Report to

THE INTERNATIONAL JOINT COMMISSION

On

THE DIVISION OF THE WATERS OF

THE ST. MARY AND MILK RIVERS

2000

Cover Photo:

St. Mary Canal above St. Mary Crossing, Montana, U.S.A. April, 2000.
Photo by Bill Streeton, Water Survey of Canada, Calgary, Alberta.

REPORT TO

THE INTERNATIONAL JOINT COMMISSION

ON

THE DIVISION OF THE WATERS OF

THE ST. MARY AND MILK RIVERS

FOR THE YEAR 2000

SUBMITTED BY

TIMOTHY GOOS

REPRESENTING CANADA

AND

WILLIAM J. CARSWELL, JR.

REPRESENTING THE UNITED STATES

March 2002

International Joint Commission
Ottawa, Ontario, and Washington, D.C.

Commissioners:

In compliance with the provisions of Article VI of the Boundary Waters Treaty of 1909 and Clause VIII(c) of your order of October 4, 1921, directing the division of the waters of the St. Mary and Milk Rivers between the United States and Canada, we are transmitting herewith a report on the operations during the irrigation season ended October 31, 2000.

Respectfully submitted,

William J. Carswell, Jr., for the
Accredited Officer of the United States

Timothy Goos
Accredited Officer of Her Majesty

SYNOPSIS

During the 2000 irrigation season the natural flows of the St. Mary and Milk Rivers were 76 percent and 25 percent, respectively, of the long-term averages.

The natural flow of the St. Mary River at the International Boundary during the irrigation season, April 1 to October 31, 2000, was 548 000 cubic decametres (dam^3) (444,000 acre-feet). Under the terms of the Boundary Waters Treaty, the Canadian share was 345 000 dam^3 (280,000 acre-feet). The total flow recorded at the International Boundary during the irrigation season was 102 percent of the Canadian allotment.

The natural flow of the Milk River at the Eastern Crossing of the International Boundary from March 1 to October 31, 2000, was 35 400 dam^3 (28,700 acre-feet). Under terms of the Treaty, the United States' allotment was 24 300 dam^3 (19,700 acre-feet). The United States received 136 percent of its allotment at Eastern Crossing, in addition to its share of St. Mary River water diverted into the Milk River by the St. Mary Canal.

The March to October natural flows of the three apportioned tributaries of the Milk River, Lodge Creek, Battle Creek, and Frenchman River, were: 0.5 percent, 18 percent, and 31 percent, respectively, of the individual long-term averages.

The annual meeting of the Field Representatives was held in Canmore, Alberta, on February 8, 2001. Mutual problems, future plans, and changes in computational procedures were discussed and a schedule of field operations for 2001 was adopted.

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INTRODUCTION

The apportionment of the waters of the St. Mary and Milk Rivers is governed by Article VI of the Boundary Waters Treaty of 1909 between Great Britain and the United States. The terms of the Treaty were further clarified by the 1921 Order of the International Joint Commission. A copy of the 1921 Order, including Article VI, is contained in Annex A of this report.

To comply with this Treaty, Field Representatives of the United States and Canada collected and compiled hydrometric data at 36 international gauging stations on a cooperative basis. An additional 30 gauging stations were operated independently by the United States or Canada to obtain data on diversions, reservoir contents, return flows and index runoff. Most of this additional information was used to improve the accuracy of natural-flow computations.

This report summarizes the year 2000 natural-flow computations, apportionment of the natural flow, unusual occurrences during the year, and procedural modifications designed to increase the accuracy of the natural-flow computations. Summary natural-flow tables are included. Detailed natural-flow computations are included in Appendix A. Daily discharge and other related data are included in Appendix B. Appendices A and B are submitted with this report under separate cover.

In accordance with the International System of Units (SI) conversion schedule adopted by the International Joint Commission, this report uses SI units first, followed by inch-pound units in parentheses. Data in tables are shown in SI units first, followed by the respective inch-pound units (for example, Tables 1 and 1A). The format for Appendices A and B of the report is SI units only. All Canadian data are collected, computed and published in SI units. The United States' data, which are collected and computed in inch-pound units, were converted to SI units using the appropriate conversions. A summary of the conversion factors is contained in Annex C.

Mr. Timothy Goos, as Accredited Officer of Her Majesty, was represented in the field by Mr. R.G. Boals, Environment Canada, Prairie and Northern Region. Mr. Robert M. Hirsch, United States Geological Survey, as Accredited Officer of the United States, was represented in the field by Mr. R.E. Davis, District Chief, United States Geological Survey, Helena, Montana. In February 2001, Mr. Hirsch designated Mr. William J. Carswell, Jr., United States Geological Survey, as his alternate as Accredited Officer of the United States. This report was prepared jointly by personnel of Environment Canada, Hydrometric Monitoring Division, and the United States Geological Survey, under the supervision of Messrs. Boals and Davis.

The annual meeting of the Field Representatives was held in Canmore, Alberta, on February 8, 2001. Mutual concerns, future plans, and changes in computational procedures were discussed and a schedule of field operations for 2000 was adopted.

ST. MARY RIVER

During the irrigation season, April 1 to October 31, Canada's share of the natural flow of the St. Mary River at the International Boundary, as stipulated by the 1921 Order, is three-fourths of the natural flow when that flow is 666 cubic feet per second (18.86 cubic metres per second) or less. Flow in excess of that quantity is divided equally between Canada and the United States. During the non-irrigation season, November 1 to March 31, the flow is divided equally between the two countries.

To comply with the above Order, representatives of both countries make twice-monthly computations of the daily natural flow of the St. Mary River during the irrigation season. If use by the United States is in excess of its share, then a delivery of an equivalent quantity of water is normally made to Canada at the earliest opportunity. Regular interim reports of these computations are sent to all agencies involved in the water use and management of the flow of the St. Mary River. The interim reports keep these agencies informed as to the quantity of water that is available and the status of apportionment.

Tentative computations and interim reports are not made during the non-irrigation season when use by the United States is limited to storage in Lake Sherburne. The flow into Lake Sherburne is considerably less than 50 percent of the natural flow. Occasionally, water is diverted into the St. Mary Canal during the non-irrigation season, necessitating additional computations.

Lake Sherburne, the only storage reservoir within the St. Mary River basin in the United States, is used to store part of the United States' share of flow for later diversion to the Milk River. This water, which passes through Canada, is used by the United States for irrigation in the eastern portion of the Milk River basin.

