

PART B

FLOODS AND HIGH WATER EVENTS **RED AND ASSINIBOINE RIVERS, 1793-1870**

INTRODUCTION

In this section, archival reports of floods or high water conditions for the Red and Assiniboine Rivers are reviewed. All events which appear to have reached bankfull conditions or greater along some reach of either river have been included, regardless of whether serious flooding is indicated, to ensure that no possible floods have been overlooked. For comparison, the most complete existing list of historic floods (Miller and Frink, 1984) is reproduced in Table 4.

Clearly the events discussed in this section represent an enormous range of discharges, from those which are simply above-average but of no long-term importance, to floods of great magnitude. The events on the Assiniboine are included because they have generally been neglected in other historical studies, despite their potential to generate significant amounts of runoff during extreme events. The contribution of the Assiniboine becomes particularly relevant in evaluating the relative severity of the 1997 flood.

For each event, the rivers involved (Red or Assiniboine) and the season of the year (spring or summer) are listed. As in the modern record, most floods of consequence in the 19th Century occurred in the spring, but some significant summer events seem to have occurred as well. Because summer floods are unusual in comparison with the flow regime during most of the 20th Century, they are especially interesting, although probably not among the largest 19th Century events..

The entries begin with a chronological description of the event, using the original accounts. Antecedent conditions are also described, beginning with the previous autumn and freezeup period and extending through the winter to the breakup period or the beginning of the chronological account.

For Red River events, an assessment of the relative contribution of the Assiniboine is given, where sufficient information exists. This is complicated, however, by the river's geomorphological setting. At Portage la Prairie, the Assiniboine flows across an alluvial fan which elevates the channel above the surrounding terrain. Under very high water conditions, a part of the floodwaters may flow northward to Lake Manitoba, bypassing the Red River altogether, or southward into the La Salle River, joining the Red in St. Norbert 20 km. upstream of the normal junction at the Forks. There is no way of partitioning historical flows among the Lake Manitoba-La Salle-Assiniboine routes but in several floods

Year	Fargo	Grand Forks	Discharge in cubic feet per second	Comments	Primary references
HISTORICAL FLOODS					
1776	--	--	--	Stages were about 4 feet lower than during the 1826 flood at Winnipeg. However, U.S. Geological Survey (1952, p. 290) references a Mr. Nolan (1826) who stated that this flood was larger than the 1826 flood. Some evidence for this claim is given. Elevation at Winnipeg, junction of the Assiniboine and Red Rivers, is given as 760 feet by U.S. Geological Survey (1952, p. 304). It is quite likely that the river was at least as high as in 1950 (Canada Department of Resources and Development, 1953, p. 86).	Simons and King (1922, p. 52).
1790	--	--	--	Stages were about 4 feet lower than during the 1826 flood at Winnipeg. Year in which general overflow occurred (U.S. Geological Survey, 1952, p. 304).	Simons and King (1922, p. 52).
1809	--	--	--	Stages were about 4 feet lower than during the 1826 flood at Winnipeg. Year in which general overflow occurred (U.S. Geological Survey, 1952, p. 304).	Simons and King (1922, p. 52).
1815	--	--	--	Water was remarkably high, overflowing its banks to a considerable distance at Fort Daer near Pembina.	Canada Department of Resources and Development (1953, p. 87).
1824	--	--	--	Listed as one of the worst floods known along the Red River along with 1825 and 1826.	Harrison and Bluemle (1980, p. 14).
1825	--	--	--	Listed as one of the worst floods known along the Red River along with 1824 and 1826.	Harrison and Bluemle (1980, p. 14).
1826	--	--	--	Elevation at Winnipeg listed as 764 feet (p. 304). Maximum known flood at Winnipeg, stages about 15 feet above ordinary flood height (Simons and King, 1922, p. 52). Ice on river reached the extraordinary thickness of 5 feet 7 inches at Winnipeg. Harrison and Bluemle (1980, p. 14) report the flood level to be 66 feet based on the present gage datum at Pembina.	U.S. Geological Survey (1952, p. 290-303).
1851	--	--	--		Harrison and Bluemle (1980, p. 14).
1852	--	--	--	Elevation at Winnipeg listed as 762 feet (p. 304). Flood was higher by 1 or more feet than that of 1882 at and below Grand Forks (Simons and King, 1922, p. 52).	U.S. Geological Survey (1952, p. 303-304).
1853	--	--	--	No farming was done in the Red River valley near Pembina due to the floods of this year and the previous two years.	Harrison and Bluemle (1980, p. 14).
1860	--	--	--		Upham (1895, p. 56).
1861	--	--	--	This flood may have exceeded the 1897 flood. Elevations are listed for Grand Forks and Winnipeg as 830 and 762 feet, respectively.	U.S. Geological Survey (1952, p. 303-304).
1871	--	--	--	This flood was exceeded during the 1897 flood.	U.S. Geological Survey (1952, p. 305).
1873	--	--	--	This flood was exceeded during the 1897 flood.	U.S. Geological Survey (1952, p. 305).

