

## APPENDIX D – TEMPERATURE AND FLOW DATA

This appendix displays the data used in the source assessment (**Tables D1 and D2**) for the Dillon WWTF (**Section 5.5.2**) and example TMDLs for the lower Beaverhead and upper Jefferson Rivers (**Sections 5.7.2 and 5.7.3**).

### D1.0 DILLON WWTF DMR DATA 2010-2013

**Table D1. Dillon WWTF effluent water temperature in °F**

| Monitoring Period Start Date | Monitoring Period End Date | Statistical Base Long Desc | DMR value |
|------------------------------|----------------------------|----------------------------|-----------|
| 12/1/2013                    | 12/31/2013                 | Instantaneous Maximum      | 41.9      |
| 12/1/2013                    | 12/31/2013                 | Instantaneous Minimum      | 34.34     |
| 11/1/2013                    | 11/30/2013                 | Instantaneous Maximum      | 41.54     |
| 11/1/2013                    | 11/30/2013                 | Instantaneous Minimum      | 38.12     |
| 10/1/2013                    | 10/31/2013                 | Instantaneous Maximum      | 51.26     |
| 10/1/2013                    | 10/31/2013                 | Instantaneous Minimum      | 44.6      |
| 9/1/2013                     | 09/30/2013                 | Instantaneous Maximum      | 66.02     |
| 9/1/2013                     | 09/30/2013                 | Instantaneous Minimum      | 59.36     |
| 8/1/2013                     | 08/31/2013                 | Instantaneous Maximum      | 68.54     |
| 8/1/2013                     | 08/31/2013                 | Instantaneous Minimum      | 66.02     |
| 7/1/2013                     | 07/31/2013                 | Instantaneous Maximum      | 71.06     |
| 7/1/2013                     | 07/31/2013                 | Instantaneous Minimum      | 68.9      |
| 6/1/2013                     | 06/30/2013                 | Instantaneous Maximum      | 64.04     |
| 6/1/2013                     | 06/30/2013                 | Instantaneous Minimum      | 58.1      |
| 5/1/2013                     | 05/31/2013                 | Instantaneous Maximum      | 59        |
| 5/1/2013                     | 05/31/2013                 | Instantaneous Minimum      | 52.34     |
| 4/1/2013                     | 04/30/2013                 | Instantaneous Maximum      | 50.9      |
| 4/1/2013                     | 04/30/2013                 | Instantaneous Minimum      | 42.62     |
| 3/1/2013                     | 03/31/2013                 | Instantaneous Maximum      | 38.84     |
| 3/1/2013                     | 03/31/2013                 | Instantaneous Minimum      | 33.98     |
| 2/1/2013                     | 02/28/2013                 | Instantaneous Maximum      | 35.96     |
| 2/1/2013                     | 02/28/2013                 | Instantaneous Minimum      | 32.18     |
| 1/1/2013                     | 01/31/2013                 | Instantaneous Maximum      | 33.44     |
| 1/1/2013                     | 01/31/2013                 | Instantaneous Minimum      | 32.72     |
| 12/1/2012                    | 12/31/2012                 | Instantaneous Maximum      | 36.5      |
| 12/1/2012                    | 12/31/2012                 | Instantaneous Minimum      | 33.62     |
| 11/1/2012                    | 11/30/2012                 | Instantaneous Maximum      | 44.78     |
| 11/1/2012                    | 11/30/2012                 | Instantaneous Minimum      | 36.68     |
| 10/1/2012                    | 10/31/2012                 | Instantaneous Maximum      | 57.74     |
| 10/1/2012                    | 10/31/2012                 | Instantaneous Minimum      | 42.8      |
| 9/1/2012                     | 09/30/2012                 | Instantaneous Maximum      | 60.62     |
| 9/1/2012                     | 09/30/2012                 | Instantaneous Minimum      | 56.84     |
| 8/1/2012                     | 08/31/2012                 | Instantaneous Maximum      | 69.26     |
| 8/1/2012                     | 08/31/2012                 | Instantaneous Minimum      | 64.58     |
| 7/1/2012                     | 07/31/2012                 | Instantaneous Maximum      | 71.24     |
| 7/1/2012                     | 07/31/2012                 | Instantaneous Minimum      | 62.96     |
| 6/1/2012                     | 06/30/2012                 | Instantaneous Maximum      | 66.56     |
| 6/1/2012                     | 06/30/2012                 | Instantaneous Minimum      | 54.86     |

