**ICE THICKNESS ON THE ATHABASCA RIVER NEAR FORT McMURRAY FROM**

**WATER SURVEY CANADA (WSC) WINTER SURVEY**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Day** | **Ice Thickness (m)** | **Location** | **WSC Comments** |
| 1972 | Oct. 17 | - | - | Very little ice in river |
|  | Nov. 24 | Slush can not be separated from ice thickness | 46 m upstream of MacEwan Bridge, 6.4 km above gauge | Ice cover, river surface very rough and large amount of slush found in cross-section (7 readings out of 22), approximately 27 m of cross-section with slush to bottom of riverbed |
|  | Dec. 20 | - | - | River surface very rough |
| 1973 | Jan. 10 | Slush can not be separated from ice thickness | Measurement made at MacEwan Bridge, 9.7 km above gauge | Ice cover, snow cover light (0.61 m), approximately 0.76 m of ice with slush, slush (4 readings out of 26), approximately 4.6 m of cross-section with slush to bottom of riverbed |
|  | Feb. 26 | 1.19 (11) **a c** | 18 m upstream side of MacEwan Bridge, 4.8 km above gauge | Ice cover, slush (6 readings out of 21) |
|  | Apr. 2 | 1.62 (20) | 4.8 km above gauge, measurement made upstream of MacEwan Bridge | Ice cover, ice thickness about 1.22 m, river surface rough and icy with pools of water forming on surface |
|  | Apr. 4 | - | - | River surface soft, partly frozen overflow, rough, pools of water forming |
|  | Apr. 19 | - | - | Open water at Fort MacKay and at GCOS Plant, very little ice flowing, a relatively small amount of ice piled on edges, ice not broken at bridge and gauge |
|  | Apr. 24 | - | - | Ice still not broken at bridge, open water along right edge and some overflow in center of river |
| **Year** | **Day** | **Ice Thickness (m)** | **Location** | **WSC Comments** |
| 1973 | May 2 | - | - | Some ice piled on sandbars near gauge and a little bit along shore in places |
|  | May 7 | - | 0.8 km below gauge | No ice |
|  |  |  |  |  |
|  | Oct. 12 | - | Below gauge | No ice |
| 1974 | Jan. 19 | 0.46 (16) | - | Ice cover, snow cover on section drifted and packed 0.15 to 0.30 m deep, section fairly smooth, no slush ice in storage under ice, ice thickness about 0.46 m |
|  | Feb. 18 | 0.61 (19) **c** | 30 m below gauge | Ice cover, average ice thickness 0.61 m, snow on river deep and becoming packed, slush (3 readings out of 22) |
|  | Mar. 18 | 0.64 (19) | At gauge | Complete ice cover |
|  | Apr. 15 | 0.61 (22) | At gauge | Ice cover, some snow remains on river, 2 open sections observed above gauge |
|  |  |  |  |  |
|  | Dec. 9 | 0.30 (12) **a** | At gauge | Ice cover, some open leads |
| 1975 | Jan. 28 | 0.55 (18) **c** | At gauge | Complete ice cover, slush (1 reading out of 19) |
|  | Mar. 15 | 0.73 (18) | At gauge | Ice cover |
|  | Apr. 19 | 0.61 (19) | At gauge | Ice cover, open leads above measurement section |
|  | Apr. 26 | - | - | River in process of breaking up |
|  | Apr. 29 | - | - | River flowing heavy ice |
|  |  |  |  |  |
|  | Oct. 7 | - | 0.3 km below gauge | No ice |
|  | Dec. 18 | 0.64 (17) | - | Ice cover, slush (8 readings out of 25), approximately 43 m of cross-section with slush to bottom of riverbed |
| **Year** | **Day** | **Ice Thickness (m)** | **Location** | **WSC Comments** |
| 1976 | Jan. 16 | 0.76 (19) **a c** | At gauge | Complete ice cover, slush (1 reading out of 21) |
|  | Feb. 20 | 0.82 (20) **c** | At gauge | Complete ice cover, slush (1 reading out of 21), approximately 6 m of cross-section with slush to bottom of riverbed |
|  | Mar. 8 | 0.85 (21) | At gauge | Complete ice cover |
|  | Apr. 1 | 0.82 (21) | - | Ice cover, some overflow present |