Storage in Lake Sherburne (station 05AE036) was 46 300 dam^3 (37,500 acre-feet) on October 31, 1999. A strong storm in early November caused severe erosion damage to the dam and required the lake elevation to be lowered until repairs were made. Lake storage decreased to 26 500 dam^3 (21,500 acre-feet) on December 23, when releases were ended after repairs had been made. Storage increased to 34 800 dam^3 (28,200 acre-feet) on March 20, 2000, when the 2000 irrigation season releases began. Maximum storage was 56 800 dam^3 (46,000 acre-feet) on July 4, 2000 and storage decreased to 10 800 dam^3 (8,760 acre-feet) by the end of the irrigation season on October 31, 2000.

Water was diverted from the St. Mary River into the Milk River via the St. Mary Canal from March 23 through September 23, 2000. The total flow recorded at the gauging station on the St. Mary Canal at St. Mary Crossing (station 05AE029) was 220 000 dam^3 (178,000 acre-feet). Any seepage from the canal between the point of diversion and the crossing of the St. Mary River is assumed to return to the river and eventually become available to Canada.

The computed natural flow of the St. Mary River at the International Boundary from November 1, 1999 to October 31, 2000 was 706 000 dam^3 (572,000 acre-feet) of which 548 000 dam^3 (444,000 acre-feet) occurred during the irrigation season, April 1 to October 31, 2000. For the irrigation season, Canada's and the United States' shares were 345 000 dam^3 (280,000 acre-feet) and 204 000 dam^3 (165,000 acre-feet), respectively. A total discharge of 350 000 dam^3 (284,000 acre-feet) was recorded at the International Boundary, which was 102 percent of the Canadian share. The computed natural flow during the irrigation season was 76 percent of the average of the previous 97 years of record.

Deficit deliveries were recorded in 4 of the16 division periods during the 2000 irrigation season. Deficits were refunded by the end of September.

The division of St. Mary River natural flow is summarized in Tables 1 and 1A and Figure 1, which follow. The detailed computation of the natural flow is given in Table 6 and the historical summary is given in Table 7 of Appendix A.

Table 1: Summary of St. Mary River Division for 2000*
Quantities in Cubic Decametres

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	CANADA'S SHARE	RECEIVED BY CANADA	RECEIVED BY CANADA	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 15	5,547	2,773	4,292	1,519	
MAR 16 - MAR 31	3,691	1,846	5,470	3,624	
APR 1 - APR 15	13,675	10,257	9,563		694
APR 16 - APR 30	37,033	24,544	24,242		302
MAY 1 - MAY 15	50,701	31,459	28,049		3,410
MAY 16 - MAY 31	80,325	46,680	46,976	296	
JUNE 1 - JUNE 15	79,201	45,710	46,015	305	
JUNE 16 - JUNE 30	100,025	56,121	58,353	2,232	
JULY 1 - JULY 15	53,008	32,612	32,771	159	
JULY 16 - JULY 31	38,821	25,927	26,868	941	
AUG 1 - AUG 15	24,778	18,204	18,634	430	
AUG 16 - AUG 31	14,041	10,530	10,955	425	
SEP 1 - SEP 15	14,038	10,527	10,237		290
SEP 16 - SEP 30	15,558	11,669	13,252	1,583	
OCT 1 - OCT 15	16,170	12,128	12,824	696	
OCT 16 - OCT 31	10,906	8,178	11,007	2,829	
TOTAL	548,280	344,546	349,746		

* This is a summary of data from Table 6, Appendix A.

Note:

Canadian share of St. Mary R. waters deficit outstanding as of May 31, 2000: 4,110 dam^3 (3,332 acre-feet) (1,680 cfs-days)

USA share of Milk River waters outstanding as of September 30, 2000: 1,379 dam^3 (1,118 acre-feet) (564 cfs-days)

Allowable deficit carryover from March 1 to May 31, as per Letter of Intent respecting St. Mary- Milk Rivers Streamflow Transfers, is 4900 dam^3 (2,000 cfs-day) (3,970 acre-feet)

Table 1A – Summary of St. Mary River Division for 2000*

Quantities in Acre-Feet

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	CANADA'S SHARE	RECEIVED BY CANADA	RECEIVED BY CANADA	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 15	4,497	2,248	3,480	1,231	
MAR 16 - MAR 31	2,992	1,497	4,435	2,938	
APR 1 - APR 15	11,086	8,315	7,753		562
APR 16 - APR 30	30,023	19,898	19,653		245
MAY 1 - MAY 15	41,103	25,504	22,739		2,765
MAY 16 - MAY 31	65,120	37,844	38,084	240	
JUNE 1 - JUNE 15	64,208	37,057	37,304	247	
JUNE 16 - JUNE 30	81,090	45,497	47,307	1,809	
JULY 1 - JULY 15	42,974	26,439	26,567	129	
JULY 16 - JULY 31	31,472	21,019	21,782	763	
AUG 1 - AUG 15	20,088	14,758	15,107	349	
AUG 16 - AUG 31	11,383	8,537	8,881	345	
SEP 1 - SEP 15	11,381	8,534	8,299		235
SEP 16 - SEP 30	12,613	9,460	10,743	1,283	
OCT 1 - OCT 15	13,109	9,832	10,396	564	
OCT 16 - OCT 31	8,842	6,630	8,923	2,293	
TOTAL	444,491	279,324	283,540		

* All values are conversions of data from Table 1. Totals and shares may not add or subtract exactly as a result of rounding.