**Table D1. Dillon WWTF effluent water temperature in °F**

| <b>Monitoring Period Start Date</b> | <b>Monitoring Period End Date</b> | <b>Statistical Base Long Desc</b> | <b>DMR value</b> |
|-------------------------------------|-----------------------------------|-----------------------------------|------------------|
| 5/1/2012                            | 05/31/2012                        | Instantaneous Maximum             | 60.26            |
| 5/1/2012                            | 05/31/2012                        | Instantaneous Minimum             | 51.26            |
| 4/1/2012                            | 04/30/2012                        | Instantaneous Maximum             | 53.6             |
| 4/1/2012                            | 04/30/2012                        | Instantaneous Minimum             | 45.86            |
| 3/1/2012                            | 03/31/2012                        | Instantaneous Maximum             | 44.78            |
| 3/1/2012                            | 03/31/2012                        | Instantaneous Minimum             | 33.8             |
| 2/1/2012                            | 02/29/2012                        | Instantaneous Maximum             | 33.62            |
| 2/1/2012                            | 02/29/2012                        | Instantaneous Minimum             | 33.26            |
| 1/1/2012                            | 01/31/2012                        | Instantaneous Maximum             | 33.8             |
| 1/1/2012                            | 01/31/2012                        | Instantaneous Minimum             | 33.44            |
| 12/1/2011                           | 12/31/2011                        | Instantaneous Maximum             | 33.98            |
| 12/1/2011                           | 12/31/2011                        | Instantaneous Minimum             | 33.44            |
| 11/1/2011                           | 11/30/2011                        | Instantaneous Maximum             | 33.8             |
| 11/1/2011                           | 11/30/2011                        | Instantaneous Minimum             | 42.98            |
| 10/1/2011                           | 10/31/2011                        | Instantaneous Maximum             | 58.46            |
| 10/1/2011                           | 10/31/2011                        | Instantaneous Minimum             | 48.38            |
| 9/1/2011                            | 09/30/2011                        | Instantaneous Maximum             | 62.42            |
| 9/1/2011                            | 09/30/2011                        | Instantaneous Minimum             | 58.64            |
| 8/1/2011                            | 08/31/2011                        | Instantaneous Maximum             | 68               |
| 8/1/2011                            | 08/31/2011                        | Instantaneous Minimum             | 65.66            |
| 7/1/2011                            | 07/31/2011                        | Instantaneous Maximum             | 103.64           |
| 7/1/2011                            | 07/31/2011                        | Instantaneous Minimum             | 74.48            |
| 6/1/2011                            | 06/30/2011                        | Instantaneous Maximum             | 72.14            |
| 6/1/2011                            | 06/30/2011                        | Instantaneous Minimum             | 56.84            |
| 5/1/2011                            | 05/31/2011                        | Instantaneous Maximum             | 60.08            |
| 5/1/2011                            | 05/31/2011                        | Instantaneous Minimum             | 45.14            |
| 4/1/2011                            | 04/30/2011                        | Instantaneous Maximum             | 46.22            |
| 4/1/2011                            | 04/30/2011                        | Instantaneous Minimum             | 43.7             |
| 3/1/2011                            | 03/31/2011                        | Instantaneous Maximum             | 41.18            |
| 3/1/2011                            | 03/31/2011                        | Instantaneous Minimum             | 33.98            |
| 2/1/2011                            | 02/28/2011                        | Instantaneous Maximum             | 35.6             |
| 2/1/2011                            | 02/28/2011                        | Instantaneous Minimum             | 34.34            |
| 1/1/2011                            | 01/31/2011                        | Instantaneous Maximum             | 39.56            |
| 1/1/2011                            | 01/31/2011                        | Instantaneous Minimum             | 35.6             |
| 12/1/2010                           | 12/31/2010                        | Instantaneous Maximum             | 36.5             |
| 12/1/2010                           | 12/31/2010                        | Instantaneous Minimum             | 35.42            |
| 11/1/2010                           | 11/30/2010                        | Instantaneous Maximum             | 51.8             |
| 11/1/2010                           | 11/30/2010                        | Instantaneous Minimum             | 36.86            |
| 10/1/2010                           | 10/31/2010                        | Instantaneous Maximum             | 59               |
| 10/1/2010                           | 10/31/2010                        | Instantaneous Minimum             | 49.28            |
| 9/1/2010                            | 09/30/2010                        | Instantaneous Maximum             | 59               |
| 9/1/2010                            | 09/30/2010                        | Instantaneous Minimum             | 57.2             |
| 8/1/2010                            | 08/31/2010                        | Instantaneous Maximum             | 69.8             |
| 8/1/2010                            | 08/31/2010                        | Instantaneous Minimum             | 62.6             |
| 7/1/2010                            | 07/31/2010                        | Instantaneous Maximum             | 68               |
| 7/1/2010                            | 07/31/2010                        | Instantaneous Minimum             | 65.66            |
| 6/1/2010                            | 06/30/2010                        | Instantaneous Maximum             | 68               |

