10 | <0.005 | <0.005 | <0.005 | 8 | <0.005 | <0.005 | <0.005 | 8 | 1 | |
| Chromium | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | 0.05 | |
| Copper | <0.005 | <0.005 | <0.005 | 5 | <0.005 | <0.005 | <0.005 | 4 | <0.005 | <0.005 | <0.005 | 4 | (1) | |
| Fluoride | 0.68 | 0.68 | 0.69 | 5 | 0.70 | 0.69 | 0.71 | 4 | 0.69 | 0.68 | 0.70 | 4 | 1.5 | 0.6 - 0.8 |
| Lead | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | 0.005 | |
| Manganese | <0.002 | <0.002 | 0.003 | 5 | <0.002 | <0.002 | <0.002 | 4 | <0.002 | <0.002 | <0.002 | 4 | 0.12 (0.02) | |
| Mercury | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | 0.001 | |
| Nitrate (as N) Dissolved | 0.058 | 0.010 | 0.090 | 10 | 0.080 | 0.020 | 0.179 | 8 | 0.065 | 0.030 | 0.090 | 8 | 10 | |
| Nitrite (as N) Dissolved | <0.010 | <0.010 | <0.010 | 10 | <0.010 | <0.010 | <0.010 | 8 | <0.010 | <0.010 | <0.010 | 8 | 1 | |
| Selenium | 0.0003 | <0.0002 | 0.0003 | 5 | 0.0003 | 0.0002 | 0.0003 | 4 | 0.0002 | 0.0002 | 0.0003 | 4 | 0.05 | |
| Strontium | 0.398 | 0.309 | 0.488 | 5 | 0.423 | 0.374 | 0.464 | 4 | 0.411 | 0.301 | 0.467 | 4 | 7.0 | |
| Total Chlorine | 1.82 | 1.47 | 2.00 | 36 | 1.64 | 1.08 | 1.98 | 35 | 1.75 | 1.28 | 1.99 | 31 | >0.5 and <3.0 | >1.0 and <2.4 |
| Uranium | <0.0005 | <0.0005 | 0.0006 | 5 | <0.0005 | <0.0005 | 0.0005 | 4 | <0.0005 | <0.0005 | 0.0005 | 4 | 0.02 | |
| **Primary Organics (ug/L) **** | | | | | | | | | | | | | | |
| Benzene | <0.5 | <0.5 | <0.5 | 7 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 6 | 5 | |
| Carbon Tetrachloride | <1.0 | <1.0 | <1.0 | 7 | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 6 | 2 | |
| Chlorobenzene | <0.50 | <0.50 | <0.50 | 7 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 6 | 80 (30) | |
| Dichlorobenzene (1,2) | <0.50 | <0.50 | <0.50 | 7 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 6 | 200 (3) | |
| Dichlorobenzene (1,4) | <0.5 | <0.5 | <0.5 | 7 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 6 | 5 (1) | |
| Dichloroethylene (1,1) | <3.0 | <3.0 | <3.0 | 7 | <3.0 | <3.0 | <3.0 | 4 | <3.0 | <3.0 | <3.0 | 6 | 14 | |
| Ethylbenzene | <0.50 | <0.50 | <0.50 | 7 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 6 | 140 (1.6) | |
| Methylene Chloride | <0.5 | <0.5 | <0.5 | 7 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 6 | 50 | |
| Tetrachloroethylene | <0.5 | <0.5 | <0.5 | 7 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 6 | 10 | |

## 7.13 Papaschase 2, Rosslyn 1, Rosslyn 2 Reservoirs
## 2022

| Parameter | Papaschase 2 | | | | Rosslyn 1 | | | | Rosslyn 2 | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| Toluene | <0.50 | <0.50 | <0.50 | 7 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 6 | 60 (24) | |
| Total Xylenes | <3 | <3 | <3 | 7 | <3 | <3 | <3 | 4 | <3 | <3 | <3 | 6 | 90 | |
| Trichloroethylene | <0.50 | <0.50 | <0.50 | 7 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 6 | 5 | |
| **Secondary Inorganics (mg/L) *** ** | | | | | | | | | | | | | | |
| Alkalinity Total | 119 | 107 | 139 | 5 | 119 | 100 | 132 | 4 | 119 | 101 | 132 | 4 | | |
| Beryllium | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | | |
| Bromide Dissolved | <0.010 | <0.010 | <0.010 | 10 | <0.010 | <0.010 | <0.010 | 8 | <0.010 | <0.010 | <0.010 | 8 | | |
| Calcium | 49.0 | 46.6 | 53.8 | 5 | 47.6 | 42.3 | 52.2 | 4 | 47.5 | 46.5 | 48.8 | 4 | | |
| Calcium Hardness | 116 | 110 | 126 | 5 | 114 | 102 | 122 | 4 | 114 | 112 | 118 | 4 | | |
| Chloride Dissolved | 6.9 | 5.5 | 8.1 | 10 | 7.4 | 6.1 | 10.4 | 8 | 6.3 | 5.2 | 7.2 | 8 | (250) | |
| Cobalt | <0.0002 | <0.0002 | 0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | | |
| Iron | <0.005 | <0.005 | <0.005 | 5 | 0.013 | 0.005 | 0.035 | 4 | <0.005 | <0.005 | <0.005 | 4 | (0.3) | 0.3 |
| Lanthanum | <Inoff | <Inoff | <Inoff | 5 | <Inoff | <Inoff | <Inoff | 4 | <0 | <0 | <0 | 4 | | |
| Lithium | 0.0031 | 0.0025 | 0.0037 | 5 | 0.0036 | 0.0033 | 0.0042 | 4 | 0.0030 | 0.0024 | 0.0034 | 4 | | |
| Magnesium | 13.9 | 12.3 | 16.4 | 5 | 14.1 | 12.3 | 15.5 | 4 | 14.0 | 12.2 | 15.1 | 4 | | |
| Molybdenum | 0.0008 | 0.0007 | 0.0008 | 5 | 0.0008 | 0.0007 | 0.0008 | 4 | 0.0008 | 0.0007 | 0.0008 | 4 | | |
| Nickel | <0.0006 | <0.0005 | 0.0008 | 5 | <0.0005 | <0.0005 | 0.0005 | 4 | <0.0006 | <0.0005 | 0.0008 | 4 | | |
| Phosphorus | <0.02 | <0.02 | <0.02 | 5 | <0.02 | <0.02 | <0.02 | 4 | <0.02 | <0.02 | <0.02 | 4 | | |
| Potassium | 0.98 | 0.50 | 1.40 | 5 | 1.30 | 0.70 | 2.50 | 4 | 0.90 | 0.50 | 1.30 | 4 | | |
| Silicon | 2.38 | 1.70 | 2.98 | 5 | 2.00 | 1.71 | 2.26 | 4 | 2.17 | 1.68 | 3.07 | 4 | | |
| Silver | <0.0002 | <0.0002 | <0.0002 | 5 | <0.0002 | <0.0002 | <0.0002 | 4 | <0.0002 | <0.0002 | <0.0002 | 4 | | |
| Sodium | 17.1 | 7.5 | 26.8 | 5 | 12.7 | 7.9 | 17.9 | 4 | 12.5 | 7.0 | 22.5 | 4 | (200) | |
| Sulphate Dissolved | 82 | 62 | 104 | 10 | 70 | 59 | 79 | 8 | 72 | 57 | 98 | 8 | (500) | |
| Thallium | <0.0005 | <0.0005 | <0.0005 | 5 | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 4 | | |
| Tin | <0.0005 | <0.0005 | <0.0005 | 5 | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 4 | | |
| Titanium | <0.0005 | <0.0005 | <0.0005 | 5 | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 4 | | |
| Total Hardness (mg/L CaCO3) | 175 | 168 | 189 | 5 | 170 | 150 | 188 | 4 | 171 | 164 | 178 | 4 | | |
| Vanadium | <0.0005 | <0.0005 | <0.0005 | 5 | <0.0005 | <0.0005 | <0.0005 | 4 | <0.0005 | <0.0005 | <0.0005 | 4 | | |
| Zinc | <0.005 | <0.005 | <0.005 | 5 | <0.005 | <0.005 | <0.005 | 4 | <0.005 | <0.005 | <0.005 | 4 | (5.0) | |
| Zirconium | <0.0010 | <0.0010 | <0.0010 | 5 | <0.0010 | <0.0010 | <0.0010 | 4 | <0.0010 | <0.0010 | <0.0010 | 4 | | |
| **Secondary Organics (ug/L) *** ** | | | | | | | | | | | | | | |
| Bromodichloromethane | <0.5 | <0.5 | <0.5 | 7 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 6 | | 16 |
| Bromoform | <1.0 | <1.0 | <1.0 | 7 | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 6 | | |
| Chloroform | 15.8 | <0.5 | 33.1 | 7 | 22.5 | 10.8 | 35.2 | 4 | 12.8 | <0.5 | 30.1 | 6 | | |
| Dibromochloromethane | <0.50 | <0.50 | <0.50 | 7 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 6 | | |
| Dichlorobenzene (1,3) | <0.50 | <0.50 | <0.50 | 7 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 6 | | |
| Dichloroethylene, cis (1,2) | <0.50 | <0.50 | <0.50 | 7 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 6 | | |
| Dichloroethylene, trans (1,2) | <0.50 | <0.50 | <0.50 | 7 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 6 | | |