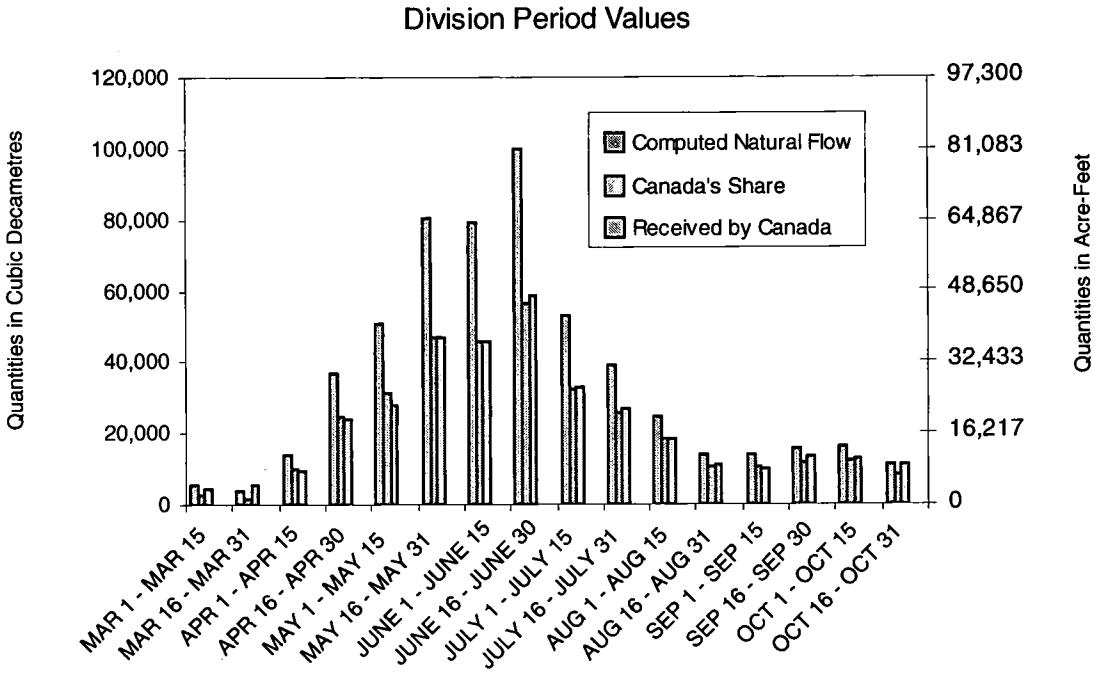
Note:

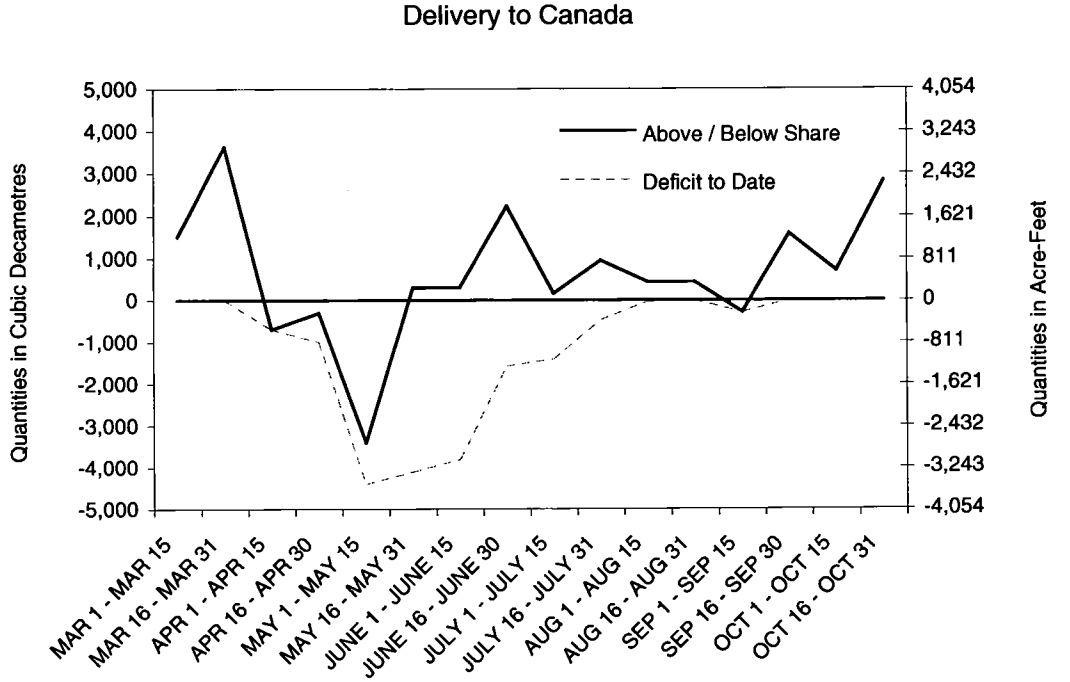
Canadian share of St. Mary R. waters deficit outstanding as of May 31, 2000: 3,332 acre-feet (4,110 dam^3) (1,680 cfs-days)

USA share of Milk River waters deficit outstanding as of September 30, 2000: 1,118 acre-feet, (1,379 dam^3) (564 cfs-days)

Allowable deficit carryover from March 1 to May 31, as per Letter of Intent respecting St. Mary- Milk Rivers Streamflow Transfers, is 3,970 acre-feet (4,900 dam^3) (2,000 cfs-day).

Figure 1. St. Mary River Division, 2000





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MILK RIVER

During the irrigation season, April 1 to October 31, the United States' share of the natural flow of the Milk River at the Eastern Crossing of the International Boundary, as stipulated by the 1921 Order, is three-fourths of the natural flow when that flow is 666 cubic feet per second (18.86 cubic metres per second) or less. Flows in excess of that quantity are divided equally between the United States and Canada. During the non-irrigation season, November 1 to March 31, the entire flow is divided equally between the two countries.

Prior to the mid 1970's, uses of the natural flow of the Milk River by Canada and the United States were assumed to be less than their respective shares and no formal apportionment was made. By 1977, it became apparent that the increasing numbers of sprinkler irrigation systems were capable of using all of the natural flow for long periods of time. Consequently, a more comprehensive natural-flow computation and water-division procedure was developed and has been used since 1985. The revised computation procedure includes an approximate accounting of irrigation consumptive uses in both countries, and the inter-basin transfer of water in Canada. An additional refinement was made in 1988 when F.I. Morton's evapo-transpiration model replaced the adjusted pan evaporation method in the natural-flow computations.

Data required for Morton's model is resource intensive. The equipment used to collect the data is highly specialized, less than robust, and located in a remote area. Data collected at the evapo-transpiration monitoring site near Milk River, Alberta needed frequent supplementation from the Onefour, Alberta pan evaporation site due to equipment malfunction. This coupled with the fact that the analysis program required extensive re-writing to port it from the obsolete DEC-VMS computer operating system suggested that alternative should be investigated.

Data from the results of Morton's model were found to have a strong linear correlation with the Onefour, Alberta, Class - A evaporation pan results. Therefore, for the year 2000, evapo-transpiration was estimated using the Onefour pan evaporation data as an index of Morton's model results.

