



# Whitemud Watershed

## Medium Carbon Emissions (RCP4.5)

| Climate Variable          | Season | 1981-2010 (Baseline) | 2021-2050   |             |             | 2051-2080   |             |             |
|---------------------------|--------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                           |        |                      | L           | M           | H           | L           | M           | H           |
| Mean Temperature          | Annual | 2.5 °C               | 3.8 °C      | 4.3 °C      | 5.1 °C      | 5.0 °C      | 5.5 °C      | 6.0 °C      |
|                           | Winter | -14.9 °C             | -13.8 °C    | -12.6 °C    | -11.4 °C    | -12.0 °C    | -10.9 °C    | -9.9 °C     |
|                           | Spring | 2.3 °C               | 3.3 °C      | 4.0 °C      | 4.9 °C      | 4.3 °C      | 5.0 °C      | 5.7 °C      |
|                           | Summer | 18.0 °C              | 18.9 °C     | 19.4 °C     | 20.0 °C     | 20.0 °C     | 20.6 °C     | 21.0 °C     |
|                           | Fall   | 4.4 °C               | 5.5 °C      | 6.1 °C      | 6.7 °C      | 6.7 °C      | 7.1 °C      | 7.7 °C      |
| Precipitation             | Annual | 488.2 mm             | 484.6 mm    | 516.6 mm    | 546.3 mm    | 492.2 mm    | 515.4 mm    | 550.2 mm    |
|                           | Winter | 65.5 mm              | 67.0 mm     | 72.4 mm     | 80.9 mm     | 68.6 mm     | 76.5 mm     | 84.3 mm     |
|                           | Spring | 109.8 mm             | 104.0 mm    | 119.5 mm    | 132.9 mm    | 104.1 mm    | 123.8 mm    | 143.3 mm    |
|                           | Summer | 206.6 mm             | 187.5 mm    | 209.3 mm    | 236.1 mm    | 184.1 mm    | 199.1 mm    | 216.0 mm    |
|                           | Fall   | 106.4 mm             | 105.5 mm    | 115.6 mm    | 126.7 mm    | 105.4 mm    | 115.9 mm    | 126.6 mm    |
| Days ≥ 30 °C              | Annual | 8.5 days             | 10.7 days   | 16.3 days   | 21.6 days   | 19.3 days   | 26.0 days   | 32.3 days   |
| Days ≤ -30 °C             | Annual | 9.0 days             | 0.8 days    | 3.8 days    | 7.8 days    | 0.2 days    | 2.2 days    | 4.3 days    |
| Frost-Free Period         | Annual | 124.2 days           | 125.0 days  | 139.3 days  | 154.9 days  | 134.1 days  | 146.1 days  | 159.8 days  |
| Date of First Fall Frost  |        | Sep 22               | Sep 18      | Sep 28      | Oct 11      | Sep 21      | Oct 01      | Oct 10      |
| Date of Last Spring Frost |        | May 21               | May 03      | May 12      | May 23      | Apr 30      | May 08      | May 18      |
| 5 °C Degree Days          | Annual | 17392.8              | 17423.8     | 17439.9     | 17451.3     | 17445.0     | 17456.2     | 17466.5     |
| 10 °C Degree Days         | Annual | 924.6                | 1052.5      | 1128.5      | 1212.3      | 1220.2      | 1302.6      | 1376.2      |
| Freeze-Thaw Cycles        | Annual | 64.4 cycles          | 50.0 cycles | 60.3 cycles | 71.9 cycles | 56.0 cycles | 63.6 cycles | 70.8 cycles |
| Days Precip ≥ 10 mm       | Annual | 11.8 days            | 10.9 days   | 12.8 days   | 14.8 days   | 11.4 days   | 12.9 days   | 14.5 days   |
| Days Precip ≥ 20 mm       | Annual | 3.5 days             | 2.5 days    | 3.7 days    | 4.9 days    | 2.7 days    | 3.7 days    | 4.8 days    |