**7.13 Papaschase 2, Rosslyn 1, Rosslyn 2 Reservoirs**
**2022**

| Parameter | Papaschase 2 | | | | Rosslyn 1 | | | | Rosslyn 2 | | | | Limits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count | Mean | Min | Max | Count | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| Dichloropropane (1,2) | <0.5 | <0.5 | <0.5 | 7 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 6 | | |
| Methyl t-Butyl Ether (MTBE) | <0.5 | <0.5 | <0.5 | 7 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 6 | (15) | |
| MIBK | <1.0 | <1.0 | <1.0 | 7 | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 6 | | |
| Styrene | <0.50 | <0.50 | <0.50 | 7 | <0.50 | <0.50 | <0.50 | 4 | <0.50 | <0.50 | <0.50 | 6 | | |
| Tetrachloroethane (1,1,2,2) | <1.0 | <1.0 | <1.0 | 7 | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 6 | | |
| Total Organic Carbon | 2.0 | 1.0 | 3.0 | 5 | 1.6 | 1.1 | 2.0 | 4 | 1.7 | 0.9 | 3.2 | 4 | | |
| Total Volatile Organics (NonTHM) | <1.0 | <1.0 | <1.0 | 7 | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 6 | | |
| Total Volatile Organics (Unknown) | <1.0 | <1.0 | <1.0 | 7 | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 6 | | |
| Trichlorobenzene (1,2,4) | <0.5 | <0.5 | <0.5 | 7 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 6 | | |
| Trichloroethane (1,1,1) | <0.5 | <0.5 | <0.5 | 7 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 6 | | |
| Xylene (1,2) | <0.5 | <0.5 | <0.5 | 7 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 6 | | |
| Xylene (1,4) | <0.5 | <0.5 | <0.5 | 7 | <0.5 | <0.5 | <0.5 | 4 | <0.5 | <0.5 | <0.5 | 6 | | |

TABLE EXPLANATIONS:

* Numbers with no brackets are Health Canada Guidelines for Canadian Drinking Water Quality (GCDWQ) Maximum Acceptable Concentrations (MAC) and/or a limit set out in the Alberta Environment and Parks (AEP) Operating Approval 638-04-00. Limits in brackets indicate Aesthetic Objectives or Operational Guidelines (OG) and are not Approval limits. The EPCOR limits are internal limits set by EPCOR in the Operations Program.

** Primary parameters are those that have health-based limits (MACs) according the AEP Operating Approval 638-04-00

*** Secondary parameters do not have health-based limits but may have aesthetic or operational objectives

## 7.14 Thorncliff Reservoir
## 2022

| Parameter | Thorncliff | | | | | | Limits | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | | | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| **Physical** | | | | | | | | |
| Colour (TCU) | 0.8 | 0.7 | 1.0 | 4 | | | (15) | 10 |
| Conductivity (uS/cm) | 409 | 368 | 483 | 4 | | | | |
| Odour | Inoff | Inoff | Inoff | 4 | | | | |
| pH (N/A) | 8.0 | 7.9 | 8.2 | 4 | | | (7.0 - 10.5) | 7.3 - 8.3 |
| Turbidity (NTU) | 0.10 | 0.05 | 0.27 | 36 | | | | 1 |
| **Primary Inorganics (mg/L) **** | | | | | | | | |
| Aluminum | 0.076 | 0.031 | 0.096 | 4 | | | 2.9 | 0.1/0.2 |
| Antimony | <0.0003 | <0.0002 | 0.0004 | 4 | | | 0.006 | |
| Arsenic | <0.0002 | <0.0002 | <0.0002 | 4 | | | 0.01 | |
| Barium | 0.063 | 0.056 | 0.078 | 4 | | | 2 | |
| Boron | 0.009 | 0.007 | 0.011 | 4 | | | 5 | |
| Bromate Dissolved | <0.005 | <0.005 | <0.005 | 8 | | | 0.01 | |
| Cadmium | <0.0002 | <0.0002 | <0.0002 | 4 | | | 0.005 | |
| Chlorate Dissolved | 0.101 | 0.080 | 0.132 | 8 | | | 1 | |
| Chlorite Dissolved | <0.005 | <0.005 | <0.005 | 8 | | | 1 | |
| Chromium | <0.0002 | <0.0002 | <0.0002 | 4 | | | 0.05 | |
| Copper | <0.005 | <0.005 | <0.005 | 4 | | | (1) | |
| Fluoride | 0.67 | 0.66 | 0.69 | 4 | | | 1.5 | 0.6 - 0.8 |
| Lead | <0.0002 | <0.0002 | <0.0002 | 4 | | | 0.005 | |
| Manganese | 0.005 | <0.002 | 0.012 | 4 | | | 0.12 (0.02) | |
| Mercury | <0.0002 | <0.0002 | <0.0002 | 4 | | | 0.001 | |
| Nitrate (as N) Dissolved | 0.070 | 0.040 | 0.090 | 8 | | | 10 | |
| Nitrite (as N) Dissolved | <0.010 | <0.010 | <0.010 | 8 | | | 1 | |
| Selenium | 0.0003 | <0.0002 | 0.0003 | 4 | | | 0.05 | |
| Strontium | 0.419 | 0.331 | 0.476 | 4 | | | 7.0 | |
| Total Chlorine | 1.62 | 1.13 | 2.14 | 36 | | | >0.5 and <3.0 | >1.0 and <2.4 |
| Uranium | <0.0005 | <0.0005 | 0.0005 | 4 | | | 0.02 | |
| **Primary Organics (ug/L) **** | | | | | | | | |
| Benzene | <0.5 | <0.5 | <0.5 | 4 | | | 5 | |
| Carbon Tetrachloride | <1.0 | <1.0 | <1.0 | 4 | | | 2 | |
| Chlorobenzene | <0.50 | <0.50 | <0.50 | 4 | | | 80 (30) | |
| Dichlorobenzene (1,2) | <0.50 | <0.50 | <0.50 | 4 | | | 200 (3) | |
| Dichlorobenzene (1,4) | <0.5 | <0.5 | <0.5 | 4 | | | 5 (1) | |
| Dichloroethylene (1,1) | <3.0 | <3.0 | <3.0 | 4 | | | 14 | |
| Ethylbenzene | <0.50 | <0.50 | <0.50 | 4 | | | 140 (1.6) | |
| Methylene Chloride | <0.5 | <0.5 | <0.5 | 4 | | | 50 | |
| Tetrachloroethylene | <0.5 | <0.5 | <0.5 | 4 | | | 10 | |