During 2000, the United States' and Canada's respective estimated consumptive uses were 3830 dam^3 (3,100 acre-feet) and 3930 dam^3 (3,190 acre-feet). An inter-basin transfer of 50 dam^3 (41 acre-feet) from Verdigris Coulee near the Mouth (station 11AA038) was credited to the Canadian consumptive use.

The computed natural flow of the Milk River at the Eastern Crossing of the International Boundary from March 1 to October 31, 2000 was 35 400 dam^3 (28,700 acre-feet). This flow was 25 percent of the average computed natural flow of the previous 88 years of record. It is important to note, however, that natural-flow computations prior to 1985 did not account for consumptive use. Consequently, natural-flow values after 1985 are not directly comparable with natural flows of previous years. The respective shares of the United States and Canada were 24 300 dam^3 (19,700 acre-feet) and 11 100 dam^3 (9,000 acre-feet). The United States received 136 percent of its allotment at Eastern Crossing, in addition to its share of St. Mary River water diverted into the Milk River by the St. Mary Canal.

Deficit deliveries were recorded in 6 of the 16 division periods during the irrigation season. By September 30, the deficit outstanding for the United States share of the waters of the Milk River was 1 380 dam^3 (1,120 acre-feet). At present Canada does not have the facility to store and release water into the Milk River Basin. Deficits are made up by transfer of Canada's share of St. Mary River water if excess capacity exists both in the stream and in the American St. Mary Canal, or as provisioned for in the 1991 Procedures for the Division of the Waters of the St. Mary and Milk River: September 30 deficits on the Milk River can be equalized against May 31 deficits outstanding on the St. Mary River, up to 2,000 cfs-days (4 900 dam^3).

For the year 2000, Canadian share of St. Mary River waters deficit outstanding as of May 31, 2000 was 4 110 dam^3 (3,330 acre-ft) (1,680 cfs-days), since this amount was greater than the Canadian deficit to the United States for the Milk River on September 30, 2000, i.e., 1 380 dam^3 (1,120 acre-feet) (564 cfs-days), a balance of deficits was applied so that no deficits remained by the end of the irrigation season.

The division of Milk River natural flow is summarized in Table 2 and 2A and Figure 2, which follow. The detailed computation of the natural flow is given in Table 8 and the historical summary is given in Table 9 of Appendix A.

Table 2: Summary of Milk River Division for 2000*
Quantities in Cubic Decametres

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	USA SHARE	RECEIVED BY USA	RECEIVED BY USA	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 15	4,155	2,078	4,157	2,079	
MAR 16 - MAR 31	4,734	2,371	4,750	2,379	
APR 1 - APR 15	5,247	3,934	5,274	1,340	
APR 16 - APR 30	6,579	4,933	6,590	1,657	
MAY 1 - MAY 15	2,048	1,536	2,048	512	
MAY 16 - MAY 31	912	684	566		118
JUNE 1 - JUNE 15	1,841	1,380	1,477	97	
JUNE 16 - JUNE 30	418	313	54		259
JULY 1 - JULY 15	308	231	0		584
JULY 16 - JULY 31	157	118	0		666
AUG 1 - AUG 15	194	145	0		496
AUG 16 - AUG 31	14	11	0		577
SEP 1 - SEP 15	3,336	2,501	2,972	471	
SEP 16 - SEP 30	3,013	2,259	3,012	753	
OCT 1 - OCT 15	1,533	1,149	1,532	383	
OCT 16 - OCT 31	895	671	896	225	
TOTAL	35,384	24,314	33,328		

* This is a summary of data from Table 8, Appendix A.

Note:

USA share of Milk River waters deficit outstanding as of September 30, 2000: 1,379 dam³ (1,118 acre-feet) (564 cfs-days)

Canadian share of St. Mary R. waters deficit outstanding as of May 31, 2000: 4 110 dam³ (3,332 acre-feet) (1,680 cfs-days)

Allowable deficit carryover from July 1 and September 30 as per Letter of Intent respecting St. Mary - Milk River Streamflow Transfers is equal to the outstanding deficit to Canada on St. Mary River division as of May 31st, not exceeding 4,900 dam³ (2,000 cfs-day) (3,970 acre-feet).

Table 2A: Summary of Milk River Division for 2000*

Quantities in Acre-Feet

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	USA SHARE	RECEIVED BY USA	RECEIVED BY USA	
				ABOVE	BELOW SHARE
MAR 1 - MAR 15	3,368	1,685	3,370	1,685	0
MAR 16 - MAR 31	3,838	1,922	3,851	1,929	0
APR 1 - APR 15	4,254	3,189	4,276	1,086	0
APR 16 - APR 30	5,334	3,999	5,343	1,343	0
MAY 1 - MAY 15	1,660	1,245	1,660	415	0
MAY 16 - MAY 31	739	555	460	0	96
JUNE 1 - JUNE 15	1,493	1,119	1,197	79	0
JUNE 16 - JUNE 30	339	254	45	0	210
JULY 1 - JULY 15	250	187	0	0	473
JULY 16 - JULY 31	127	96	0	0	540
AUG 1 - AUG 15	157	118	0	0	402
AUG 16 - AUG 31	11	9	0	0	468
SEP 1 - SEP 15	2,704	2,028	2,409	382	0
SEP 16 - SEP 30	2,443	1,831	2,442	610	0
OCT 1 - OCT 15	1,243	931	1,242	310	0
OCT 16 - OCT 31	726	544	726	182	0
TOTAL	28,686	19,711	27,021		

* All values are conversions of data from Table 2. Totals and shares may not add or subtract exactly as a result of rounding.