|  | Apr. 10 | - | - | Ice broken out in places, open holes all across channel |
|  | Apr. 17 | - | - | Ice on sandbars and on banks below gauge, probably 0.30 to 0.46 m of backwater, also ice flowing in stream |
|  | May 7 | - | 0.8 km below gauge | No ice |
|  |  |  |  |  |
|  | Dec. 4 | 0.55 (12) **a c** | 0.8 km below gauge at summer section | Complete ice cover, slush (5 readings out of 21), approximately 61 m of cross-section with slush to bottom of riverbed |
|  | Dec. 17 | 0.67 (17) **c** | 0.8 km below gauge | Complete ice cover, slush (4 readings out of 21) |
| 1977 | Jan. 21 | 0.85 (20) | 0.4 km below gauge | Complete ice cover, average ice thickness 0.85 m |
|  | Feb. 18 | 0.91 (20) | 0.8 km below gauge | Complete ice cover, average ice thickness 0.91 m |
|  | Mar. 30 | 0.88 (21) **a** | 0.8 km below gauge | Complete ice cover, average ice thickness 0.94 m |
|  | Apr. 15 | - | - | Lots of ice in area above and below gauge, large ice jam at mouth of Clearwater |
|  |  |  |  |  |
|  |  |  |  |  |
| **Year** | **Day** | **Ice Thickness (m)** | **Location** | **WSC Comments** |
| 1977 | Apr. 17 | - | - | Large ice jam above gauge, ice on edge below gauge, very little velocity on right bank, high velocity on left bank, this is the opposite of normal |
|  | Apr. 21 | - | - | Ice jam above gauge |
|  | Apr. 26 | - | - | Some ice flowing, large jam above gauge blocking right channel of river, no ice below gauge, channel conditions severely changed due to ice jam, the sandbar that was located in front of the gauge has moved downstream |
|  |  |  |  |  |
|  | Oct. 27 | - | 0.8 km below gauge | No ice |
|  | Dec. 19 | 0.73 (23) | 0.4 km below gauge | Complete ice cover |
| 1978 | Jan. 16 | 0.79 (26) | 0.8 km below gauge | Complete ice cover, average ice thickness 0.79 m |
|  | Feb. 4 | 0.82 (25) | 1.6 km below gauge | Complete ice cover |
|  | Mar. 8 | 0.91 (17) | - | Complete ice cover |
|  | Apr. 2 | 0.88 (28) | 0.4 km below gauge | Complete ice cover, some open leads |
|  | Apr. 12 | - | - | Open hole in ice at gauge |
|  | Apr. 18 | - | - | Ice cover, open hole at gauge and an open channel below gauge |
|  | Apr. 24 | - | - | Ice has not moved out, open channel out from gauge |
|  | Apr. 27 | - | - | Ice jam at bridge in Fort McMurray, ice jammed at gauge |
|  |  |  |  |  |
|  | Nov. 17 | - | - | Open area at gauge, but jammed everywhere else |
| **Year** | **Day** | **Ice Thickness (m)** | **Location** | **WSC Comments** |
| 1978 | Dec. 5 | 0.37 (6) **a c** | 0.4 km below gauge | Complete ice cover, slush (6 readings out of 22), approximately 15 m of cross-section with slush to bottom of riverbed |
|  | Dec. 18 | 0.43 (7) **a c** | 0.4 km below gauge | Complete ice cover, slush (9 readings out of 24), approximately 76 m of cross-section with slush to bottom of riverbed |
| 1979 | Jan. 11 | 0.61 (15) **a c** | 0.4 km below gauge | Complete ice cover, slush (7 readings out of 24), approximately 69 m of cross-section with slush to bottom of riverbed |
|  | Feb. 14 | 0.67 (18) **a c** | 0.4 km below gauge | Complete ice cover, slush (5 readings out of 24), approximately 130 m of cross-section with slush to bottom of riverbed |
|  | Mar. 8 | 0.85 (19) **c** | 0.5 km below gauge | Complete ice cover, slush (5 readings out of 24), approximately 114 m of cross-section with slush to bottom of riverbed |
|  | Apr. 3 | 0.88 (18) **a c** | 0.8 km below gauge | Complete ice cover, some overflow on ice, open hole above gauge, slush (2 readings out of 24) |
|  | Apr. 21 | 1.10 (19) **c** | 61 m below MacEwan Bridge | Ice cover, open holes along left bank at gauge, slush (1 readings out of 21) |