## 7.14 Thorncliff Reservoir
## 2022

| Parameter | Thorncliff | | | | | | Limits | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | | | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| Toluene | <0.50 | <0.50 | <0.50 | 4 | | | 60 (24) | |
| Total Xylenes | <3 | <3 | <3 | 4 | | | 90 | |
| Trichloroethylene | <0.50 | <0.50 | <0.50 | 4 | | | 5 | |
| **Secondary Inorganics (mg/L) *** ** | | | | | | | | |
| Alkalinity Total | 122 | 113 | 133 | 4 | | | | |
| Beryllium | <0.0002 | <0.0002 | <0.0002 | 4 | | | | |
| Bromide Dissolved | <0.010 | <0.010 | <0.010 | 8 | | | | |
| Calcium | 48.2 | 46.5 | 49.7 | 4 | | | | |
| Calcium Hardness | 116 | 111 | 124 | 4 | | | | |
| Chloride Dissolved | 6.6 | 5.6 | 7.4 | 8 | | | (250) | |
| Cobalt | <0.0002 | <0.0002 | <0.0002 | 4 | | | | |
| Iron | <0.005 | <0.005 | <0.005 | 4 | | | (0.3) | 0.3 |
| Lanthanum | <Inoff | <Inoff | <Inoff | 4 | | | | |
| Lithium | 0.0030 | 0.0026 | 0.0032 | 4 | | | | |
| Magnesium | 13.9 | 12.2 | 15.5 | 4 | | | | |
| Molybdenum | 0.0008 | 0.0007 | 0.0008 | 4 | | | | |
| Nickel | <0.0006 | <0.0005 | 0.0007 | 4 | | | | |
| Phosphorus | <0.02 | <0.02 | <0.02 | 4 | | | | |
| Potassium | 0.88 | 0.50 | 1.20 | 4 | | | | |
| Silicon | 2.14 | 1.70 | 2.82 | 4 | | | | |
| Silver | <0.0002 | <0.0002 | <0.0002 | 4 | | | | |
| Sodium | 16.6 | 7.2 | 34.1 | 4 | | | (200) | |
| Sulphate Dissolved | 80 | 59 | 120 | 8 | | | (500) | |
| Thallium | <0.0005 | <0.0005 | <0.0005 | 4 | | | | |
| Tin | <0.0005 | <0.0005 | <0.0005 | 4 | | | | |
| Titanium | <0.0005 | <0.0005 | <0.0005 | 4 | | | | |
| Total Hardness (mg/L CaCO3) | 175 | 168 | 182 | 4 | | | | |
| Vanadium | <0.0005 | <0.0005 | <0.0005 | 4 | | | | |
| Zinc | <0.005 | <0.005 | <0.005 | 4 | | | (5.0) | |
| Zirconium | <0.0010 | <0.0010 | <0.0010 | 4 | | | | |
| **Secondary Organics (ug/L) *** ** | | | | | | | | |
| Bromodichloromethane | <0.5 | <0.5 | <0.5 | 4 | | | | 16 |
| Bromoform | <1.0 | <1.0 | <1.0 | 4 | | | | |
| Chloroform | 17.7 | 11.4 | 33.7 | 4 | | | | |
| Dibromochloromethane | <0.50 | <0.50 | <0.50 | 4 | | | | |
| Dichlorobenzene (1,3) | <0.50 | <0.50 | <0.50 | 4 | | | | |
| Dichloroethylene, cis (1,2) | <0.50 | <0.50 | <0.50 | 4 | | | | |
| Dichloroethylene, trans (1,2) | <0.50 | <0.50 | <0.50 | 4 | | | | |

**7.14 Thorncliff Reservoir**
**2022**

| Parameter | Thorncliff | | | | | | Limits | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | | | *Approval or GCDWQ MAC, (AO or OG) | EPCOR |
| Dichloropropane (1,2) | <0.5 | <0.5 | <0.5 | 4 | | | | |
| Methyl t-Butyl Ether (MTBE) | <0.5 | <0.5 | <0.5 | 4 | | | (15) | |
| MIBK | <1.0 | <1.0 | <1.0 | 4 | | | | |
| Styrene | <0.50 | <0.50 | <0.50 | 4 | | | | |
| Tetrachloroethane (1,1,2,2) | <1.0 | <1.0 | <1.0 | 4 | | | | |
| Total Organic Carbon | 1.6 | 0.9 | 2.9 | 4 | | | | |
| Total Volatile Organics (NonTHM) | <1.0 | <1.0 | <1.0 | 4 | | | | |
| Total Volatile Organics (Unknown) | <1.0 | <1.0 | <1.0 | 4 | | | | |
| Trichlorobenzene (1,2,4) | <0.5 | <0.5 | <0.5 | 4 | | | | |
| Trichloroethane (1,1,1) | <0.5 | <0.5 | <0.5 | 4 | | | | |
| Xylene (1,2) | <0.5 | <0.5 | <0.5 | 4 | | | | |
| Xylene (1,4) | <0.5 | <0.5 | <0.5 | 4 | | | | |

TABLE EXPLANATIONS:

* Numbers with no brackets are Health Canada Guidelines for Canadian Drinking Water Quality (GCDWQ) Maximum Acceptable Concentrations (MAC) and/or a limit set out in the Alberta Environment and Parks (AEP) Operating Approval 638-04-00. Limits in brackets indicate Aesthetic Objectives or Operational Guidelines (OG) and are not Approval limits. The EPCOR limits are internal limits set by EPCOR in the Operations Program.

** Primary parameters are those that have health-based limits (MACs) according the AEP Operating Approval 638-04-00

*** Secondary parameters do not have health-based limits but may have aesthetic or operational objectives

## 7.15 Distribution System Disinfection By-products

**2022**

| Parameter | Mean | Min | Max | Count | Limits: GCDWQ or Approval or MAC* or (AO or OG) | Limits: EPCOR single result |
|---|---|---|---|---|---|---|
| **HAA (ug/L)** | | | | | 80 | 40 |
| **Far End of Distribution System** | | | | | | |
| **Dead End** | 19.4 | 11.2 | 41.3 | 13 | | |
| **Water Transfer to Regional Customers** | 21.4 | 12.6 | 37.1 | 12 | | |
| **Middle of Distribution System** | | | | | | |
| **Staff Residence** | 19.4 | 10.5 | 40.2 | 46 | | |
| | 19.8 | 10.5 | 41.3 | 71 | | |
| **NDMA (ng/L)** | | | | | 40 | 10 |
| **Far End of Distribution System** | | | | | | |
| **Dead End** | 0.002 | 0.001 | 0.004 | 8 | | |
| **Water Transfer to Regional Customers** | 0.002 | 0.001 | 0.003 | 5 | | |
| **Middle of Distribution System** | | | | | | |
| **Staff Residence** | 0.002 | 0.001 | 0.004 | 26 | | |
| | 0.002 | 0.001 | 0.004 | 39 | | |
| **Trihalomethanes (ug/L)** | | | | | 100 | 50 |
| **Far End of Distribution System** | | | | | | |
| **Dead End** | 16.7 | 7.4 | 37.2 | 13 | | |
| **Water Transfer to Regional Customers** | 18.8 | 11.4 | 35.5 | 12 | | |
| **Middle of Distribution System** | | | | | | |
| **Field Reservoirs** | 15.6 | 1.0 | 37.0 | 96 | | |
| **Staff Residence** | 16.5 | 7.0 | 37.4 | 46 | | |
| | 16.2 | 1.0 | 37.4 | 167 | | |