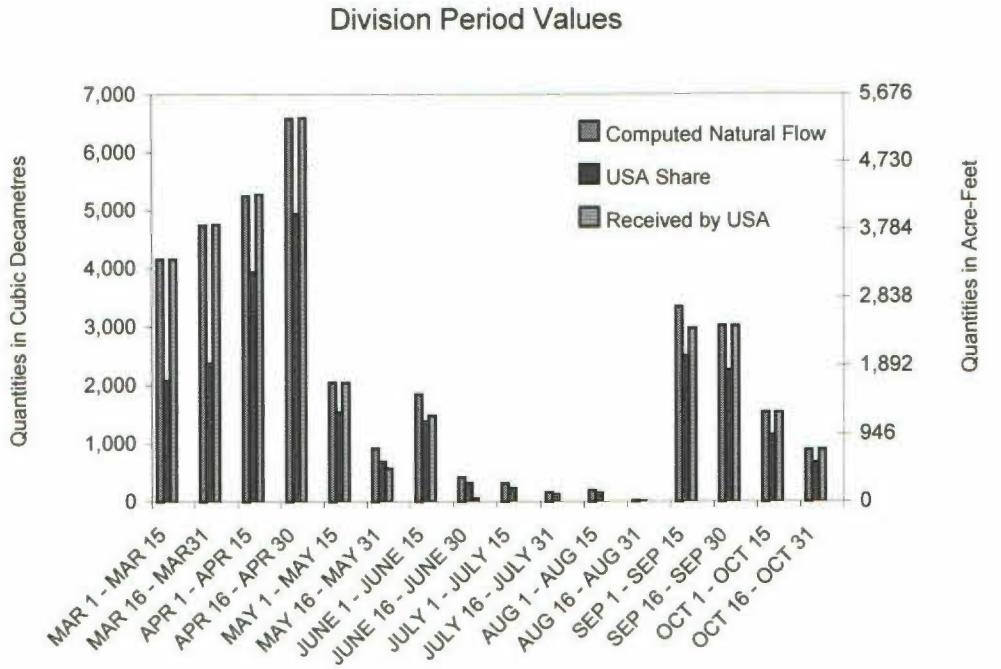
Note:

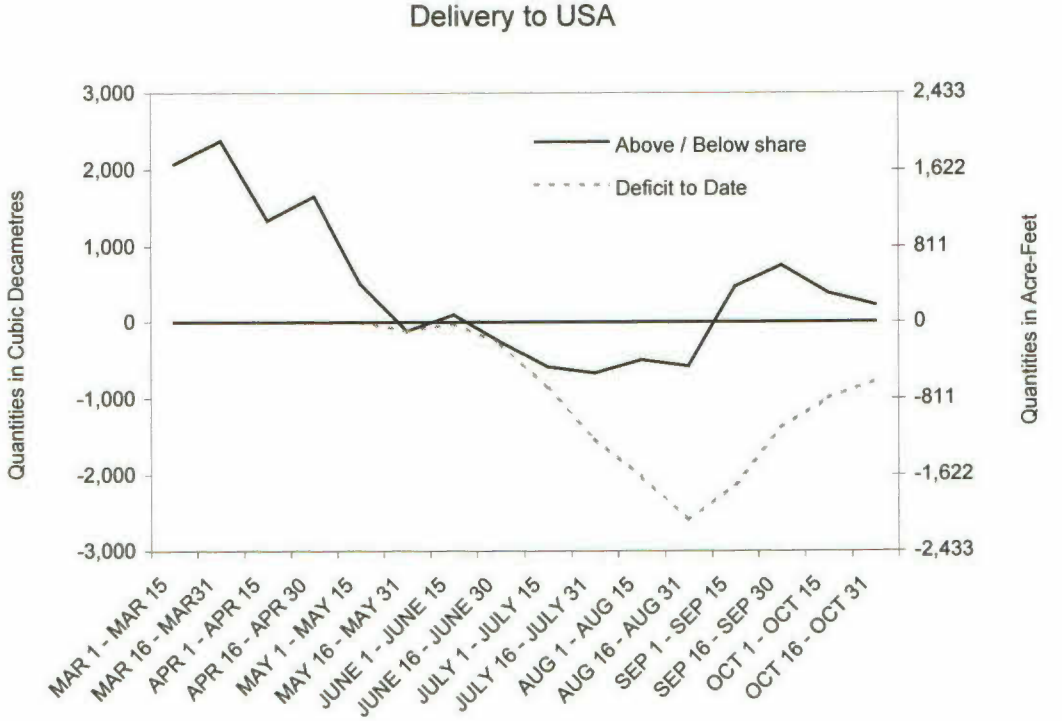
USA share of Milk River waters deficit outstanding as of September 30, 2000: 1,118 acre-feet (1 379 dam^3) (564 cfs-days)

Canadian share of St. Mary R. waters deficit outstanding as of May 31, 2000: 3,332 acre-feet (4,110 dam^3) (1,680 cfs-days)

Allowable deficit carryover from July 1 and September 30 as per Letter of Intent respecting St. Mary- Milk Rivers Streamflow Transfers is equal to the outstanding deficit to Canada on St. Mary River division as of May 31st, not exceeding 3,970 acre-feet (4,900 dam$^{3)}$)(2,000 cfs-day)

Figure 2. Milk River Division, 2000





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SOUTHERN TRIBUTARIES OF THE MILK RIVER

Responding to concerns expressed by Canadian water users, the International Joint Commission at its executive session on December 8, 1986, agreed in principle that the issue of utilization of the southern tributaries should be addressed in an informal, pragmatic manner. The Commission instructed the Accredited Officers to proceed with discussion to resolve Canadian concerns. To assist them in implementing the Commission's instructions, the Accredited Officers established a four-member ad hoc task force comprised of officials from the State of Montana and the Province of Alberta water management agencies and the United States and Canadian field representatives for the St. Mary-Milk River Treaty.

The task force met with United States and Canadian water users, conducted public meetings, toured water-use projects, compiled information on water availability and use, investigated ground-water supplies, and considered various options for resolving issues. The task force determined that United States water users were reluctant to participate in options that might limit their use of water and jeopardize their water claims in future adjudication of water rights. They also determined that basic Canadian water-user needs for domestic and stock-water use were being satisfied with wells and dugouts. Solutions to water-utilization problems were limited because cost of storage facilities, pumpage from the Milk River, and formal apportionment of southern tributary waters would not be cost effective.

In September 1991, the Montana Department of Natural Resources and Conservation, in response to requests from the task force and others, issued an Order to close the southern tributaries to issuance of additional water permits.

The final report was forwarded to the International Joint Commission in May 1994. At its Executive session on September 21, 1994, the Commission agreed that the task force should be terminated as recommended. The Commission also agreed not to act at that time on the three recommendations related to the adjudication process, but requested that the Accredited Officers continue to monitor the situation and report annually, or more frequently if appropriate, on such matters as complaints by Canadian ranchers and changes in the status of basin adjudication.

No Canadian complaints or changes in the Montana adjudication process were noted in 2000.