|  | Apr. 25 | - | - | Ice has open leads above and below gauge, ice has lifted but not moved |
|  | Apr. 29 | - | - | Ice jam 8.0 km below gauge |
|  | May 1 | - | - | Ice still jammed at gauge and at town, high water mark 244.969 |
|  | May 3 | - | - | Ice jammed at gauge and above |
|  | May 5 | - | - | Lots of ice flowing, still some backwater |
|  | May 14 | - | - | Some ice on banks and islands, probably normal |
| **Year** | **Day** | **Ice Thickness (m)** | **Location** | **WSC Comments** |
| 1979 | May 24 | - | - | No ice |
|  |  |  |  |  |
|  | Oct. 22 | - | 1.6 km below gauge | No ice |
|  | Nov. 15 | - | - | Slush pans flowing, back channels are frozen |
|  | Nov. 30 | 0.31 (16) **a c** | - | Ice cover, open channel 20 m below gauge, measuring conditions poor, slush (14 readings out of 35), approximately 185 m of cross-section with slush to bottom of riverbed |
| 1980 | Jan. 11 | 0.59 (21) **a c** | 0.5 km below gauge | Ice cover, slush (5 readings out of 28), approximately 25 m of cross-section with slush to bottom of riverbed, approximately 5 m of ice to bottom of riverbed on left bank |
|  | Feb. 7 | 0.90 (15) **a c** | 1 km below gauge | Ice cover, slush (4 readings out of 26), approximately 60 m of cross-section with ice to bottom of riverbed |
|  | Mar. 6 | 0.80 (21) **c** | 1 km below gauge | Ice cover, slush (3 readings out of 26), approximately 60 m of cross-section with ice to bottom of riverbed |
|  | Apr. 2 | 0.80 (17) **a c** | 0.5 km below gauge | Ice cover, slush (3 readings out of 27), approximately 75 m of cross-section with ice to bottom of riverbed |
|  | Apr. 11 | 0.69 (20) **a c** | 0.5 km below gauge | Complete ice cover at gauge, open water along left bank at measurement section, slush (3 readings out of 27), approximately 55 m of cross-section with ice to bottom of riverbed |
| **Year** | **Day** | **Ice Thickness (m)** | **Location** | **WSC Comments** |
| 1980 | Apr. 22 | - | - | Ice pans flowing and ice piled along banks |
|  | May 21 | - | 1 km below gauge | No ice, river very low for May |
|  |  |  |  |  |
|  | Dec. 13 | 0.57 (28) **a c** | 0.5 km below gauge | Complete ice cover, slush (10 readings out of 39), approximately 15 m of cross-section with slush to bottom of riverbed |
| 1981 | Jan. 23 | 0.71 (19) **a** | 1 km below gauge | Complete ice cover, some slush in measurement section |
|  | Feb. 18 | 0.73 (15) **a c** | 1 km below gauge | Complete ice cover, slush (2 readings out of 20), approximately 75 m of cross-section with ice to bottom of riverbed |
|  | Mar. 25 | 0.75 (19) **a** | Below gauge | Ice cover |
|  | Apr. 16 | - | - | Complete ice cover at gauge |
|  |  |  |  |  |
|  | Oct. 31 | - | - | Complete ice cover at gauge, open leads upstream and downstream |
|  | Dec. 10 | 0.30 (8) **c** | 0.1 km below gauge | Compete ice cover at gauge, slush at measurement section (12 readings out of 20), no flow on left side of sandbar (left bank) |
| 1982 | Jan. 15 | 0.57 (9) **a c** | 0.5 km above MacEwan Bridge | Ice cover, slush (17 readings out of 32), approximately 110 m of cross-section with slush to bottom of riverbed |
|  | Feb. 19 | 0.58 (24) **c** | Below gauge at summer boat measurement site | Ice cover, slush (5 readings out of 29), approximately 40 m of cross-section with slush to bottom of riverbed |
|  | Mar. 27 | 0.65 (26) **a c** | 1 km below gauge at boat measurement section | Ice cover, slush (2 readings out of 29) |
|  | Apr. 24 | - | - | Complete ice cover at gauge |
| **Year** | **Day** | **Ice Thickness (m)** | **Location** | **WSC Comments** |
| 1982 | Apr. 29 | - | - | Some ice pans flowing, ice piled along edges |