TABLE 4: Major historical floods on the Red River (modified from Miller and Frink, 1984).

prior to the beginning of gauge records and 20th Century dyking of the lower Assiniboine, significant northward flow to Lake Manitoba has been observed (for a review of these observations, see Canada Department of Agriculture, 1952).

Wherever possible, an attempt is made to infer relative magnitudes for the events on the Red to permit them to be rank ordered and compared with the modern record. The basis for these estimates is slender; in most cases, the only information available is whether the river seems to have been out of its banks (and thus exceeded channel capacity) and a sense of the extent of the flooded area. To translate this into usable estimates of magnitude, the descriptions have been compared with the areal extent of flooding during selected modern floods of differing severity. Channel capacities and discharge data for several locations on both rivers for a variety of modern floods are given in Tables 5 and 6. Figure 8 shows the flooded areas for a range of magnitudes and provides a sort of template against which the historical descriptions can be compared. In estimating these magnitudes, an attempt has been made to err on the conservative side.

Because of the highly subjective nature of the sources and their evaluation, the historical materials are given in as much detail as is practicable, to enable others to arrive at their own, and possibly differing, interpretations directly from the observers' comments. An additional reason for the inclusion of abundant original materials is that in many cases, the nature of the event can only be appreciated by the sense that is conveyed by repeated statements by differing observers or over a period of time. All references which cast light on the actual floods have been included; the others have been selected for their information value and to illustrate the sequence of events. It should be emphasized, however, that as extensive as the citations are, they represent only a small fraction of the entire database. Full references for all archival materials are included within the entry for each year. Most are from the Hudson's Bay Company Archives or Provincial Archives of Manitoba (now amalgamated into a single Archive). The references contained in the Hudson's Bay collection are prefixed by HBCA, followed by the archival reference number; those in the Provincial Archives of Manitoba are prefixed by PAM.

The interpretation of these descriptions is complicated by a number of factors beyond the imprecise nature of the descriptions themselves. Gerard and Karpuk (1979) introduced the concept of "perception stage" which they defined as

the stage above which it is estimated the source would have provided information on the flood peak in any given year... The perception stage for archival sources such as journals, newspapers... is the minimum water level that would have called for comment. (Gerard and Karpuk, 1979, p. 1155).

This "perception stage" varies with the individual according to such factors as proximity to the river, the degree of danger or inconvenience, the length of the person's experience in the region, access to information, etc.

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TABLE 4: Major historical floods on the Red River (modified from Miller and Frink, 1984).

	Emerson	Ste. Agathe	Below Forks
Channel capacity	38,000 ¹	69,000 ¹	69,000 ¹
1826	----	----	225,000
1852	----	----	165,000
1861	----	----	125,000
1916	46,000	----	86,000
1948	52,000	----	75,000
1950	94,000	----	108,000
1966	66,000	66,000	88,000
1974	43,000	88,000	96,000 ²
1979	92,000	72,000	107,000 ²
1996	72,000	78,000	108,000 ²
1997	139,000	130,000	162,000 ²
¹ Canada Department of Resources and Development, 1953. ² Natural discharge (Manitoba Water Resources)			

	Portage la Prairie	Brandon	Russell
Channel capacity	15,000 ¹	8,200 ²	1,500 ¹
1882	----	40-48,000 ⁴	----
1904	----	28-32,000 ⁴	----
1923	22,100	23,000	14,500
1974	32,000 ³	10,900	2,500
1976	53,000 ³	22,100	2,900
¹ Undyked capacity (Mudry et al., 1983) ² Manitoba Water Resources ³ Discharge at Holland ⁴ Canada Department of Agriculture, 1952			

Note on Units: Because the Imperial unit for discharge (cubic feet per second) strongly engrained in the literature on Red River floods (including the reporting of discharge during the 1997 flood) and in the minds of the local hydrologic community, this unit will be used in this report.

On the Red River, the definition of “perception stage” is made more problematic by a number of factors relating to the nature of major floods, the pattern of settlement in the region, and the information which would have been available to local observers (mostly residents of the Red River Settlement):