Flows for March through October 2000 for the southern tributaries were as follows:

- Bear Creek near International Boundary - 11 dam^3 (9 acre-feet).
- Miners Coulee near International Boundary – No recorded flow for the year 2000

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EASTERN TRIBUTARIES OF THE MILK RIVER

The waters of the eastern tributaries of the Milk River are divided in accordance with the 1921 Order of the International Joint Commission, which stipulates under Rule III that "The natural flow of the eastern (otherwise known as the Saskatchewan or northern) tributaries of the Milk River at the points where they cross the International Boundary shall be divided equally between the two countries." This order might well be interpreted as requiring that the division of water be made on a continuing basis; however, the physical limitation due to transit time in the flow system was recognized. Further analysis showed that the minimum practical time frame for compilation of the natural flows at the International Boundary was every ten days. In 1994 the time frame was increased to twice monthly to reduce lag-time anomalies, reduce costs, and conform to St. Mary and Milk Rivers computation periods.

Prior to 1937, Canadian use along the eastern tributaries consisted of domestic projects, and the Canadian share of the natural flow was not fully used. In the late 1930's, the Government of Canada constructed three dams on the Frenchman River creating Eastend Reservoir (station 11AC055), Huff Lake (11AC063), and Newton Lake (station 11AC056) and necessitated an operational division of flow on this tributary by 1937. In 1938, dams were constructed at both ends of Cypress Lake (station 11AC037) near the Battle Creek-Frenchman River divide to allow inter-basin storage and transfers of water. In the early 1950's the redevelopment of several private irrigation projects and the construction of the Vidora Irrigation Project resulted in increased use of Battle Creek water in Canada and made an operational division of the flow on this tributary necessary by 1957. In 1960, construction of Altawan reservoir (station 11AB089) and Spangler Irrigation Project (station 11AB060) on Lodge Creek made an operational division of flow on this tributary necessary by 1961.

During the period March 1 to October 31, twice-monthly computations of the natural flow of Lodge Creek, Battle Creek, and the Frenchman River are made to determine each country's share. If use by Canada is in excess of its share, then a delivery of an equivalent quantity of water is made to the United States at the earliest opportunity. When mutually agreed to, the United States or Canada may request that deficit deliveries be delayed to allow for more efficient use of the water.

Regular interim reports on the progress of the division of the natural flows of Lodge Creek, Battle Creek, and Frenchman River at the International Boundary are distributed to interested agencies during the irrigation season. Additional computations may be made to account for significant usages before October 31. Generally, no division of flow is made during winter as flow and use are low and streamflow records are impractical to obtain.

Lyons Creek (station 11AB075) is monitored by Canada, but does not have sufficient use in Canada at this time to warrant an operational division of flow. No flow was recorded on Lyons Creek for the year 2000.

Volumes for unmeasured diversions to private irrigation projects in the Lodge Creek, Battle Creek, and Frenchman River basins in Saskatchewan were based on year-end reports provided by the Saskatchewan Water Corporation, and for the Lodge Creek and Battle Creek basins in Alberta by Alberta Environmental Protection. These reports are compiled from reports received from operators of irrigation projects and from on-site inspections. An additional adjustment is made for domestic projects in the Battle Creek and Frenchman River basins based on the results of studies conducted by Canada on domestic use.

For interim reports prepared at the end of each division period, estimates of minor diversions were made based on field conditions and historical usages. At mid-year and at year-end, estimates of minor diversions were updated based on usage reports received from Alberta Environmental Protection and the Saskatchewan Water Corporation. Consequently, some discrepancy exists between the interim and the final division computations. Lists of reported diversions are contained in Appendix B.

Well below average runoff occurred in 2000. Lodge Creek at the International Boundary did not flow this season, the first time since 1992, and only the second time since 1950. Many irrigators in the Lodge Creek basin received little or no irrigation water. A small release was made from Altawan Reservoir in late June for livestock watering. Canadian irrigators in the Battle Creek basin only received one irrigation release rather than the normal two releases. Battle Creek at the International Boundary did not flow for most of August, September, and October. A release from Cypress Lake into the Frenchman system was made in May to meet the needs of irrigators in the Frenchman basin. Dry conditions prevailed during the summer.

Month-end reservoir contents for the majority of reservoirs in the Lodge Creek basin were below average for the year. Month-end reservoir contents for Battle Creek and Frenchman River basins were average to the end of July and below average for remainder of year. Well below average year-end levels for Cypress, Altawan, and Eastend reservoirs were forty-five percent, four percent and twenty-eight percent of full supply volume (FSV), respectively. The year-end percentage of live storage dropped from fifty-eight percent in 1999 to nineteen percent in 2000. Further details on storage in the major Canadian reservoirs are provided in Figure 3, and in Table 16 of Appendix B.

Figure 3. Reservoirs in Lodge, Battle, and Frenchman Basins Month-End Contents: 1999, 2000, and 1990-1999 Mean