|  |  |  |  |  |
|  | Oct. 29 | - | - | Slush flowing |
|  | Dec. 16 | 0.46 (12) **c** | 0.1 km below gauge | Ice cover, slush (6 readings out of 18) |
| 1983 | Jan. 19 | 0.53 (11) **a c** | - | Ice cover, slush (1 reading out of 18) |
|  | Mar. 12 | 0.54 (11) **a b** | 0.1 km below gauge | Ice cover |
|  | Apr. 19 | - | - | ¾ of ice cover at gauge |
|  |  |  |  |  |
|  | Dec. 12 | 0.37 (15) **c** | 50 m below gauge | Complete ice cover at gauge, slush (5 readings out of 20) |
| 1984 | Jan. 12 | 0.71 (15) | 60 m below gauge | Complete ice cover |
|  | Mar. 6 | 0.81 (15) | 80 m below gauge | Ice cover |
|  | Apr. 6 | - | - | River starting to open up on sides |
|  | Apr. 12 | - | - | River went out at Fort McMurray at 00:26 Apr. 11th according to H. Rickert from Alberta Environment, ice jammed up at gauge |
|  | Apr. 16 | - | - | Could not level, ice piled high on banks |
|  |  |  |  |  |
|  | Dec. 13 | 0.58 (18) | 80 m below gauge | Complete ice cover |
| 1985 | Jan. 14 | 0.68 (19) | 75 m below gauge | Full ice cover |
|  | Mar. 14 | 0.79 (24) | 75 m below gauge | Complete ice cover |
|  | Apr. 2 | 0.73 (20) | Below gauge | Full ice cover |
|  | Apr. 10 | - | - | Open lead upstream of gauge |
|  | Apr. 25 | - | - | Light ice flowing |
|  |  |  |  |  |
|  | Nov. 1 | - | - | Slush starting to flow, likely no backwater due to ice |
| **Year** | **Day** | **Ice Thickness (m)** | **Location** | **WSC Comments** |
| 1986 | Jan. 9 | 0.96 (31) | 30 m below gauge | Ice cover |
|  | Mar. 7 | 1.01 (31) | At gauge | Complete ice cover |
|  | Apr. 12 | - | - | Ice unsafe (80% ice cover), open leads everywhere |
|  | Apr. 15 | 1.05 (17) | Above gauge, upstream of MacEwan Bridge | Ice cover |
|  | May 11 | - | 2 km below gauge | No ice |
|  |  |  |  |  |
|  | Nov. 1 | - | - | Ice flowing |
| 1987 | Jan. 14 | 0.62 (28) **a** | At gauge | Ice cover, approximately 20 m of cross-section with ice to bottom of riverbed |
|  | Mar. 7 | 0.78 (21) | At gauge | Complete ice cover at gauge |
|  | Mar. 8 | - | - | Complete ice cover at gauge |
|  | Mar. 9 | 0.87 (22) | 1 km above MacEwan Bridge | Ice cover |
|  | Apr. 7 | 0.87 (22) | 1 km above MacEwan Bridge | Ice cover, water pooling on ice, some open holes |
|  | Apr. 9 | - | - | Complete ice cover at gauge, open leads just downstream of gauge, stage rising |
|  | Apr. 29 | - | Below gauge | No ice |
|  |  |  |  |  |
|  | Nov. 3 | - | 1 km below gauge | No ice |
| 1988 | Jan. 5 | 0.42 (21) | 5 km above gauge | Complete ice cover, very little slush |
|  | Jan. 6 | - | - | Complete ice cover at gauge |
|  | Mar. 4 | - | - | Complete ice cover at gauge |
|  | Mar. 6 | 0.63 (20) | At water treatment plant | Complete ice cover |
|  | Apr. 10 | - | - | Complete ice cover at gauge, some open leads |
|  | Apr. 12 | 0.66 (25) | 2 km above gauge | Complete ice cover throughout and some open leads along left edge |
| **Year** | **Day** | **Ice Thickness (m)** | **Location** | **WSC Comments** |
| 1988 | May 8 | - | 1 km below gauge | No ice |
|  |  |  |  |  |
|  | Nov. 4 | - | - | Ice along both edges, steady flowing ice pans |
|  | Dec. 13 | 0.46 (17) **a c** | 5 km above gauge at water treatment plant | Complete ice cover, slush (3 readings out of 21) |
|  | Dec. 14 | - | - | Complete ice cover at gauge |
| 1989 | Jan. 9 | 0.50 (19) **a c** | 5 km above gauge | Ice cover, slush (4 readings out of 24), approximately 20 m of cross-section with slush to bottom of riverbed |
|  | Jan. 10 | - | - | Complete ice cover at gauge |
|  | Feb. 8 | 0.60 (24) | Fort McMurray | Ice cover, slush (7 readings out of 24) |