- C During much of the period being considered here, the only documents in the Red River valley were from the vicinity of the Forks and to a lesser extent, Pembina. On the Assiniboine, the furthest downstream site which left written records was Brandon House, and above that, Fort Pelly. Communication among these was infrequent at best and thus the advance warning of flooding and information about such factors as the winter snowpack, areal extent of spring precipitation, etc. available to residents of the Forks region was negligible.
- C In the largest events, floods form in the United States portion of the basin and the crest travels northward. Because of the very gentle downstream gradient, the time from the beginning of snowmelt to the peak stage in the vicinity of the “Forks” is long, typically several weeks. The melt season is usually well-advanced or even completed in the vicinity of modern-day Winnipeg before the magnitude of the impending flood could be perceived. Thus local descriptions that the prairies near the Red River Settlement were almost snow-free, for example, are not inconsistent with a later description of a major flood.
- C The perspective of the great majority of observations was from the Red River Settlement whereas the causes of the flood may have been principally due to conditions in the upper basin of present-day North Dakota and Minnesota, far from the Red River Settlement. Consequently, conditions as they were described around the Settlement may be a poor reflection of the flood potential.
- C The pattern of occupation in the Red River Settlement, and particularly the locations of those who left written documents, would have placed particular restrictions on the “perception stage” of observers. Only floods of 1950 magnitude or larger would have extended flooding as far as the Settlement and have had any direct consequences for its inhabitants. In 1950, the flooded area of Winnipeg (Figure 9) widened southward from a narrow apex in the vicinity of the Forks. Whereas the area to the south of the Forks was extensively flooded, only a narrow corridor for a few miles north of the Forks was threatened. In the Red River Settlement, virtually all of the observers who left written documents lived on the west bank of the river north of the Forks and after the opening of Lower Fort Garry in 1831, many observers lived outside of the area directly threatened by even the largest floods. Consequently, it is conceivable that floods of 1948-1966 magnitude could have occurred with little commentary from those in the region of the Forks, other than perhaps a comment that the river is high. The occupants of the river banks in the Upper Settlement parishes of St. Boniface, St. Vital, St. Norbert, Ste. Agathe and further south would certainly have been affected by floods of 1950 or

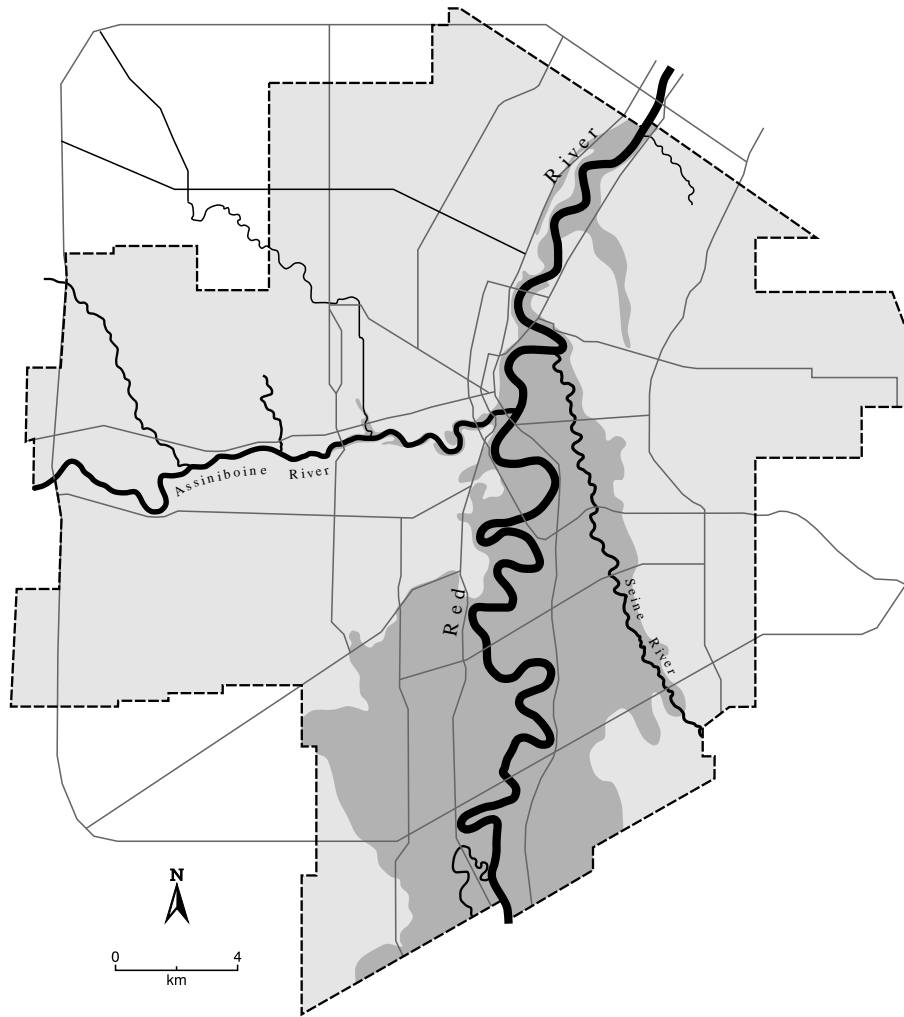


FIGURE 9: Flooded area, Winnipeg, 1950 (including dyke-defended areas of St. Boniface and St. Vital)

possibly even 1966 magnitude but they left no written documents. On the Assiniboine, the river downstream of present-day Headingley becomes progressively entrenched and flooding upstream of White Horse Plain might have gone unrecorded by observers in the Settlement.

- C The residents of the Red River Settlement had only their own situation to worry about, in contrast to 20th Century floods after extensive settlement of the Valley when factors such as evacuations, disruption of communications, concerns about loss of agricultural production, widespread property damage, etc. became more prominent. In other words, except in the very largest events, there was little reason for the inhabitants of the Settlement to be concerned about overbank conditions to the south, almost regardless of magnitude.