Figure 3a. Altawan Reservoir

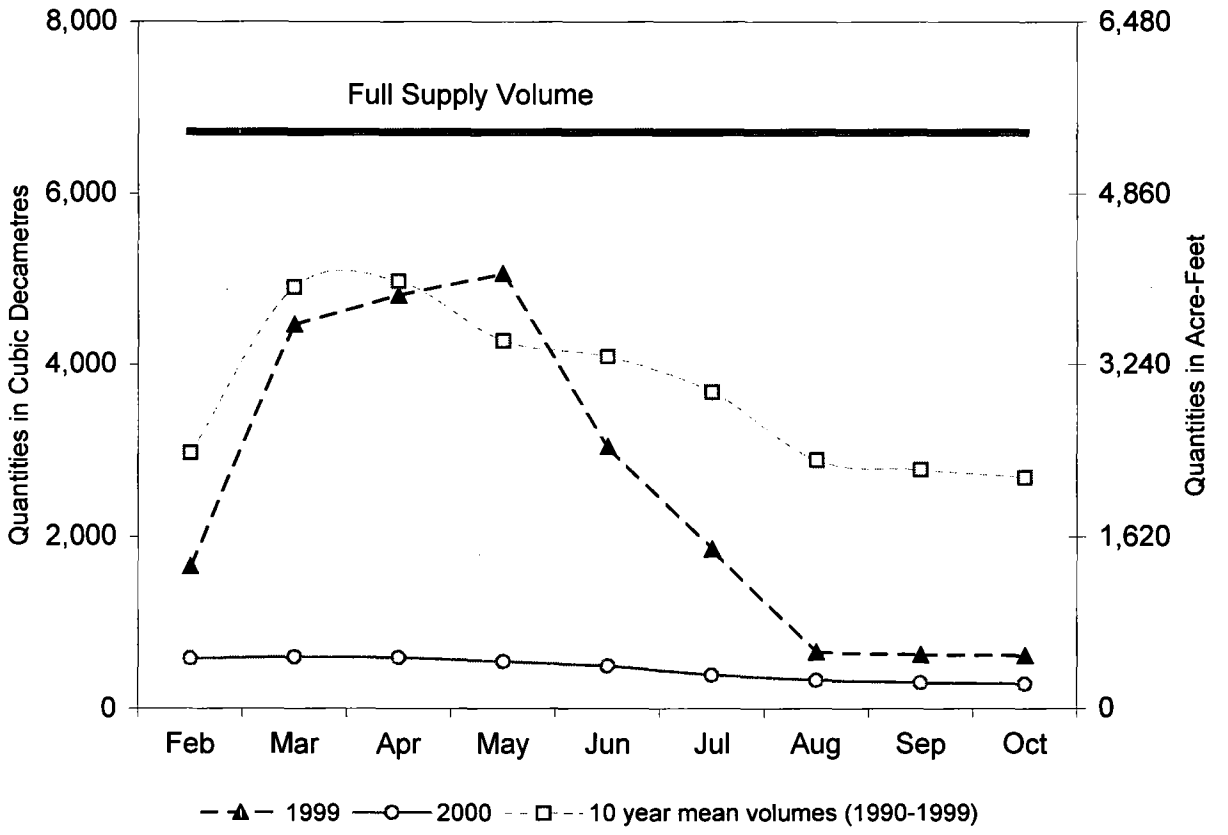


Figure 3. Reservoirs in Lodge, Battle, and Frenchman Basins Month-End Contents: 1999, 2000, and 1990-1999 Mean

Figure 3b. Cypress Lake

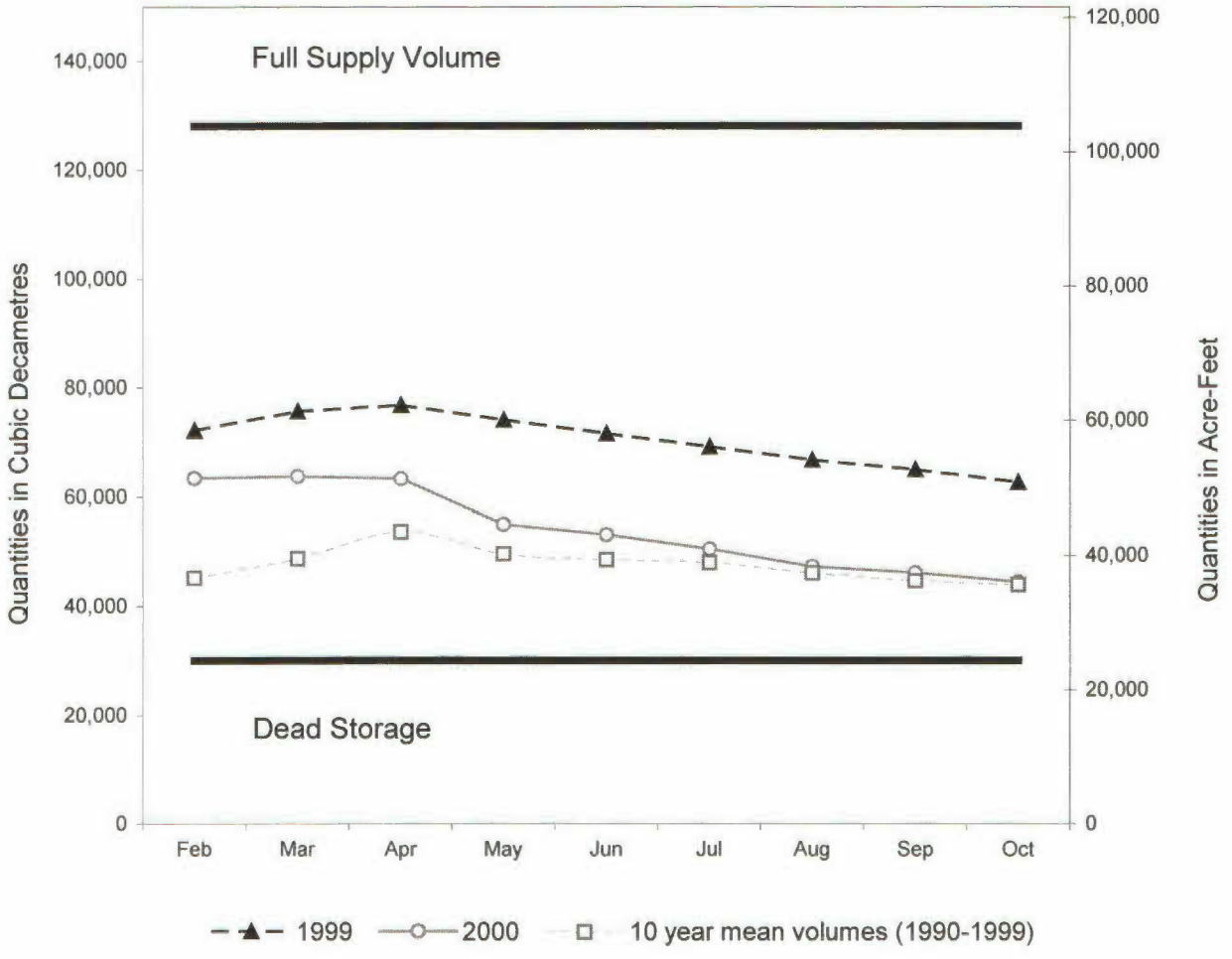


Figure 3. Reservoirs in Lodge, Battle, and Frenchman Basins Month-End Contents: 1999, 2000, and 1990-1999 Mean