|  | Mar. 6 | 0.76 (24) | 5 km above gauge | Complete ice cover at gauge, slush (5 readings out of 24) |
|  | Apr. 11 | 0.83 (24) **c** | 5 km above gauge | Complete ice cover at measurement section and throughout, slush (2 readings out of 26) |
|  | Apr. 12 | 0.62 (22) | 1 km below gauge | Complete ice cover at gauge and measurement section |
|  |  |  |  |  |
|  | Oct. 24 | - | 2 km below gauge | No ice |
|  | Dec. 5 | 0.37 (6) **a c** | 1 km below gauge | Complete ice cover at gauge, lots of slush ice, slush (17 readings out of 24), approximately 80 m of cross-section with slush to bottom of riverbed |
| 1990 | Jan. 9 | 0.54 (12) **a c** | 1 km below gauge | 99% complete ice cover, open lead just below gauge, slush (9 readings out of 22), approximately 20 m of cross-section with slush to bottom of riverbed |
| **Year** | **Day** | **Ice Thickness (m)** | **Location** | **WSC Comments** |
| 1990 | Mar. 4 | 0.69 (26) **c** | 1 km below gauge | Complete ice cover at gauge and throughout, lots of snow (0.5 to 0.7m), slush (2 readings out of 28) |
|  | Apr. 7 | 0.63 (26) | 1 km below gauge | Complete ice cover at gauge and throughout |
|  | May 6 | - | 1 km below gauge | No ice |
|  |  |  |  |  |
|  | Oct. 26 | - | - | Ice along both edges with ice pans flowing |
|  | Dec. 4 | 0.38 (8) **a c** | 1 km below gauge | Complete ice cover at gauge, slush (15 readings out of 24) |
| 1991 | Jan. 9 | 0.66 (20) **c** | 1 km below gauge | Complete ice cover at gauge and throughout, slush (5 readings out of 25), approximately 20 m of cross-section with slush to bottom of riverbed |
|  | Feb. 27 | 0.77 (23) **c** | 1 km below gauge | Complete ice cover, slush (1 reading out of 24) |
|  | Apr. 5 | 0.77 (26) | 1.5 km below gauge | Complete ice cover at and below gauge |
|  | May 5 | - | 1 km below gauge | No ice |
|  |  |  |  |  |
|  | Dec. 4 | 0.64 (21) | 1 km below gauge at boat measurement site | Ice cover, no slush |
| 1992 | Jan. 8 | 0.74 (21) | 1 km below gauge | Complete ice cover, slush (1 reading out of 21) |
|  | Mar. 8 | 0.83 (26) | 1 km below gauge at open water site | Ice cover, slush |
|  | Apr. 1 | 0.75 (25) | 1 km below gauge | Complete ice cover, no slush |
|  | May 5 | - | 1.5 km below gauge | No ice |
|  |  |  |  |  |
|  | Oct. 15 | - | 1 km below gauge | No ice |
|  |  |  |  |  |
| **Year** | **Day** | **Ice Thickness (m)** | **Location** | **WSC Comments** |
| 1993 | Jan. 7 | 0.76 (24) | 1 km below gauge | Complete ice cover, lots of ice ridges, slush (1 reading out of 24) |
|  | Mar. 5 | 0.96 (25) | 1 km below gauge | Ice cover, lots of melt water on ice, no slush |
|  | Apr. 2 | 0.82 (25) **b** | 1 km below gauge | Complete ice cover |
|  | May 1 | - | - | Steady stream, mini bergs in middle of river |
|  | May 3 | - | 1 km below gauge | No ice flowing |
|  |  |  |  |  |
|  | Oct. 14 | - | 1 km below gauge | No ice |
|  | Dec. 16 | 0.51 (21) | 1 km below gauge | Complete ice cover, slush (6 readings out of 21) |
| 1994 | Jan. 6 | 0.57 (23) | 1 km below gauge | Ice cover, slush (2 readings out of 23) |
|  | Mar. 6 | 0.81 (26) | 1 km below gauge | Complete ice cover, 0.8% of slush area at cross-section (1 reading out of 26) |
|  | Apr. 9 | 0.68 (25) | 1 km below gauge at open water site | Ice cover, small open lead, right bank at gauge, no slush |
|  | May 15 | - | 1 km below gauge | No ice |
|  |  |  |  |  |
|  | Oct. 16 | - | 0.5 km below gauge | No ice |
|  | Dec. 14 | 0.60 (24) | 1 km below gauge | Complete ice cover, 16.4% of slush area at cross-section (3 readings out of 24) |
| 1995 | Jan. 4 | 0.70 (25) | 1 km below gauge | Ice cover, 4.0% of slush area at cross-section (4 readings out of 25) |