## 7.16 Raw River Water: Physical, Inorganic, Organic and Pesticide Parameters

## 2022

| | ROSSDALE | | | | E.L. SMITH | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count |
| **Microbiologicals** | | | | | | | | |
| Microcystin | <0.10 | <0.10 | 0.11 | 12 | <0.10 | <0.10 | 0.13 | 12 |
| **Physical** | | | | | | | | |
| Colour (TCU) | 9.8 | 1.6 | 72.2 | 365 | 9.9 | 2.2 | 76.9 | 366 |
| Conductivity (uS/cm) | 343 | 297 | 396 | 53 | 338 | 297 | 386 | 53 |
| FPA-Intensity (N/A) | 0.65 | 0.25 | 1.50 | 66 | 0.65 | 0.31 | 1.38 | 66 |
| pH (N/A) | 8.2 | 8.0 | 8.4 | 13 | 8.2 | 8.0 | 8.4 | 13 |
| Total Dissolved Solids (mg/L) | 202 | 166 | 228 | 13 | 202 | 167 | 228 | 13 |
| Total Suspended Solids | 47 | <5 | 376 | 13 | 26 | <5 | 129 | 13 |
| Turbidity (NTU) | 39 | 1 | 2,590 | 365 | 29 | 1 | 2,330 | 366 |
| **Primary Inorganics (mg/L) **** | | | | | | | | |
| Antimony | 0.0004 | <0.0002 | 0.0033 | 13 | 0.0004 | <0.0002 | 0.0032 | 13 |
| Arsenic | 0.0006 | <0.0002 | 0.0039 | 13 | 0.0004 | <0.0002 | 0.0010 | 13 |
| Barium | 0.083 | 0.053 | 0.233 | 13 | 0.076 | 0.055 | 0.127 | 13 |
| Boron | 0.009 | <0.005 | 0.013 | 13 | 0.010 | <0.005 | 0.013 | 13 |
| Bromate Dissolved | <0.005 | <0.003 | <0.005 | 54 | <0.005 | <0.003 | <0.005 | 54 |
| Cadmium | <0.0002 | <0.0002 | <0.0002 | 13 | <0.0002 | <0.0002 | <0.0002 | 13 |
| Chlorate Dissolved | <0.012 | <0.010 | <0.100 | 54 | <0.012 | <0.010 | <0.100 | 54 |
| Chlorite Dissolved | <0.009 | <0.005 | <0.200 | 54 | <0.009 | <0.005 | <0.200 | 54 |
| Chromium | 0.0022 | <0.0002 | 0.0188 | 13 | 0.0012 | <0.0002 | 0.0061 | 13 |
| Copper | <0.005 | <0.005 | 0.009 | 13 | <0.005 | <0.005 | <0.005 | 13 |
| Cyanide Dissolved | <0.002 | <0.002 | <0.002 | 13 | <0.002 | <0.002 | <0.002 | 13 |
| Fluoride | 0.12 | 0.10 | 0.14 | 53 | 0.11 | 0.10 | 0.13 | 53 |
| Lead | 0.0009 | <0.0002 | 0.0065 | 13 | 0.0004 | <0.0002 | 0.0010 | 13 |
| Manganese | 0.045 | <0.002 | 0.371 | 13 | 0.021 | 0.003 | 0.095 | 13 |
| Mercury | <0.0002 | <0.000005 | <0.0002 | 17 | <0.0002 | <0.000005 | <0.0002 | 17 |
| Nitrate (as N) Dissolved | 0.053 | <0.010 | 0.306 | 54 | 0.049 | <0.010 | 0.278 | 54 |
| Nitrite (as N) Dissolved | <0.010 | <0.005 | 0.010 | 54 | <0.010 | <0.005 | 0.010 | 54 |
| Selenium | <0.0002 | <0.0002 | 0.0004 | 13 | <0.0002 | <0.0002 | 0.0003 | 13 |
| Total Chlorine | <0.03 | <0.03 | <0.03 | 13 | <0.03 | <0.03 | <0.03 | 13 |
| Uranium | <0.0005 | <0.0005 | 0.0006 | 13 | <0.0005 | <0.0005 | 0.0006 | 13 |

## 7.16 Raw River Water: Physical, Inorganic, Organic and Pesticide Parameters

## 2022

| | ROSSDALE | | | | E.L. SMITH | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count |
| Primary Organics (ug/L) ** | | | | | | | | |
| 2,4-D | <2.538 | <0.050 | <10.000 | 4 | <2.538 | <0.050 | <10.000 | 4 |
| Atrazine | <0.100 | <0.100 | <0.100 | 4 | <0.100 | <0.100 | <0.100 | 4 |
| Benzene | <0.5 | <0.5 | <1.0 | 375 | <0.5 | <0.5 | <1.0 | 376 |
| Benzo(a)pyrene | <0.01 | <0.01 | <0.01 | 4 | <0.01 | <0.01 | <0.01 | 4 |
| Bromoxynil | <0.163 | <0.050 | <0.500 | 4 | <0.163 | <0.050 | <0.500 | 4 |
| Carbon Tetrachloride | <1.0 | <0.5 | <1.0 | 374 | <1.0 | <0.5 | <1.0 | 375 |
| Chlorobenzene | <0.51 | <0.00 | <1.00 | 378 | <0.51 | <0.00 | <1.00 | 379 |
| Chlorpyrifos | <0.100 | <0.100 | <0.100 | 4 | <0.100 | <0.100 | <0.100 | 4 |
| Cyanazine | <0.100 | <0.100 | <0.100 | 4 | <0.100 | <0.100 | <0.100 | 4 |
| Diazinon | <0.100 | <0.100 | <0.100 | 4 | <0.100 | <0.100 | <0.100 | 4 |
| Dicamba | <3.075 | <0.100 | <12.000 | 4 | <3.075 | <0.100 | <12.000 | 4 |
| Dichlorobenzene (1,2) | <0.50 | <0.50 | <0.50 | 363 | <0.50 | <0.50 | <0.50 | 364 |
| Dichlorobenzene (1,4) | <0.5 | <0.5 | <0.5 | 363 | <0.5 | <0.5 | <0.5 | 364 |
| Dichloroethylene (1,1) | <3.00 | <3.00 | <3.00 | 363 | <3.00 | <3.00 | <3.00 | 364 |
| Dichlorophenol (2,4) | <0.30 | <0.30 | <0.30 | 4 | <0.30 | <0.30 | <0.30 | 4 |
| Diclofop-methyl | <0.10 | <0.10 | <0.10 | 4 | <0.10 | <0.10 | <0.10 | 4 |
| Dimethoate | <0.100 | <0.100 | <0.100 | 4 | <0.100 | <0.100 | <0.100 | 4 |
| Diuron | <1.0 | <1.0 | <1.0 | 4 | <1.0 | <1.0 | <1.0 | 4 |
| Ethylbenzene | <0.51 | <0.50 | <1.00 | 375 | <0.51 | <0.50 | <1.00 | 376 |
| Glyphosate | <0.15 | <0.01 | <0.20 | 4 | <0.15 | <0.01 | <0.20 | 4 |
| Malathion | <0.100 | <0.100 | <0.100 | 4 | <0.100 | <0.100 | <0.100 | 4 |
| MCPA | <0.163 | <0.050 | <0.500 | 4 | <0.163 | <0.050 | <0.500 | 4 |
| Methylene Chloride | <0.6 | <0.5 | <5.0 | 374 | <0.6 | <0.5 | <5.0 | 375 |
| Metolachlor | <0.100 | <0.100 | <0.100 | 4 | <0.100 | <0.100 | <0.100 | 4 |
| Metribuzin | <0.325 | <0.100 | <1.000 | 4 | <0.325 | <0.100 | <1.000 | 4 |
| Nitrilotriacetic acid | <0.20 | <0.20 | <0.20 | 4 | <0.20 | <0.20 | <0.20 | 4 |
| Pentachlorophenol | <1.9 | <0.5 | <6.0 | 4 | <1.9 | <0.5 | <6.0 | 4 |
| Perfluorooctane sulfonic acid (PFOS) | <0.01 | <0.01 | <0.01 | 4 | <0.01 | <0.01 | <0.01 | 4 |
| Perfluorooctanoic acid (PFOA) | <0.01 | <0.01 | <0.01 | 4 | <0.01 | <0.01 | <0.01 | 4 |
| Phorate | <0.100 | <0.100 | <0.100 | 4 | <0.100 | <0.100 | <0.100 | 4 |
| Picloram | <4.825 | <0.100 | <19.000 | 4 | <4.825 | <0.100 | <19.000 | 4 |
| Simazine | <0.100 | <0.100 | <0.100 | 4 | <0.100 | <0.100 | <0.100 | 4 |
| Terbufos | <0.10 | <0.10 | <0.10 | 4 | <0.10 | <0.10 | <0.10 | 4 |
| Tetrachloroethylene | <0.5 | <0.5 | <0.5 | 364 | <0.5 | <0.5 | <0.5 | 365 |
| Toluene | <0.51 | <0.50 | <1.00 | 375 | <0.51 | <0.50 | <1.00 | 376 |
| Total Xylenes | <3 | <3 | <3 | 363 | <3 | <3 | <3 | 364 |
| Trichloroethylene | <0.50 | <0.50 | <0.50 | 364 | <0.50 | <0.50 | <0.50 | 365 |
| Trifluralin | <0.100 | <0.100 | <0.100 | 4 | <0.100 | <0.100 | <0.100 | 4 |
| Trihalomethanes | <1.0 | <1.0 | <1.0 | 363 | <1.0 | <1.0 | <1.0 | 364 |
| Vinyl Chloride | <1.0 | <1.0 | <1.0 | 11 | <1.0 | <1.0 | <1.0 | 11 |
| Radionuclides (Bq/L) | | | | | | | | |
| Cesium-137 | <0.15 | <0.10 | <0.20 | 2 | <0.15 | <0.10 | <0.20 | 2 |
| Gross Alpha | 0.60 | <0.21 | 0.98 | 2 | <0.14 | <0.11 | <0.16 | 2 |
| Gross Beta | 0.85 | 0.29 | 1.40 | 2 | 0.11 | 0.08 | 0.14 | 2 |
| Iodine-131 | <0.50 | <0.30 | <0.70 | 2 | <0.45 | <0.40 | <0.50 | 2 |
| Lead-210 | <0.11 | <0.02 | <0.20 | 2 | <0.02 | <0.02 | <0.02 | 2 |
| Radium-226 | 0.06 | 0.01 | 0.10 | 2 | <0.01 | <0.01 | <0.01 | 2 |
| Strontium-90 | <0.3 | <0.1 | <0.5 | 2 | <0.1 | <0.1 | <0.1 | 2 |
| Tritium | <40 | <40 | <40 | 2 | <40 | <40 | <40 | 2 |