REFERENCES:

- Canada Department of Agriculture, 1952. Report, Conservation and Flood Control, Assiniboine River, Appendix 1, Hydrologic Study, Volume II. Prairie Farm Rehabilitation Branch, Regina, Saskatchewan.
- Canada Department of Resources and Development, 1953. Report on Investigations into Measures for the Reduction of the Flood Hazard in the Greater Winnipeg Area, Appendix C, Flood Runoff Analysis. Red River Basin Investigation, 142 p.
- Gerard, R. and E.W. Karpuk, 1979. Probability analysis of historical flood data. Journal of the Hydraulics Division, American Society of Civil Engineers, HY9 (September), 1153-1165.
- Mudry, N., G.H. MacKay and V.M. Austford, 1983. Flood control and flow regulation problems on the Assiniboine River, in B. Mitchell and J.S. Gardner (eds.), 1983. River Basin Management: Canadian Experiences. Department of Geography, University of Waterloo, 297-309.
- Miller, J.E. and D.L. Frink, 1984. Changes in response of the Red River of the North basin, North Dakota-Minnesota. United States Geological Survey, Water-Supply Paper 2243, 54p.

1790

Although a flood in 1790 is listed in most compilations, the only source reference to the event is by Alexander Ross:

The Indians likewise mention a flood about the year 1790. (Ross, A., 1856 (Reprinted 1957). The Red River Settlement: Its Rise, Progress, and Present State. Ross and Haines, Minneapolis, Minnesota, p. 107)

No archival records exist for this year to confirm or deny the event.

1797

ASSINIBOINE

Spring

The upper Assiniboine was reported as very high in May, 1797, in the Brandon House Journal.

April 27: ...water rising fast in the [Assiniboine] river and the ice breaking away in small pieces. (Brandon House Journal, HBCA B.22/a/4 1796/97)

April 30: ...the [Assiniboine] river open water very high. (ibid)

May 7: ...the water is higher in the [Assiniboine] river than ever any man of the oldest time has seen it...[it has risen?] 10 feet perpendicular where there was not one drop last year. (ibid)

May 18: Cannot get the Boats repaired and all the houses filling with water. (ibid)

ANTECEDENT CONDITIONS:

The Brandon House and Fort Pelly Journals contain references that the water level in the Assiniboine was very low in the fall of 1796:

Sept. 8: leading almost all day, hard work, water low making the Journey very disagreeable. (ibid)

Oct. 20: the Batteaux was Stopt by Ice and the Shallowness of the Water in the [Assiniboine] river.... (Fort Pelly Journal B.159/a/3 1796-97)

Winter appears to have set in relatively early:

Oct. 21: It snowed and froze so much Last night that it set the [Assiniboine] River fast. (ibid)

Nov. 12: ...am sorry you had such a troublesome Journey in the fall, owing to the early setting in of the [Assiniboine] River She filled with Ice here [Brandon House] the 24th of Oct. but was not totally set fast before the 12th of Nov. since which time we have had much snow and very severe weather. (Letter, James Sutherland [Brandon House] to John Sutherland [Fort Pelly], dated Jan. 3, 1797, in Fort Pelly Journal, op. cit.)

Daily records in both journals report numerous heavy snowfalls throughout the winter, with periodic thawing beginning in mid-March. Heavy snow fell in April after the water began rising on April 13 and during the flood period:

April 15: As bad a day as ever was seen in this or any other Country...it fell more than a foot of snow. (Brandon House Journal, op. cit.)

April 16: heavy snow till noon, snow 18 inches deep in the yard. (ibid)

April 18: More snow in the afternoon, cold disagreeable weather, the earth loaded with snow, no sign of the Rivers braking. (ibid)

April 19: Snowy Day...I left this place this day 12 months [ago] to go down to Brandon House, the [Assiniboine] River being open six Days befor, but no sign of her opening this year yet. (ibid)

April 21: Rainy weather all day. (ibid)

April 22: heavy rain all day. (ibid)

April 23: Very cold weather with snow last night, scarcely thaw'd on the hight of the day. (ibid)

Cold weather continued through the first three weeks of May, becoming generally "fine" thereafter.

SUGGESTED MAGNITUDE:

Little can be said about flood magnitude other than it was overbank at Brandon.

1798

RED

Spring

Independent comments on this flood are given in journals by Thomas Miller at Red River and Charles Chaboillez at Pembina:

April 4: the [Red] River turning very Weak and the water Rising very Fast. (Journal of Transactions by Thos. Miller at Red River B.235/a/1 1797/1798)

April 8: Rains very hard all day ice driving in the [Red] River and the water Rising very high. (ibid)

April 9: The Ice in the River [at Pembina] all brook- the Water being High. (Journal of Charles Chaboillez in Payette, B.C. (ed.), 1964. The Northwest. Payette Radio Ltd., Montreal, p. 202)

April 11: ...ice driving in the River. (Miller, op. cit.)