**Table D1. Dillon WWTF effluent water temperature in °F**

| <b>Monitoring Period Start Date</b> | <b>Monitoring Period End Date</b> | <b>Statistical Base Long Desc</b> | <b>DMR value</b> |
|-------------------------------------|-----------------------------------|-----------------------------------|------------------|
| 6/1/2010                            | 06/30/2010                        | Instantaneous Minimum             | 50               |
| 5/1/2010                            | 05/31/2010                        | Instantaneous Maximum             | 57.56            |
| 5/1/2010                            | 05/31/2010                        | Instantaneous Minimum             | 48.02            |
| 4/1/2010                            | 04/30/2010                        | Instantaneous Maximum             | 52.52            |
| 4/1/2010                            | 04/30/2010                        | Instantaneous Minimum             | 42.08            |
| 3/1/2010                            | 03/31/2010                        | Instantaneous Maximum             | 43.16            |
| 3/1/2010                            | 03/31/2010                        | Instantaneous Minimum             | 34.52            |

**D2.0 FLOW DATA FOR STATION BRDM ON THE BEAVERHEAD RIVER 2005****Table D2. Report For Water Year 2005**

| Run 06/02/2006 08:49 |        | Station Identification: BRDM - Beaverhead River at Dillon, MT |       |       |       |       |       | Parameter code: QD - Daily Mean Total Discharge (cfs) |        |        |        |        |
|----------------------|--------|---|-------|-------|-------|-------|-------|---|--------|--------|--------|--------|
| Day                  | Oct    | Nov   | Dec   | Jan   | Feb   | Mar   | Apr   | May   | June   | Jul    | Aug    | Sept   |
| 1                    | 55.20  | 96.83   | 74.64 | 69.53 | 50.78 | 76.14 | 43.89 | 44.14   | 160.80 | 107.28 | 206.27 | 128.43 |
| 2                    | 56.42  | 94.32   | 80.96 | 68.83 | 42.54 | 70.93 | 44.84 | 43.23   | 165.77 | 122.27 | 196.91 | 119.80 |
| 3                    | 56.07  | 104.18  | 78.22 | 66.87 | 41.56 | 60.13 | 44.20 | 42.04   | 133.22 | 120.24 | 175.06 | 112.63 |
| 4                    | 55.57  | 103.12  | 76.42 | 66.81 | 40.50 | 64.43 | 44.43 | 39.68   | 107.55 | 116.54 | 177.81 | 116.70 |
| 5                    | 58.44  | 101.93  | 83.22 | 66.87 | 41.65 | 64.30 | 47.17 | 39.00   | 102.52 | 113.45 | 168.16 | 121.17 |
| 6                    | 57.41  | 101.21  | 82.78 | 66.87 | 59.75 | 64.47 | 44.27 | 49.67   | 108.55 | 135.10 | 158.45 | 121.49 |
| 7                    | 55.34  | 100.61  | 83.06 | 66.87 | 38.70 | 66.51 | 42.82 | 42.07   | 119.89 | 142.98 | 181.95 | 115.01 |
| 8                    | 54.25  | 99.10   | 85.63 | 66.87 | 38.70 | 68.12 | 43.81 | 42.49   | 133.01 | 154.04 | 178.00 | 90.99  |
| 9                    | 52.85  | 98.10   | 85.34 | 66.87 | 38.70 | 67.86 | 42.81 | 48.93   | 111.38 | 187.07 | 175.82 | 82.19  |
| 10                   | 53.01  | 95.13   | 87.34 | 66.87 | 40.05 | 69.20 | 42.17 | 104.79  | 94.80  | 194.14 | 170.15 | 86.29  |
| 11                   | 55.83  | 94.58   | 92.66 | 66.87 | 80.56 | 69.23 | 42.11 | 158.60  | 95.51  | 198.75 | 168.72 | 96.89  |
| 12                   | 54.25  | 94.13   | 91.48 | 66.87 | 78.60 | 70.24 | 41.88 | 115.37  | 106.68 | 180.58 | 167.73 | 95.96  |
| 13                   | 55.68  | 88.59   | 88.76 | 66.87 | 77.68 | 68.75 | 43.11 | 89.88   | 161.69 | 155.37 | 177.44 | 89.73  |