## 7.16 Raw River Water: Physical, Inorganic, Organic and Pesticide Parameters

## 2022

| | ROSSDALE | | | | E.L. SMITH | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count |
| Secondary Inorganics (mg/L) *** | | | | | | | | |
| Alkalinity Total | 132 | 112 | 172 | 53 | 131 | 111 | 168 | 53 |
| Alkalinity, PHP (mg CaCO3/L) | <3 | <1 | <3 | 13 | <3 | <1 | <3 | 13 |
| Aluminum | 1.579 | 0.037 | 15.200 | 13 | 0.924 | 0.063 | 5.280 | 13 |
| Ammonia as NH3 | <0.05 | <0.05 | 0.14 | 68 | <0.06 | <0.05 | 0.15 | 68 |
| Beryllium | <0.0002 | <0.0002 | <0.0002 | 13 | <0.0002 | <0.0002 | <0.0002 | 13 |
| Bromide Dissolved | <0.012 | <0.010 | <0.050 | 54 | <0.012 | <0.010 | <0.050 | 54 |
| Calcium Dissolved | 46.6 | 40.9 | 53.0 | 13 | 46.3 | 40.4 | 53.3 | 13 |
| Calcium Hardness | 108 | 92 | 126 | 53 | 108 | 91 | 126 | 53 |
| Chloride Dissolved | 1.52 | 0.50 | 5.05 | 54 | 0.80 | 0.40 | 3.34 | 54 |
| Cobalt | 0.0007 | <0.0002 | 0.0057 | 13 | 0.0003 | <0.0002 | 0.0008 | 13 |
| Free Chlorine | <0.03 | <0.03 | <0.03 | 13 | <0.03 | <0.03 | <0.03 | 13 |
| Iron | 1.503 | 0.036 | 14.000 | 13 | 0.814 | 0.066 | 4.260 | 13 |
| Lanthanum | <0.001 | <0.001 | <0.001 | 13 | <0.001 | <0.001 | <0.001 | 13 |
| Lithium | 0.0048 | 0.0029 | 0.0148 | 13 | 0.0041 | 0.0030 | 0.0073 | 13 |
| Magnesium | 14.9 | 12.4 | 19.1 | 13 | 14.4 | 11.6 | 16.2 | 13 |
| Manganese Dissolved | <0.002 | <0.002 | 0.005 | 13 | <0.002 | <0.002 | 0.006 | 13 |
| Molybdenum | 0.0007 | <0.0002 | 0.0009 | 13 | 0.0007 | <0.0002 | 0.0009 | 13 |
| Nickel | 0.0025 | <0.0005 | 0.0183 | 13 | 0.0010 | <0.0005 | 0.0024 | 13 |
| Ortho_P | <0.02 | <0.02 | 0.02 | 12 | <0.02 | <0.02 | <0.02 | 12 |
| Phosphorus | 0.06 | <0.02 | 0.31 | 13 | 0.03 | <0.02 | 0.07 | 13 |
| Potassium | 1.30 | 0.60 | 4.70 | 13 | 1.13 | 0.60 | 2.40 | 13 |
| Silicon | 5.00 | 1.41 | 34.80 | 13 | 3.76 | 1.50 | 14.60 | 13 |
| Silver | <0.0002 | <0.0002 | 0.0003 | 13 | <0.0002 | <0.0002 | <0.0002 | 13 |
| Sodium | 4.5 | 2.8 | 6.8 | 13 | 3.9 | 2.7 | 6.2 | 13 |
| Strontium | 0.434 | 0.336 | 0.489 | 13 | 0.429 | 0.302 | 0.496 | 13 |
| Sulphate Dissolved | 49.9 | 32.5 | 60.0 | 54 | 49.2 | 32.8 | 60.0 | 54 |
| Sulphide | <0.002 | <0.002 | 0.003 | 13 | <0.002 | <0.002 | 0.003 | 13 |
| Thallium | <0.0005 | <0.0005 | <0.0005 | 13 | <0.0005 | <0.0005 | <0.0005 | 13 |
| Tin | <0.0005 | <0.0005 | <0.0005 | 13 | <0.0005 | <0.0005 | <0.0005 | 13 |
| Titanium | 0.0250 | <0.0005 | 0.2300 | 13 | 0.0211 | 0.0011 | 0.1200 | 13 |
| Total Hardness (mg/L CaCO3) | 170 | 145 | 193 | 53 | 169 | 142 | 194 | 53 |
| Total Kjeldahl Nitrogen | 0.36 | <0.10 | 2.00 | 13 | 0.22 | <0.10 | 0.60 | 13 |
| Vanadium | 0.0036 | <0.0005 | 0.0337 | 13 | 0.0023 | <0.0005 | 0.0097 | 13 |
| Zinc | <0.006 | <0.005 | 0.008 | 13 | <0.005 | <0.005 | 0.007 | 13 |
| Zirconium | <0.0010 | <0.0010 | <0.0010 | 13 | <0.0010 | <0.0010 | <0.0010 | 13 |