|  | Mar. 7 | 0.83 (25) | 1 km below gauge at summer section | Complete ice cover, no slush |
|  | Mar. 31 | 0.85 (24) | 1 km below gauge at summer section | Complete ice cover, no slush |
|  | May 13 | - | 1 km below gauge | No ice |
|  |  |  |  |  |
|  | Oct. 29 | - | 1 km below gauge | No ice |
| **Year** | **Day** | **Ice Thickness (m)** | **Location** | **WSC Comments** |
| 1995 | Dec. 6 | 0.47 (28) | 1 km below gauge at summer section | Complete ice cover, 23.8% of slush area at cross-section (11 readings out of 28) |
| 1996 | Jan. 4 | 0.63 (24) | 1 km below gauge | Complete ice cover, no slush |
|  | Mar. 9 | 0.75 (27) | 1 km below gauge | Complete ice cover, no slush |
|  | Apr. 16 | 0.73 (25) | 1 km below gauge | Ice cover, large open lead at gauge in middle and along right bank, very little snow cover, no slush |
|  |  |  |  |  |
|  | Dec. 11 | 0.48 (11) **a** | 1 km below gauge | Complete ice cover at gauge and throughout, no slush |
| 1997 | Mar. 12 | 0.77 (24) | - | Complete ice cover, 8.5% of slush area at cross-section (3 readings out of 24) |
|  |  |  |  |  |
| 1998 | Jan. 29 | 0.69 (19) | 5 km below gauge | Ice cover, no slush, little flow on left edge |
|  | Mar. 12 | 0.58 (23) | 1.6 km below gauge | Ice cover, 0.7 m of ice at gauge, 2.4% of slush area at cross-section (1 reading out of 23), river has a lot of flow through bridge channel at measurement site, poor velocity distribution, very low discharge, some panels with no discharge |
|  | Apr. 21 | - | - | River clear of ice except pans flowing, spare ice on west bank above confluence of Clearwater |
|  |  |  |  |  |
|  | Oct. 23 | - | 0.8 km below gauge | No ice |
|  | Dec. 15 | 0.45 (24) | 5 km below gauge | Complete ice cover, very little slush, some open leads |
| 1999 | Jan. 28 | 0.56 (22) | Below gauge | Complete ice cover, no slush |
|  |  |  |  |  |
| **Year** | **Day** | **Ice Thickness (m)** | **Location** | **WSC Comments** |
| 1999 | Mar. 11 | - | Approximately 5 km below gauge, 2 km below sawmill | Ice cover |
|  | Apr. 8 | 0.81 (20) | 10 to 12 km below gauge at winter road crossing | Ice cover, ice is rotting away, ice is saturated and candled, numerous holes, no slush |
|  | May 5 | - | - | No ice |
|  | May 7 | - | Downstream side of bridge, 5.6 km above gauge, above confluence of Clearwater | No ice |
|  |  |  |  |  |
|  | Dec. 20 | 0.40 (20) | Downstream side of MacEwan Bridge above confluence of Clearwater | Complete ice cover, ice cover very irregular, a lot of slush in cross-sections (13 readings out of 20), approximately 60 m of cross-section with slush to bottom of riverbed |
|  | Dec. 21 | - | - | Complete ice cover at gauge |
|  |  |  |  |  |
| 2000 | Dec. 13 | 0.40 (25) | Athabasca River below Fort McMurray | Ice cover, 6.1% of slush area at cross-section (3 readings out of 25) |
|  |  |  |  |  |
| 2001 | Jan. 23 | 0.54 (24) | - | Complete ice cover at gauge |
|  | Mar. 8 | 0.64 (23) | 8 km below gauge | Ice cover, some open leads, flow in 2 channels |
|  | Mar. 28 | 0.67 (24) | Approximately 8 km below gauge | Complete ice cover at gauge, water pooling on ice, cracks appearing, measured total ice thickness of 0.72 m |
|  | May 7 | - | - | No ice left |

**a** Omitted ice thickness values that are believed to be affected by slush

**b** It appears that the ice was melting on left bank

**c** Omitted ice thickness measurements affected by slush

Note: When slush was believed to affect the ice thickness measurements, a value of at least 10 cm was used to separate the readings affected by slush from the ones with no slush.