| 14                   | 54.84  | 87.48   | 85.76 | 66.87 | 78.81 | 62.43 | 44.57 | 96.15   | 128.07 | 152.95 | 182.32 | 85.88  |
| 15                   | 54.39  | 89.35   | 86.29 | 66.87 | 56.46 | 63.68 | 47.54 | 90.33   | 90.03  | 131.72 | 194.01 | 64.55  |
| 16                   | 62.91  | 91.93   | 85.12 | 66.87 | 38.88 | 59.23 | 53.74 | 90.15   | 94.44  | 122.97 | 186.87 | 53.84  |
| 17                   | 68.19  | 91.21   | 82.47 | 69.92 | 59.03 | 50.68 | 54.42 | 133.50  | 89.59  | 114.22 | 178.15 | 58.50  |
| 18                   | 74.10  | 91.93   | 83.75 | 66.87 | 46.92 | 47.94 | 59.64 | 142.58  | 82.82  | 134.03 | 180.08 | 57.28  |
| 19                   | 77.27  | 93.47   | 85.89 | 66.89 | 62.07 | 49.39 | 77.87 | 126.36  | 87.31  | 128.92 | 164.49 | 51.10  |
| 20                   | 78.80  | 93.27   | 82.31 | 66.87 | 76.96 | 50.38 | 88.59 | 117.32  | 92.04  | 134.62 | 159.73 | 49.40  |
| 21                   | 82.40  | 83.14   | 98.35 | 66.87 | 69.88 | 50.83 | 82.53 | 120.43  | 60.09  | 148.79 | 158.84 | 50.89  |
| 22                   | 82.89  | 84.48   | 79.57 | 66.87 | 69.72 | 49.39 | 73.26 | 108.82  | 86.88  | 164.88 | 158.45 | 58.78  |
| 23                   | 87.71  | 88.67   | 95.78 | 64.10 | 71.17 | 50.77 | 68.93 | 92.54   | -----  | 209.87 | 162.99 | 60.76  |
| 24                   | 84.38  | 93.20   | 60.73 | 57.59 | 71.46 | 49.92 | 72.03 | 77.22   | 132.40 | 210.51 | 156.32 | 66.31  |
| 25                   | 82.06  | 97.67   | 53.27 | 52.47 | 72.93 | 50.05 | 73.48 | 66.51   | 141.67 | 223.48 | 151.62 | 66.54  |
| 26                   | 81.84  | 91.98   | 62.10 | 50.83 | 73.66 | 49.18 | 67.35 | 45.04   | 157.54 | 241.97 | 142.24 | 67.71  |
| 27                   | 83.37  | 85.39   | 83.26 | 46.88 | 74.94 | 47.78 | 55.11 | 47.00   | 203.25 | 207.71 | 121.01 | 64.16  |
| 28                   | 94.67  | 80.24   | 64.02 | 45.64 | 74.17 | 50.98 | 48.17 | 53.85   | 177.19 | 205.60 | 114.29 | 62.39  |
| 29                   | 107.32 | 92.45   | 65.54 | 44.50 |       | 51.27 | 48.40 | 86.06   | 141.85 | 207.25 | 113.25 | 65.97  |
| 30                   | 102.62 | 71.64   | 67.58 | 44.80 |       | 47.75 | 46.02 | 105.64  | 130.76 | 207.28 | 119.94 | 64.71  |
| 31                   | 100.57 |   | 70.15 | 43.51 |       | 44.27 |       | 117.86  |        | 197.54 | 125.86 |        |

**Table D2. Report For Water Year 2005**

| Run 06/02/2006 08:49 |        | Station Identification: BRDM - Beaverhead River at Dillon, MT |       |       |       |       |       | Parameter code: QD - Daily Mean Total Discharge (cfs) |        |        |        |        |
|----------------------|--------|---|-------|-------|-------|-------|-------|---|--------|--------|--------|--------|
| Day                  | Oct    | Nov   | Dec   | Jan   | Feb   | Mar   | Apr   | May   | June   | Jul    | Aug    | Sept   |
| Min                  | 52.85  | 71.64   | 53.27 | 43.51 | 38.70 | 44.27 | 41.88 | 39.00   | 60.09  | 107.28 | 113.25 | 49.40  |
| Max                  | 107.32 | 104.18  | 98.35 | 69.92 | 80.56 | 76.14 | 88.59 | 158.60  | 203.25 | 241.97 | 206.27 | 128.43 |
| Avg                  | 70.34  | 92.64   | 80.08 | 62.23 | 59.51 | 58.27 | 54.31 | 83.14   | 120.60 | 163.62 | 163.64 | 80.87  |
| T KAF                | 4.325  | 5.513   | 4.924 | 3.826 | 3.305 | 3.583 | 3.231 | 5.112   | 6.937  | 10.060 | 10.062 | 4.812  |
| T CFS                | 2181   | 2779  | 2482  | 1929  | 1666  | 1806  | 1629  | 2577  | 3497   | 5072   | 5073   | 2426   |