## 7.16 Raw River Water: Physical, Inorganic, Organic and Pesticide Parameters

## 2022

| | ROSSDALE | | | | E.L. SMITH | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Count | Mean | Min | Max | Count |
| Secondary Organics (ug/L) *** | | | | | | | | |
| Aldicarb | <1.0 | <0.9 | <1.0 | 4 | <1.0 | <0.9 | <1.0 | 4 |
| Aldrin | <0.008 | <0.008 | <0.008 | 4 | <0.008 | <0.008 | <0.008 | 4 |
| Azinphos-methyl | <0.1 | <0.1 | <0.1 | 4 | <0.1 | <0.1 | <0.1 | 4 |
| Bromobenzene | <1.00 | <1.00 | <1.00 | 11 | <1.00 | <1.00 | <1.00 | 11 |
| Bromodichloromethane | <0.5 | <0.5 | <1.0 | 375 | <0.5 | <0.5 | <1.0 | 376 |
| Bromoform | <1.0 | <0.5 | <1.0 | 375 | <1.0 | <0.5 | <1.0 | 376 |
| Bromomethane | <9.2 | <0.5 | <10.0 | 12 | <9.2 | <0.5 | <10.0 | 12 |
| Carbaryl | <0.275 | <0.200 | <0.500 | 4 | <0.275 | <0.200 | <0.500 | 4 |
| Carbofuran | <0.275 | <0.200 | <0.500 | 4 | <0.275 | <0.200 | <0.500 | 4 |
| Chloroethane | <9.2 | <0.5 | <10.0 | 12 | <9.2 | <0.5 | <10.0 | 12 |
| Chloroform | <0.513 | <0.001 | <1.000 | 378 | <0.513 | <0.001 | <1.000 | 379 |
| Chloromethane | <9.6 | <5.0 | <10.0 | 12 | <9.6 | <5.0 | <10.0 | 12 |
| Dibromochloromethane | <0.51 | <0.01 | <1.00 | 378 | <0.51 | <0.01 | <1.00 | 379 |
| Dibromomethane | <1.00 | <1.00 | <1.00 | 11 | <1.00 | <1.00 | <1.00 | 11 |
| Dichlorobenzene (1,3) | <0.50 | <0.50 | <0.50 | 363 | <0.50 | <0.50 | <0.50 | 364 |
| Dichloroethylene, cis (1,2) | <0.50 | <0.50 | <0.50 | 363 | <0.50 | <0.50 | <0.50 | 364 |
| Dichloroethylene, trans (1,2) | <0.50 | <0.50 | <0.50 | 363 | <0.50 | <0.50 | <0.50 | 364 |
| Dichloropropane (1,2) | <0.5 | <0.5 | <0.5 | 363 | <0.5 | <0.5 | <0.5 | 364 |
| Dieldrin | <0.008 | <0.008 | <0.008 | 4 | <0.008 | <0.008 | <0.008 | 4 |
| Hexachlorobutadiene | <1.0 | <1.0 | <1.0 | 11 | <1.0 | <1.0 | <1.0 | 11 |
| Hexachloroethane | <1.0 | <1.0 | <1.0 | 11 | <1.0 | <1.0 | <1.0 | 11 |
| Methyl t-Butyl Ether (MTBE) | <0.5 | <0.5 | <0.5 | 363 | <0.5 | <0.5 | <0.5 | 364 |
| MIBK | <1.0 | <1.0 | <1.0 | 363 | <1.0 | <1.0 | <1.0 | 364 |
| n-Butylbenzene | <1.0 | <1.0 | <1.0 | 11 | <1.0 | <1.0 | <1.0 | 11 |
| n-Propylbenzene | <1.00 | <1.00 | <1.00 | 11 | <1.00 | <1.00 | <1.00 | 11 |
| Parathion | <0.100 | <0.100 | <0.100 | 4 | <0.100 | <0.100 | <0.100 | 4 |
| Perfluorobutanoic acid (PFBA) | <0.6 | <0.1 | <0.8 | 4 | <0.6 | <0.1 | <0.8 | 4 |
| Perfluoroheptanoic acid (PFHpA) | <0.02 | <0.01 | <0.02 | 4 | <0.02 | <0.01 | <0.02 | 4 |
| Perfluorohexane sulfonic acid (PFHxS) | <0.02 | <0.01 | <0.02 | 4 | <0.02 | <0.01 | <0.02 | 4 |
| Perfluorohexanoic acid (PFHxA) | <0.02 | <0.01 | <0.02 | 4 | <0.02 | <0.01 | <0.02 | 4 |
| Perfluorononanoic acid (PFNA) | <0.02 | <0.01 | <0.02 | 4 | <0.02 | <0.01 | <0.02 | 4 |
| Perfluoropentanoic acid (PFPeA) | <0.02 | <0.01 | <0.02 | 4 | <0.02 | <0.01 | <0.02 | 4 |
| p-Isopropyltoluene | <5.00 | <5.00 | <5.00 | 11 | <5.00 | <5.00 | <5.00 | 11 |
| sec-Butylbenzene | <1.0 | <1.0 | <1.0 | 11 | <1.0 | <1.0 | <1.0 | 11 |
| Styrene | <0.51 | <0.50 | <1.00 | 375 | <0.51 | <0.50 | <1.00 | 376 |
| tert-Butylbenzene | <1.0 | <1.0 | <1.0 | 11 | <1.0 | <1.0 | <1.0 | 11 |
| Tetrachloroethane (1,1,2,2) | <1.0 | <1.0 | <1.0 | 363 | <1.0 | <1.0 | <1.0 | 364 |
| Total Organic Carbon | 2.5 | 1.0 | 10.6 | 53 | 2.5 | <0.6 | 10.3 | 53 |
| Total Volatile Organics (NonTHM) | <1.0 | <1.0 | <1.0 | 363 | <1.0 | <1.0 | <1.0 | 364 |
| Total Volatile Organics (Unknown) | <1.0 | <1.0 | <1.0 | 363 | <1.0 | <1.0 | <1.0 | 364 |
| Triallate | <0.100 | <0.100 | <0.100 | 4 | <0.100 | <0.100 | <0.100 | 4 |
| Trichlorobenzene (1,2,4) | <0.5 | <0.5 | <0.5 | 363 | <0.5 | <0.5 | <0.5 | 364 |
| Trichloroethane (1,1,1) | <0.5 | <0.5 | <0.5 | 363 | <0.5 | <0.5 | <0.5 | 364 |
| Trichlorofluoromethane | <1.00 | <1.00 | <1.00 | 11 | <1.00 | <1.00 | <1.00 | 11 |
| Xylene (1,2) | <0.5 | <0.5 | <0.5 | 363 | <0.5 | <0.5 | <0.5 | 364 |
| Xylene (1,4) | <0.5 | <0.5 | <0.5 | 363 | <0.5 | <0.5 | <0.5 | 364 |

TABLE EXPLANATIONS:

** Primary parameters are those that have health-based limits (MACs) according the AEP Operating Approval 638-04-00

*** Secondary parameters do not have health-based limits but may have aesthetic or operational objectives

**7. 17 EPCOR Lead Management Program (2022)**

EPCOR has had a proactive lead management program in place since 2008, which aims to reduce exposures to lead in drinking water. For many years a major focus of the lead management program was dealing with lead service lines. The underground pipe that connects a property's plumbing to the water main in the street is called a service line. The EPCOR portion of the service line runs from the water main under the street or alley to the property line, and the homeowner (or business owner) portion of the service line runs from the property line to the water meter in the home or building. At the end of 2021, approximately 4,000 homes had lead service lines in Edmonton on either the EPCOR side or the homeowner side, or both. These are homes located in older neighbourhoods that were typically built before 1950. They represent about 1.4% of the approximately 274,000 homes in the City supplied with EPCOR water.

In 2019 the City of Edmonton approved a new Lead Mitigation Strategy. The goal of the program is to ensure that the lead concentration at the tap in all homes and businesses supplied through lead service lines in the City of Edmonton is less than the Health Canada Maximum Acceptable Concentration (MAC) for lead of 5 µg/L and to reduce lead release from all other sources of lead, such as lead-containing plumbing components, in all homes across the city. EPCOR's Lead Management Program has three main components:

1. **Adding a lead Inhibitor** (orthophosphate) to the Edmonton drinking water: Orthophosphate creates a protective coating on the inside of lead pipes and plumbing that that prevents lead from leaching into drinking water. It is commonly used for this purpose by water utilities across North America and the United Kingdom. It has no impact on the taste or odour of drinking water. It is naturally present in food and is a common additive to beverages and considered to be a safe additive. Orthophosphate addition systems are being designed and constructed at our two water treatment plants and will be operational in 2023.

2. **Elimination of Partial Lead Service Line Replacements / Utility Funding of Private Portion Replacements**: EPCOR has ended the practice of replacing just the utility portion of a lead service line while leaving the private portion in place. These partial lead service line replacements are not effective for lead reduction and can sometimes result in higher lead levels at the tap. EPCOR will replace from the LSL from "main to meter". That is, we will replace the private portion any time we replace the utility portion. Both the utility and private portion replacements will be funded through water utility rates at no cost to the recipient.

3. **Accelerated Replacement of High Priority Lead Service Lines / Utility Funding of Private Portion Replacements**: EPCOR will accelerate the replacement of any lead service lines (private and utility portions) that have been identified through testing as having lead levels in excess of the new Health Canada Guideline after the implementation of orthophosphate. Both the utility and private portion replacements for these "High Priority" LSLs will be funded through water utility rates at no cost to the recipient. Since the start of the program in 2020, 280 high priority lead service lines have been replaced

Annual Totals for Accelerated replacement of High Priority Lead Service Lines

| | Year | | | |
|---|---|---|---|---|
| Replacements | 2020 | 2021 | 2022 | Grand Total |
| High Priority Lead Service Lines | 69 | 144 | 67 | 280 |
| Full Replacement | 37 | 71 | 30 | 138 |
| Private Side Only | 28 | 54 | 34 | 116 |

EPCOR completed the construction of facilities to add the lead inhibitor orthophosphate to the Edmonton drinking water in 2022. Commissioning of those facilities and the start of orthophosphate will be occurring in the first quarter of 2023.

Orthophosphate is the final stage of EPCOR's Lead Mitigation Strategy and it will ensure that lead levels remain low in all other homes/businesses with lead service lines, but ongoing customer communication and monitoring for lead at the tap will be required. EPCOR will develop a comprehensive monitoring plan that will include lead at the tap in 2023 and beyond to ensure the effectiveness of lead reduction through the addition of orthophosphate.