April 12: The water [at Pembina] now very high in the night we were obliged to carry all the Goods etc. out of the Fort...the Water came up to the Floor in the night. (Chaboillez, op. cit.).

April 12: the water [at Red River] rising to a prodigious height. (Miller, op. cit.)

April 13: the water [at Pembina] still rises. (Chaboillez, op. cit., p. 202)

April 14: the water [at Pembina] still rises. (ibid, p. 202)

April 15: The Channel [at Pembina] clear. (ibid, p. 203)

April 17: The Water [at Pembina] rose a great Deal since two days-say over the square of the House and still continues a rising... (ibid, p. 203)

There are no further references to the height of the water after April 17 so it is assumed that the level began to lower shortly thereafter and did not produce an extensive overflow.

ANTECEDENT CONDITIONS:

Journals from Fort Pelly, Brandon House and Pembina report numerous and apparently substantial snowfalls throughout November. The daily entries at these posts portray the ensuing winter as unusually gentle, with few severe periods separated by many days described variously as "gentle", "thawy", "mild", "fine", etc.

Jan. 29: it has been a very mild winter here which [is] the cause I imagine the Buffalo Cows has been so Long in coming. (Fort Pelly Journal B.159a/4 1797-1798)

Feb. 28: weather as befor,-it has been the mildest weather, the 2 last Months, I ever seed since I have been in this country. (ibid)

Mild temperatures continued into March, accompanied by several closely-spaced and substantial snowfalls, eg.

Mar. 9: Wind East with the greatest fall of snow I saw this year. (Brandon House Journal, HBCA, B.22/a/5 1797/ 98)

These storms left a covering of deep, wet snow:

Mar. 14: Our journey [between the Forks and Pembina] for the last eight days has been wretched travelling; the Snow was full three feet deep; the ice of the River had much water on it, from the mild weather with small showers of rain, or wet snow. (Alexander Henry in Coues, I. (ed.), 1965. The Manuscript Journals of Alexander Henry and of David Thompson. Ross and Haines Inc., Minneapolis, Minnesota, p. 185)

Thawing began in earnest in the last week of March, with rain commonly reported:

Mar. 27: The snow was thawing and wet; very bad walking. (ibid, p.189)

Mar. 29: Rained all night & still a Raining [at Pembina]. (Chaboillez, op. cit., p. 199)

Mar. 29: Rain continued until noon; The Snow was now so mixed with water that we could not proceed. In the evening Rain came on and continued. (Henry, op. cit., p. 189)

Mar. 30: Showers of Hail and Sleet. With the Guide went to examine the country before us: which appeared like a Lake, with water. (Brandon House, op. cit.)

Mar. 31: Here [at Red Lake River] a few days has thawed three and a half feet of heavy snow. (David Thompson, in Henry, op. cit., p. 190)

This early spring led to the Red River at the Forks opening on April 7, a very early date in a 19th Century context. (Miller, op. cit.).

STATE OF THE ASSINIBOINE:

Journals from Fort Pelly throughout the flood period do not mention the state of the Assiniboine and it is assumed that it was not unusual. This inference is supported by the observation at Fort Pelly on May 6 (three weeks after the flood period) that the "the [Assiniboine] River [is] very Shoald." (Fort Pelly Journal B.159/a/4 1797-1798).

SUGGESTED MAGNITUDE:

The river seems to have been overbank at Pembina but does not appear to have inundated a large area and there is no indication that it was overbank at Red River in the vicinity of the Forks. It may have been comparable to 1948.

1801

ASSINIBOINE

Spring

This high water event is reported from the upper Assiniboine.

April 16: the [Assiniboine] river is quite free from ice here & the water seems to be high. (Archibald McLeod in Gates, C.M. (ed.), 1965. *Five Fur Traders in the Northwest*. Minnesota Historical Society, St. Paul, Minnesota, p. 173)

May 10: Still raining, & cold the water [in the upper Assiniboine] is remarkably high, & all the low ground hereabout is entirely deluged. (ibid, p. 179)

May 11: Still very bad weather, the water rising very fast. (ibid, p. 179)

May 12: A Cold cloudy day, Snowed & rained a little all day...the water [in the upper Assiniboine] is extremely high, and far from decreasing it still increases. (ibid, p. 179)

May 14: ...Jacco...reports the water is so excessively high that all the plains & in particular those bordering on Lakes and rivers are overflowed which is far from being favourable for the beaver hunt, the water has risen 3 feet perpendicular since yesterday...the Rivers are so high they could not cross them. (ibid, p. 180)

May 17: We sett off as soon as it was light to follow the people who could not cross at the usual crossing place of the S. River the water being so extremely high that all the points were entirely under water, & never did I see such heavy roads. (ibid, p. 180-181)

May 19: ...the men tell me the Houses at Swan River had two feet water on their floors, when the water rose, & that they had not a Dry bit of ground, within three or four leagues of the Fort all around the overflowing of the River having laid all underwater [on upper Assiniboine]. (ibid, p.182).