## High Carbon Emissions (RCP8.5)

| Climate Variable          | Season | 1981-2010 (Baseline) | 2021-2050   |             |             | 2051-2080   |             |             |
|---------------------------|--------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                           |        |                      | L           | M           | H           | L           | M           | H           |
| Mean Temperature          | Annual | 2.5 °C               | 3.9 °C      | 4.7 °C      | 5.3 °C      | 5.7 °C      | 6.9 °C      | 8.1 °C      |
|                           | Winter | -15.0 °C             | -13.2 °C    | -12.0 °C    | -10.8 °C    | -11.0 °C    | -9.3 °C     | -7.7 °C     |
|                           | Spring | 2.3 °C               | 3.3 °C      | 4.0 °C      | 4.8 °C      | 4.6 °C      | 5.7 °C      | 6.9 °C      |
|                           | Summer | 18.0 °C              | 19.3 °C     | 19.9 °C     | 20.5 °C     | 21.0 °C     | 22.0 °C     | 23.0 °C     |
|                           | Fall   | 4.4 °C               | 5.6 °C      | 6.4 °C      | 7.2 °C      | 7.6 °C      | 8.6 °C      | 9.6 °C      |
| Precipitation             | Annual | 488.0 mm             | 484.3 mm    | 515.0 mm    | 544.4 mm    | 495.9 mm    | 527.1 mm    | 557.2 mm    |
|                           | Winter | 66.5 mm              | 65.0 mm     | 72.4 mm     | 82.0 mm     | 67.6 mm     | 79.2 mm     | 87.3 mm     |
|                           | Spring | 109.2 mm             | 105.4 mm    | 121.1 mm    | 135.2 mm    | 121.1 mm    | 137.6 mm    | 156.9 mm    |
|                           | Summer | 205.7 mm             | 189.8 mm    | 204.5 mm    | 220.1 mm    | 175.4 mm    | 194.5 mm    | 211.8 mm    |
|                           | Fall   | 106.5 mm             | 102.8 mm    | 116.8 mm    | 129.8 mm    | 101.4 mm    | 115.8 mm    | 130.5 mm    |
| Days ≥ 30 °C              | Annual | 8.5 days             | 13.5 days   | 19.4 days   | 25.8 days   | 28.7 days   | 39.4 days   | 50.0 days   |
| Days ≤ -30 °C             | Annual | 9.3 days             | 0.8 days    | 3.3 days    | 6.6 days    | 0.0 days    | 1.0 days    | 2.3 days    |
| Frost-Free Period         | Annual | 124.0 days           | 126.3 days  | 143.3 days  | 159.9 days  | 141.8 days  | 157.1 days  | 174.1 days  |
| Date of First Fall Frost  |        | Sep 22               | Sep 20      | Oct 01      | Oct 14      | Sep 27      | Oct 07      | Oct 20      |
| Date of Last Spring Frost |        | May 21               | May 02      | May 11      | May 21      | Apr 25      | May 03      | May 13      |
| 5 °C Degree Days          | Annual | 17393.3              | 17422.8     | 17442.4     | 17463.6     | 17474.6     | 17496.1     | 17517.9     |
| 10 °C Degree Days         | Annual | 923.9                | 1116.4      | 1191.3      | 1271.0      | 1373.2      | 1525.8      | 1704.9      |
| Freeze-Thaw Cycles        | Annual | 64.1 cycles          | 51.9 cycles | 60.4 cycles | 68.2 cycles | 51.7 cycles | 59.5 cycles | 66.9 cycles |
| Days Precip ≥ 10 mm       | Annual | 11.9 days            | 11.2 days   | 12.8 days   | 14.4 days   | 11.8 days   | 13.5 days   | 15.3 days   |
| Days Precip ≥ 20 mm       | Annual | 3.5 days             | 2.7 days    | 3.6 days    | 4.7 days    | 3.0 days    | 3.9 days    | 4.9 days    |