## 7.18 REPORTABLE DETECTION LIMITS

| Analyte | RDL | Unit |
|---|---|---|
| Alkalinity phenolphthalein | 3 | mg CaCO3/L |
| Alkalinity Total | 6 | mg CaCO3/L |
| Aluminum | 0.005 | mg/L |
| Ammonia as N | 0.05 | mg/L |
| Ammonia as NH3 | 0.05 | mg/L |
| Antimony | 0.0002 | mg/L |
| Arsenic | 0.0002 | mg/L |
| Barium | 0.002 | mg/L |
| Benzene | 0.5 | µg/L |
| Beryllium | 0.0002 | mg/L |
| Bicarbonate | 3 | mg CaCO3/L |
| Boron | 0.005 | mg/L |
| Bromate Dissolved | 0.005 | mg/L |
| Bromide Dissolved | 0.01 | mg/L |
| Bromochloroacetic acid | 1.0 | ug/L |
| Bromodichloromethane | 0.5 | µg/L |
| Bromoform | 1.0 | µg/L |
| Cadmium | 0.0002 | mg/L |
| Calcium | 0.1 | mg/L |
| Calcium Dissolved | 0.1 | mg/L |
| Calcium Hardness | 2 | mg/L CaCO3 |
| Carbon Tetrachloride | 1.0 | µg/L |
| Carbonate | 3 | mg/L CaCO3 |
| Cellular ATP | 0.1 | pg/mL |
| Chlorate Dissolved | 0.01 | mg/L |
| Chloride Dissolved | 0.1 | mg/L |
| Chlorite Dissolved | 0.005 | mg/L |
| Chlorobenzene | 0.5 | µg/L |
| Chloroform | 0.5 | µg/L |
| Chromium | 0.0002 | mg/L |
| Cobalt | 0.0002 | mg/L |
| Coliforms, total | 1.0 | MPN/100 mL |
| Colour | 0.5 | TCU |
| Conductivity | 1 | µS/cm |
| Copper | 0.005 | mg/L |
| Copper Dissolved | 0.005 | mg/L |
| Cryptosporidium | 0.1 | oocysts/100L |
| Dibromoacetic acid | 1.0 | ug/L |
| Dibromochloromethane | 0.5 | µg/L |
| Dichloroacetic acid | 2.0 | ug/L |
| Dichlorobenzene (1,2) | 0.5 | µg/L |
| Dichlorobenzene (1,3) | 0.5 | µg/L |
| Dichlorobenzene (1,4) | 0.5 | µg/L |
| Dichloroethylene (1,1) | 3.0 | µg/L |
| Dichloroethylene, cis (1,2) | 0.5 | µg/L |
| Dichloroethylene, trans (1,2) | 0.5 | µg/L |
| Dichloropropane (1,2) | 0.5 | µg/L |
| Dissolved Organic Carbon | 0.6 | mg/L |
| E. coli | 1.0 | MPN/100 mL |
| Ethylbenzene | 0.5 | µg/L |

## 7.18 REPORTABLE DETECTION LIMITS

| Analyte | RDL | Unit |
|---|---|---|
| Fluoride | 0.05 | mg/L |
| Free Chlorine | 0.03 | mg/L |
| Giardia | 0.1 | cysts/100L |
| Haloacetic Acids, total (HAA5) | 5.0 | ug/L |
| Haloacetic Acids, total (HAA6) | 5.0 | ug/L |
| Iron | 0.005 | mg/L |
| Lanthanum | 0.001 | mg/L |
| Lead | 0.0002 | mg/L |
| Lithium | 0.0002 | mg/L |
| Magnesium | 0.1 | mg/L |
| Manganese | 0.002 | mg/L |
| Manganese Dissolved | 0.002 | mg/L |
| Mercury | 0.0002 | mg/L |
| Methyl t-Butyl Ether (MTBE) | 0.5 | µg/L |
| Methylene Chloride | 0.5 | µg/L |
| MIBK | 1.0 | µg/L |
| Microcystin | 0.10 | µg/L |
| Molybdenum | 0.0002 | mg/L |
| Monobromoacetic acid | 1.0 | ug/L |
| Monochloroacetic acid | 5.0 | ug/L |
| Nickel | 0.0005 | mg/L |
| Nitrate (as N) Dissolved | 0.01 | mg/L |
| Nitrite (as N) Dissolved | 0.01 | mg/L |
| Ortho_P | 0.02 | mg/L |
| Phosphorus | 0.02 | mg/L |
| Potassium | 0.1 | mg/L |
| Selenium | 0.0002 | mg/L |
| Silicon | 0.05 | mg/L |
| Silver | 0.0002 | mg/L |
| Sodium | 0.1 | mg/L |
| Strontium | 0.002 | mg/L |
| Styrene | 0.5 | µg/L |
| Sulphate Dissolved | 0.2 | mg/L |
| Tetrachloroethane (1,1,2,2) | 1.0 | µg/L |
| Tetrachloroethylene | 0.5 | µg/L |
| Thallium | 0.0005 | mg/L |
| Tin | 0.0005 | mg/L |
| Titanium | 0.0005 | mg/L |
| Toluene | 0.5 | µg/L |
| Total Chlorine | 0.03 | mg/L |
| Total Dissolved Solids | 25 | mg/L |
| Total Hardness | 2 | mg/L CaCO3 |
| Total Kjeldahl Nitrogen | 0.1 | mg/L N |
| Total Organic Carbon | 0.6 | mg/L |
| Total Suspended Solids | 5 | mg/L |
| Total Volatile Organics (NonTHM) | 1.0 | µg/L |
| Total Volatile Organics (Unknown) | 1.0 | µg/L |
| Total Xylenes | 2.5 | µg/L |
| Trichloroacetic acid | 3.0 | ug/L |
| Trichlorobenzene (1,2,4) | 0.5 | µg/L |
| Trichloroethane (1,1,1) | 0.5 | µg/L |
| Trichloroethylene | 0.5 | µg/L |

## 7.18 REPORTABLE DETECTION LIMITS

| Analyte | RDL | Unit |
|---|---|---|
| Trihalomethanes | 1.0 | µg/L |
| Turbidity | 0.04 | NTU |
| Uranium | 0.0005 | mg/L |
| UV 254 % Transmittance | 99.8 | %T/cm |
| Vanadium | 0.0005 | mg/L |
| Xylene (1,2) | 0.5 | µg/L |
| Xylene (1,4) | 0.5 | µg/L |
| Zinc | 0.005 | mg/L |
| Zirconium | 0.001 | mg/L |
| Zirconium Dissolved | 0.001 | mg/L |

## 7.18 REPORTABLE DETECTION LIMITS

| Analyte | RDL | Unit |
|---|---|---|
| **Contract Lab Analysis** | | |
| 1,1,1-Trichloroethane | 0.50 | ug/L |
| 1,1,2,2-Tetrachloroethane | 0.50 | ug/L |
| 1,1,2-Trichloroethane | 0.50 | ug/L |
| 1,1-Dichloroethane | 0.50 | ug/L |
| 1,1-Dichloroethylene | 0.50 | ug/L |
| 1,2,3-Trichlorobenzene | 0.50 | ug/L |
| 1,2,3-Trichloropropane | 0.50 | ug/L |
| 1,2,4-Trichlorobenzene | 0.50 | ug/L |
| 1,2-Dibromoethane | 0.50 | ug/L |
| 1,2-Dichlorobenzene | 0.50 | ug/L |
| 1,2-Dichloroethane | 0.50 | ug/L |
| 1,2-Dichloroethylene, cis | 0.50 | ug/L |
| 1,2-Dichloroethylene, trans | 0.50 | ug/L |
| 1,2-Dichloropropane | 0.50 | ug/L |
| 1,3,5-Trichlorobenzene | 0.50 | ug/L |
| 1,3-Dichlorobenzene | 0.50 | ug/L |
| 1,3-Dichlorophropylene, trans | 0.50 | ug/L |
| 1,3-Dichloropropylene, cis | 0.50 | ug/L |
| 1,4-Dichloro-2-butene, cis | 5.0 | ug/L |
| 1,4-Dichloro-2-butene, trans | 5.0 | ug/L |
| 1,4-Dichlorobenzene | 0.50 | ug/L |
| 2,3,4,6-Tetrachlorophenol | 0.50 | µg/L |
| 2,4,5-T | 0.500 | µg/L |
| 2,4,6-Trichlorophenol | 0.50 | µg/L |
| 2,4-D | 0.500 | µg/L |
| 2,4-Dichlorophenol | 0.30 | µg/L |
| 2-Hexanone | 20 | ug/L |
| 6:2 Fluorotelomer sulfonic acid(6:2 FTS) | 0.010 | µg/L |
| 8:2 Fluorotelomer sulfonic acid(8:2 FTS) | 0.010 | µg/L |
| Acetone | 20 | ug/L |
| a-chlordane | 0.0080 | µg/L |
| Acrolein | 50 | ug/L |
| Acrylonitrile | 20 | ug/L |
| Alachlor | 0.10 | µg/L |
| Aldicarb | 1.0 | µg/L |
| Aldrin | 0.0080 | µg/L |
| Ametryn | 0.10 | µg/L |
| Atrazine | 0.10 | µg/L |
| Atrazine Desethyl | 0.10 | µg/L |
| Atrazine+N-Dealkylated Metabolites | 0.2 | µg/L |
| Azinphos-methyl | 0.10 | µg/L |
| Bendiocarb | 0.50 | µg/L |
| Benzene | 0.50 | ug/L |
| Benzo(a)pyrene | 0.0050 | ug/L |
| Bromodichloromethane | 0.50 | ug/L |
| Bromoform | 0.50 | ug/L |
| Bromomethane | 0.50 | ug/L |
| Bromoxynil | 0.500 | µg/L |
| BTEX, Total | 1.0 | ug/L |
| Carbaryl | 0.20 | µg/L |
| Carbofuran | 0.20 | µg/L |