May 20: ...the [Assiniboine] River still overflows the banks, & there is water on the House floor as yet. (ibid, p. 182)

May 22: ...sent people to fish. tho' the water is so high that they have very little success. (ibid, p.182)

Although these references are all from the upper Assiniboine, there is some evidence that stages on the Red were also high (although apparently not overbank). At Pembina, Alexander Henry reported:

April 18: drowned buffalo still drifting down the river. (Alexander Henry in Coues, I. (ed.), 1965. *The Manuscript Journals of Alexander Henry and of David Thompson*. Ross and Haines Inc., Minneapolis, Minnesota, p. 175)

The observation of "floating buffalo" was not uncommon and does not imply flooding, but it does suggest that water levels were sufficiently high to present problems. Entries by Henry in 1802 suggest that stages had been notably high the previous year:

May 9, 1802: It required 90 fathoms of net to cross the [Red] river as the water is high, and the strong current forms a great bend. (ibid, p. 197)

May 11, 1802: Water falling it had risen almost as high as last year. (ibid, p. 197)

ANTECEDENT CONDITIONS:

The fall of 1800 began early with reports of severe cold and snow in October at Pembina and Brandon House:

October 14: sharp weather [Assiniboine] river full of driving ice. (Brandon House Journal, HBCA B.22/a/8 1800-01)

October 16: It began to snow and blow hard from the N...The snowstorm increasing...it snowed all night [at Pembina]. (Henry, op. cit., p. 120)

Subsequent milder weather seems to have delayed permanent complete freezeup of both rivers until mid-November. Mild conditions in late November continued throughout most of December and January.

January 22: ...the Buffaloe are going further off very fast owing to the extraordinary mildness of the weather, people go days journeys without mittens so very fine is the weather. I took a ride on horseback today of upwards of an hour without gloves & felt not the least cold. (McLeod, op. cit., p. 154)

Heavy snow fell on the upper Assiniboine region in late January-early February but melted with subsequent warm weather.

March 5: The snow being entirely melted [at Pembina], and the ground thawing about noon, renders it very muddy, at times over the shoes. (Henry, op. cit., p.171)

March 7: As fine a day as the two preceding. all the Ice & Snow is entirely melted in the Fort [upper Assiniboine]. (McLeod, op. cit., p. 162)

March 14: As fine a day as yesterday...the snow is absolutely quite gone the other side of Mr. Perignes' Fort [on upper Assiniboine]. (ibid, p. 164)

March 14: The ice [on the Red at Pembina] is rising in a body, in consequence of the melting snow. Being apprehensive the water would come into the fort and overflow the property. (Henry, op. cit., p. 173)

March 19: The river continues to rise and is now only a few feet from the gate. Got out my canoes...and placed them in the fort ready to load, to save ourselves in the plain in case the water rises suddenly. (ibid, p. 173)

March 21: My anxiety about the water increasing, I set the men to work. (ibid, p. 173)

Rain and snow fell on several days in late March and a change to colder weather

caused it to begin to accumulate again.

March 30: Snowed constantly from ten o'clock A.M. until the evening when it ceased & the weather became much colder [on upper Assiniboine]. (McLeod, op. cit., p. 168)

March 30: Rain broke up the ice...The water is falling, leaving us an ugly, dirty bank, covered with nearly a foot of slime and mud; had it risen two feet more, we should have had it in our houses. A heavy fall of snow. (Henry, op. cit., p. 174)

April 5: The plains [around Pembina] have been clear of snow and dry, we had two feet of snow and the river nearly froze over again. We brought our baggage into the fort. (ibid, p. 174)

The elevation of the upper Assiniboine to flood stage seems to have been the result of frequent and significant precipitation in the second half of April and the first weeks of May. McLeod reported rain or snow on 7 days from April 15 to April 30 and on 14 days from May 1 to May 18.

SUGGESTED MAGNITUDE:

No estimate.

1806

RED

Summer

This flood on the Red occurred during the summer and is known only from Alexander Henry's journal at Pembina and vicinity.

June 6: Water [on the Red] extraordinarily high and continued storms which breed an incredible number of mosquitoes. (Alexander Henry in Coues, I. (ed.), 1965. The Manuscript Journals of Alexander Henry and of David Thompson. Ross and Haines Inc., Minneapolis, p. 281)

July 7: The travelling was tedious from the heavy rains which made ugly and laborious walking for our horses...In many places we found several feet of water, every little hollow formed a pond, and every rivulet appeared like a river. Our horses often sunk up to their knees in mud, and at times had water up to their bellies...The water [in the Red] was very high...They attempted to go there [to the east side of the Red] but found the country almost entirely overflowed. (ibid, p.285-286)

Aug. 13: This summer's extraordinary rain, having overflowed the low country, has caused the buffalo to resort to the high lands southward. (ibid, p. 420)