**D3.0 7Q10 MODELED FLOW DATA FOR THE JEFFERSON RIVER 8/20-8/22****Table D3. Baseline condition - Jefferson River 7Q10 flow used in QUAL2K model**

| River station mile | Flow in CFS |  | River station mile | Flow in CFS |  | River station mile | Flow in CFS |
|--------------------|-------------|--|--------------------|-------------|--|--------------------|-------------|
| 41.19              | 386.7       |  | 25.52              | 151.8       |  | 11.89              | 26.1        |
| 40.91              | 384.3       |  | 25.26              | 151.7       |  | 11.60              | 24.3        |
| 40.62              | 382.0       |  | 25.00              | 135.7       |  | 11.30              | 22.5        |
| 40.34              | 379.6       |  | 24.74              | 135.6       |  | 11.01              | 20.6        |
| 40.05              | 390.5       |  | 24.48              | 135.4       |  | 10.72              | 18.8        |
| 39.77              | 388.1       |  | 24.14              | 135.0       |  | 10.43              | 16.9        |
| 39.48              | 385.7       |  | 23.79              | 134.6       |  | 10.13              | 15.1        |
| 39.20              | 383.7       |  | 23.45              | 134.2       |  | 9.84               | 13.3        |
| 38.91              | 381.3       |  | 23.11              | 133.8       |  | 9.55               | 11.4        |
| 38.63              | 379.0       |  | 22.76              | 139.2       |  | 8.99               | 16.9        |
| 38.34              | 374.2       |  | 22.42              | 138.8       |  | 8.43               | 60.7        |
| 37.75              | 373.6       |  | 22.07              | 140.4       |  |                    |             |
| 37.16              | 362.3       |  | 21.73              | 52.2        |  |                    |             |
| 36.56              | 364.1       |  | 21.39              | 53.0        |  |                    |             |
| 35.97              | 320.8       |  | 21.04              | 52.6        |  |                    |             |
| 35.38              | 322.6       |  | 20.53              | 54.5        |  |                    |             |
| 34.78              | 155.3       |  | 20.01              | 56.3        |  |                    |             |
| 34.19              | 157.2       |  | 19.49              | 83.0        |  |                    |             |
| 33.60              | 159.0       |  | 18.97              | 85.9        |  |                    |             |
| 33.01              | 160.8       |  | 18.46              | 87.7        |  |                    |             |
| 32.41              | 162.7       |  | 17.94              | 48.5        |  |                    |             |
| 31.88              | 165.7       |  | 17.42              | 50.3        |  |                    |             |
| 31.35              | 168.7       |  | 16.90              | 52.2        |  |                    |             |
| 30.82              | 171.7       |  | 16.39              | 73.8        |  |                    |             |
| 30.28              | 106.6       |  | 15.87              | 75.6        |  |                    |             |
| 29.75              | 145.4       |  | 15.53              | 77.2        |  |                    |             |
| 29.22              | 148.4       |  | 15.19              | 78.8        |  |                    |             |
| 28.69              | 151.4       |  | 14.85              | 91.4        |  |                    |             |
| 28.15              | 157.3       |  | 14.51              | 20.3        |  |                    |             |
| 27.62              | 150.3       |  | 14.17              | 21.9        |  |                    |             |
| 27.09              | 153.3       |  | 13.83              | 23.5        |  |                    |             |
| 26.83              | 153.2       |  | 13.49              | 25.1        |  |                    |             |
| 26.57              | 152.3       |  | 13.15              | 26.6        |  |                    |             |
| 26.31              | 152.1       |  | 12.81              | 28.2        |  |                    |             |
| 26.05              | 152.0       |  | 12.47              | 29.8        |  |                    |             |
| 25.79              | 151.9       |  | 12.18              | 28.0        |  |                    |             |