## 7.18 REPORTABLE DETECTION LIMITS

| Analyte | RDL | Unit |
|---|---|---|
| Carbon Disulfide | 0.50 | ug/L |
| Carbon tetrachloride | 0.50 | ug/L |
| Cesium-137 | 0.08 | Bq/L |
| Chlorobenzene | 0.50 | ug/L |
| Chloroethane | 0.50 | ug/L |
| Chloroform | 0.50 | ug/L |
| Chloromethane | 5.00 | ug/L |
| Chlorpyrifos | 0.10 | µg/L |
| Cyanazine | 0.10 | µg/L |
| Cyanide Dissolved | 0.002 | mg/L |
| Diazinon | 0.10 | µg/L |
| Dibromochloromethane | 0.50 | ug/L |
| Dibromoethane | 0.50 | ug/L |
| Dicamba | 1.00 | µg/L |
| Dichlorodifluoromethane | 0.50 | ug/L |
| Dichloromethane | 1.00 | ug/L |
| Diclofop-methyl | 0.10 | µg/L |
| Dieldrin | 0.0080 | µg/L |
| Dimethoate | 0.10 | µg/L |
| Dinoseb | 0.500 | µg/L |
| Diquat | 1.0 | µg/L |
| Diuron | 1.0 | µg/L |
| Ethanol | 250 | ug/L |
| Ethyl Methacrylate | 5.0 | ug/L |
| Ethylbenzene | 0.50 | ug/L |
| gamma-hexachlorocyclohexane | 0.0080 | µg/L |
| g-chlordane | 0.0080 | µg/L |
| Glyphosate | 0.20 | µg/L |
| Gross Alpha | 0.12 | Bq/L |
| Gross Beta | 0.06 | Bq/L |
| Heptachlor | 0.0080 | µg/L |
| Heptachlor Epoxide | 0.0080 | µg/L |
| Iodine-131 | 0.2 | Bq/L |
| Iodomethane | 0.50 | ug/L |
| Lead-210 | 0.02 | Bq/L |
| m+p-Xylene | 0.40 | ug/L |
| Malathion | 0.10 | µg/L |
| MCPA | 0.500 | µg/L |
| Mercury | 0.0000500 | mg/L |
| Methoxychlor | 0.0080 | µg/L |
| Methyl Ethyl Ketone (MEK) | 20 | ug/L |
| Methyl Isobutyl Ketone (MIBK) | 20 | ug/L |
| Methyl Parathion | 0.10 | µg/L |
| Metolachlor | 0.10 | µg/L |
| Metribuzin | 0.10 | µg/L |
| NDMA | 0.00090 | µg/L |
| Nitrilotriacetic acid | 0.20 | mg/L |
| op-DDT | 0.0040 | µg/L |
| Oxychlordane | 0.0080 | µg/L |
| o-Xylene | 0.30 | ug/L |
| Paraquat | 1.0 | µg/L |
| Parathion | 0.10 | µg/L |

## 7.18 REPORTABLE DETECTION LIMITS

| Analyte | RDL | Unit |
|---|---|---|
| Pentachlorophenol | 0.50 | µg/L |
| Perfluorobutane sulfonic acid (PFBS) | 0.020 | µg/L |
| Perfluorobutanoic acid [PFBA] | 0.80 | µg/L |
| Perfluoroheptanoic acid [PFHpA] | 0.020 | µg/L |
| Perfluorohexanesulfonic acid [PFHxS] | 0.020 | µg/L |
| Perfluorohexanoic acid [PFHxA] | 0.020 | µg/L |
| Perfluorononanoic acid [PFNA] | 0.020 | µg/L |
| Perfluorooctanesulfonic acid [PFOS] | 0.010 | µg/L |
| Perfluorooctanoic acid (PFOA) | 0.010 | µg/L |
| Perfluoropentanoic acid (PFPeA) | 0.020 | µg/L |
| Phorate | 0.10 | µg/L |
| Picloram | 1.00 | µg/L |
| pp-DDD | 0.0040 | µg/L |
| pp-DDE | 0.0040 | µg/L |
| pp-DDT | 0.0040 | µg/L |
| Prometon | 0.10 | µg/L |
| Prometryne | 0.10 | µg/L |
| Propazine | 0.10 | µg/L |
| Radium-226 | 0.005 | Bq/L |
| Simazine | 0.10 | µg/L |
| Strontium-90 | 0.05 | Bq/L |
| Styrene | 0.50 | ug/L |
| Sulphide | 0.002 | mg/L |
| Temephos | 1.0 | µg/L |
| Terbufos | 0.10 | µg/L |
| Terbutryn | 0.10 | µg/L |
| Tetrachloroethylene | 0.50 | ug/L |
| Toluene | 0.50 | ug/L |
| Triallate | 0.10 | µg/L |
| Trichlorfluoromethane | 0.50 | ug/L |
| Trichloroethylene | 0.50 | ug/L |
| Trifluralin | 0.10 | µg/L |
| Trihalomethanes (THMs), Total | 1.0 | ug/L |
| Tritium | 40 | Bq/L |
| Vinyl chloride | 0.50 | ug/L |
| Xylenes, Total | 0.50 | ug/L |

## 7.19 EXPLANATION OF NOTATIONS USED

Concentrations are reported as mg/L unless otherwise indicated.
Alkalinity and Hardness (Ca and Total) are reported as mg $CaCO_3$/L

| | | |
|---|---|---|
| %T | = | % Transmission |
| - ve | = | Absent |
| + ve | = | Present |
| µg/L | = | Micrograms per litre (1 µg/L = 0.001 mg/L) |
| µS/cm | = | Microsiemens per centimeter (unit of conductivity) |
| 2/Y | = | Twice per Year |
| AO | = | Aesthetic Objective |
| Bq/L | = | Becquerel(s) per litre (unit of radionuclide concentration) |
| CCPP | = | Calcium Carbonate Precipitation Potential |
| CFU | = | Colony Forming Units |
| Comm | = | Commercial Laboratories |
| D | = | Daily |
| EWSI | = | EPCOR Water Services Inc. |
| FPA | = | Flavour Profile Analysis |
| GCDWQ | = | Guidelines for Canadian Drinking Water Quality |
| GM | = | Geometric Mean |
| HPC | = | Heterotrophic Plate Count |
| inoff | = | Inoffensive (no objectionable odour) |
| M | = | Monthly |
| MAC | = | Maximum Acceptable Concentration |
| MDL | = | Method Detection Limit |
| N/A | = | Not Available |
| ND | = | Not Detected |
| NTU | = | Nephelometric Turbidity Units |
| PA | = | Presence/Absence Testing |
| PBR | = | Performance Based Rates |
| PHP | = | phenolphthalein |
| PLPH | = | Provincial Laboratory of Public Health |
| ppb | = | Parts Per Billion |
| ppm | = | Parts Per Million |
| Q | = | Quarterly |
| QA | = | Quality Assurance |
| QC | = | Quality Control |
| RDL | = | Reportable Detection Limit |
| TCU | = | True Colour Units |
| TDS | = | Total Dissolved Solids |
| TOC | = | Total Organic Carbon |
| WL | = | Water Laboratory |
| WTP | = | Water Treatment Plant |