Aug. 14: We found a great quantity of water, and for a long distance our horses had it up to their bellies...This road used to be firm and good but the continued rain of the summer has altered the face of almost everything, and there is now mud and water knee deep [between Escarpment and Pembina Post]. (ibid, p. 421)

Peter Fidler's journal entry for May 16, 1820, confirms the exceptionally high water in the Assiniboine basin in the summer of 1806:

found the East end of our House [at Fort Dauphin] 4 feet 9 1/2 Inches higher than the water in the Lake-the Summer 1806 it was all covered with water. (HBCA B.51/a/2 1819/1820)

ANTECEDENT CONDITIONS:

Henry's journal contains only scattered references to weather during the winter of 1805-06. It seems to have been cold and snowy, particularly in the late winter and early spring.

Mar. 17: All my people laid up snowblind with sore eyes occasioned by the continual storms and drift. (Henry, op. cit., p. 274)

April 13: Dreadful snowstorms. (ibid, p. 275)

April 23: Ice broke up in Red River [at Pembina]. (ibid, p. 275)

May 1: Great banks of snow still lying on the edge of the woods. This certainly has been the most extraordinarily cold and stormy weather I have ever experienced on Red River. (ibid, p. 275)

May 4: A deluge of rain; our stores flooded and the property damaged. (ibid, p. 275)

Henry's descriptions of the flood in the summer indicate that it was caused by the "continued storms". "heavy rains", "extraordinary rain", etc. from June through August.

STATE OF ASSINIBOINE:

There is no direct reference to the Assiniboine in Henry's reports but Peter Fidler's description of the high level of Lake Dauphin (4 feet 9 1/2 inches higher than in 1820) indicates that the Assiniboine basin probably received similarly heavy rainfall, particularly since Fidler remembered and chose to mention the summer of 1806 fourteen years later.

SUGGESTED MAGNITUDE:

Henry's description indicates that the river was over its banks and suggests that the inundated area extended for some distance beyond the river. There are no modern counterparts for this magnitude of summer flow but a level similar to or smaller than the spring flood of 1948 seems appropriate.

1809

A flood in this year has appeared on most previous compilations, based on a single comment by Alexander Ross:

...the natives now on the ground affirm that in 1809 the water rose unusually high. (Ross, A., 1856 (Reprinted 1957). *The Red River Settlement: Its Rise, Progress, and Present State*. Ross and Haines, Inc., Minneapolis, Minnesota, 419p, p. 107)

There is no mention of the event by observers at Pembina during April and May of 1809 whose only diary entries relating to the river were:

April 14: The ice [in the Red] took a start. (Journal of Occurrences at Pabina River, 1808-09 B. HBCA 160/a/1 1808/1809)

April 15: Raining. (ibid)

April 16: the [Red] River entirely clear of ice. (ibid)

May 23: Wind and rain which obliged us to stop the whole Day. (ibid)

On April 10, the Brandon House Journal reported on conditions in the Assiniboine basin:

April 10: not...able to get the least thing hauled home for want of snow. (Brandon House Journal, HBCA B.22/a/16 1808-1809)

Thus it concluded that a flood in this year was very unlikely and that the event remembered by the "natives on the ground" probably refers to the 1811 event discussed below.

1810

ASSINIBOINE

Spring

The only evidence for this event comes from a few entries in the Brandon House Journal.

April 19: its not possible to burn Charcoal as the Bluff is overflowed with water. (Brandon House Journal, HBCA B.22/a/17 1809-1810)

April 23: the Water [in the Assiniboine] is extremely high. (ibid)

April 26: Sent John Easter and Thomas Favil to the Sourie to dart Sturgeon they returned in the Evening and say's the Water is too high. (ibid)

June 1: they returned and complains of the Water [in the Souris] being yet too high for darting [sturgeon]. (ibid)

ANTECEDENT CONDITIONS:

No information.

SUGGESTED MAGNITUDE:

No estimate.

1811

RED

Spring

The only references to this event are in two letters written from York Factory in October of 1811 which, although having different authors, would probably have relied on common sources of information.

An extraordinary inundation occurred this spring on the South or Pembina branch of the Red River, which overflowed its banks to the extent of 4 miles on each side of the river into the Country while the Northern branch was not more swollen than usual. This flood was occasioned by the melting of snows which fell last winter towards the source of that [river] uncommonly great. Such a circumstance has not been before in the memory of the oldest Indian, & perhaps may happen again. (Letter, Miles MacDonell [York Factory] to Lord Selkirk, Oct. 1, 1811, [Note F] Sessional Papers [No. 12], British House of Commons, p.CXCV).

You will learn with great mortification that the S. Branch or proper Red River was so overflowed that Mr. Henry's House in the Pabina was under water for 28 days the bed of the River generally 5 feet deep was increased to 55 & the Country on both sides deluged forming a Lake thro' its whole Course of about 8 miles wide instead of being only 100 & oftener only 50 yards in breadth. (Letter, William Auld to A. Wedderburner, dated York Fort, Oct. 5, 1811, Selkirk Papers, vol. 1, p.86-87, PAM M171).

Given the apparently extreme (and thus memorable) nature of this flood, the vagueness of Ross' sources on the 1809 event, and the lack of commentary by observers at Pembina in that year, it seems most likely that this is the event being reported on as 1809 in Ross' book and followed by other compilations.

ANTECEDENT CONDITIONS:

MacDonell's letter attributes the flood to very heavy winter snowfall which fell in the southern part of the basin (at least). Little other useful information is available to assess the flood-forming conditions, other than two reports of significant rain at Brandon House in late April and mid-May:

April 29: a bad day Continually raining and blowing. (Brandon House Journal HBCA B.22/a/1 1810/1811)

May 16: a bad day Continually raining. (ibid)

STATE OF ASSINIBOINE:

Both sources clearly state that the flood was on the Red River only and Auld's letter indicates specifically that the Assiniboine (North Branch) was "...not more swollen than usual.", implying that it was probably less than bankfull.

SUGGESTED MAGNITUDE:

The descriptions indicate an exceptionally large flood. The extent of the flooded area was described as 8 miles in breadth and the total rise as about 50 feet. By comparison, the 1950 flooded width was about 8 miles at Emerson/Pembina and somewhat less at many places to the north and south (except near Morris); the total rise in 1979 was 39 feet and in 1997 was 40 feet. Even if the total rise was considerably exaggerated, this event must have exceeded 1950/79 and may have approached 1861.

1815

RED

Spring

The evidence for a significant flood in this year is from the following entries in Peter Fidler's Journal.

May 19: Water remarkably high in Red River overflowing its banks to a considerable distance, the water at Fort Daer rose to within 4 inches of the Upper part of the Door within the fort. The water rather lower than usual on the North Branch and damed up above the forks above 10 miles, tho' the river has a considerable descent, very deep snow in Red River this winter & most all the Horses died in consequence. (Peter Fidler's Journal, HBCA B.235/a/3 1814/1815)

May 26: The water is very high in the Red River and has not yet begun to abate it is about 10 feet below the bank at the settlement on the N. side, but into the woods on the other side. Water so high that very few fish are caught. (ibid)

June 4: the water falling fast daily-very few leaves have yet made their appearance. Indians arrived from Lake Winnipeg say it is fast yet except a little water along the shore. (ibid)

June 10: water falling about five inches perpendicular daily. (ibid)

ANTECEDENT CONDITIONS:

There is some indication that the previous (1914) fall was relatively wet:

Sept. 27: Rain. (ibid)

Sept. 28: could not work from rain these two days. (ibid)

Oct. 6: water rising very fast these 5 days. (ibid)

Fidler's account of May 19 (above) indicates that there had been "very deep snow in Red River this winter & most all the Horses died in consequence."

Breakup of the Red was relatively late (although not especially unusual in a 19th Century context):

April 21: part of the [Red] river gave way at the N.W. Fort. (Journal No. 2 of Archibald McDonald. Kept at Red River Settlement, Selkirk papers, vol. 68, p. 18320)

April 22: The ice moved [in the Red] & stopped again [at Red River Settlement]. (Miles McDonell's Journal No. 4, Selkirk Papers, vol. 63, p.16993-94)

April 23: Some large openings are made in the river but the main body of ice remains yet fast. (ibid)

April 24: The Ice gave way, the snow is going fast. (McDonald, op. cit., p. 18320)

The flood peak at Pembina was very late (May 26-June 6) in the context of modern floods.

Reports from Brandon House and Peter Fidler's journal suggest that considerable rain fell during the course of the flood:

May 22: rain all night. (Brandon House Journal, HBCA B.22/a/19 1815/1816)

May 25: Thunder Lightening & rain. (ibid)

May 30: Rain fell these two days. (ibid)

May 31: Rain nearly all day. (Peter Fidler's Journal, op. cit.)

June 3: Showers, Thund. & Lightning. (Brandon House Journal, op. cit.)

STATE OF ASSINIBOINE:

Fidler's May 19 entry above indicates that the Assiniboine (North Branch) was "rather lower than usual". However, a rather different impression is given by the following entry:

November 11, 1815: The Grande Marie [at Portage la Prairie] is a beautiful part of the country. The Marie or rather Lake encircles a considerable point of land covered with Oak, Elm and Maple, when the water rises this Lake overflows and forms swamps in the low meadows which appears to have been the case last spring. (Colin Robertson's Diary, at Fort Douglas, Vol. III (1815), HBCA E/10/1)

Because this latter observation is more first-hand, it is concluded that the Assiniboine was more probably high, at least bankfull at Portage la Prairie (c. 15,000 cfs).

SUGGESTED MAGNITUDE:

Difficult to assess. The water seems to have been out-of-bank on one side of the river at least, but there is no indication that extensive areas were flooded. Discharge greater than 1948 but less than 1966 seems most likely.