Figure 3c. Eastend Reservoir

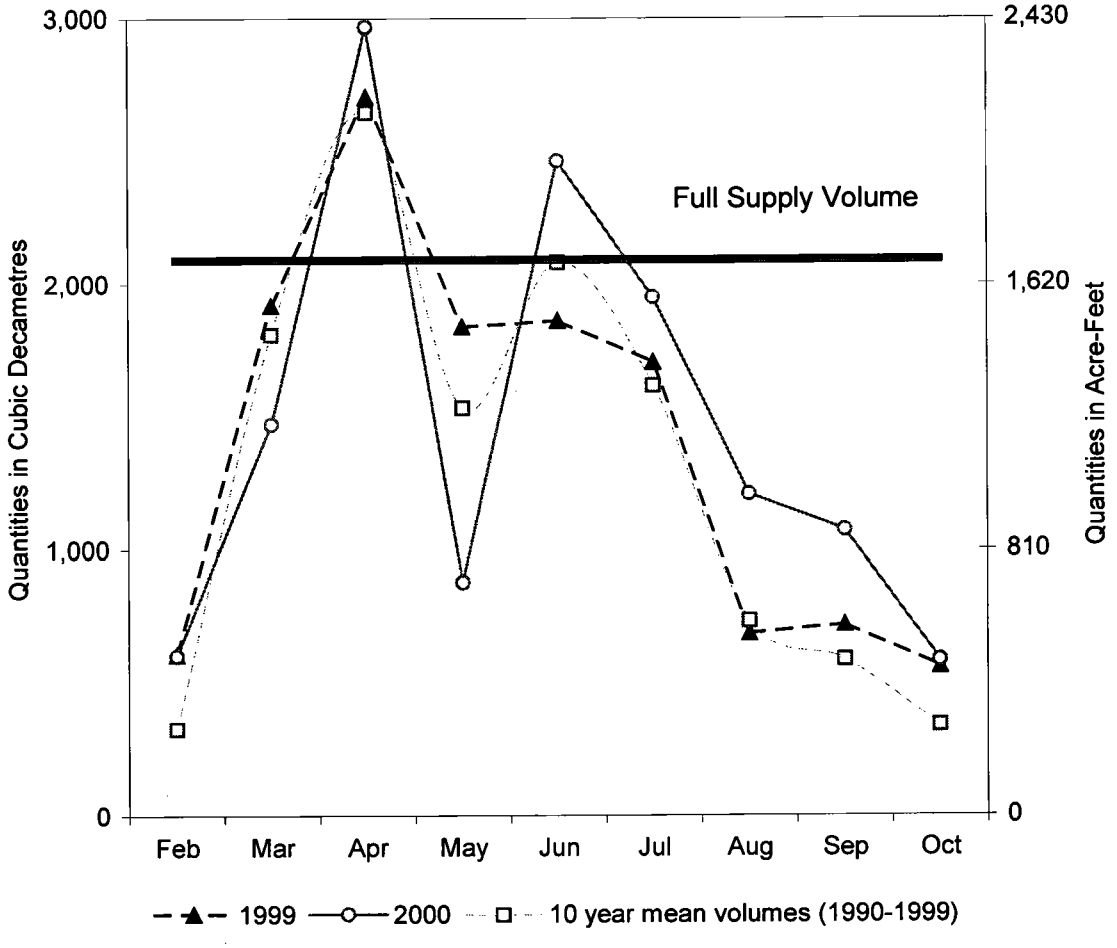


Figure 3. Reservoirs in Lodge, Battle, and Frenchman Basins Month-End Contents: 1999, 2000, and 1990-1999 Mean

Figure 3d. Huff Lake

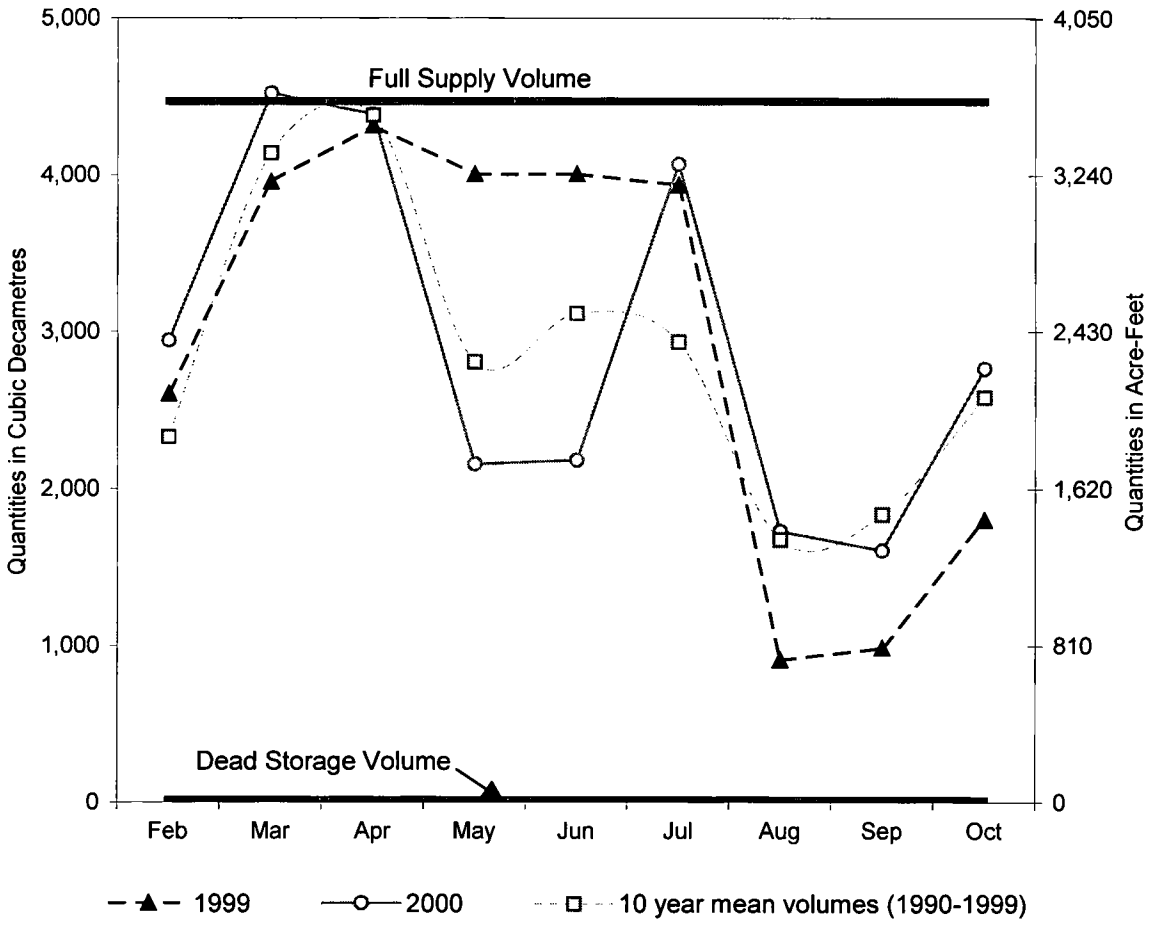
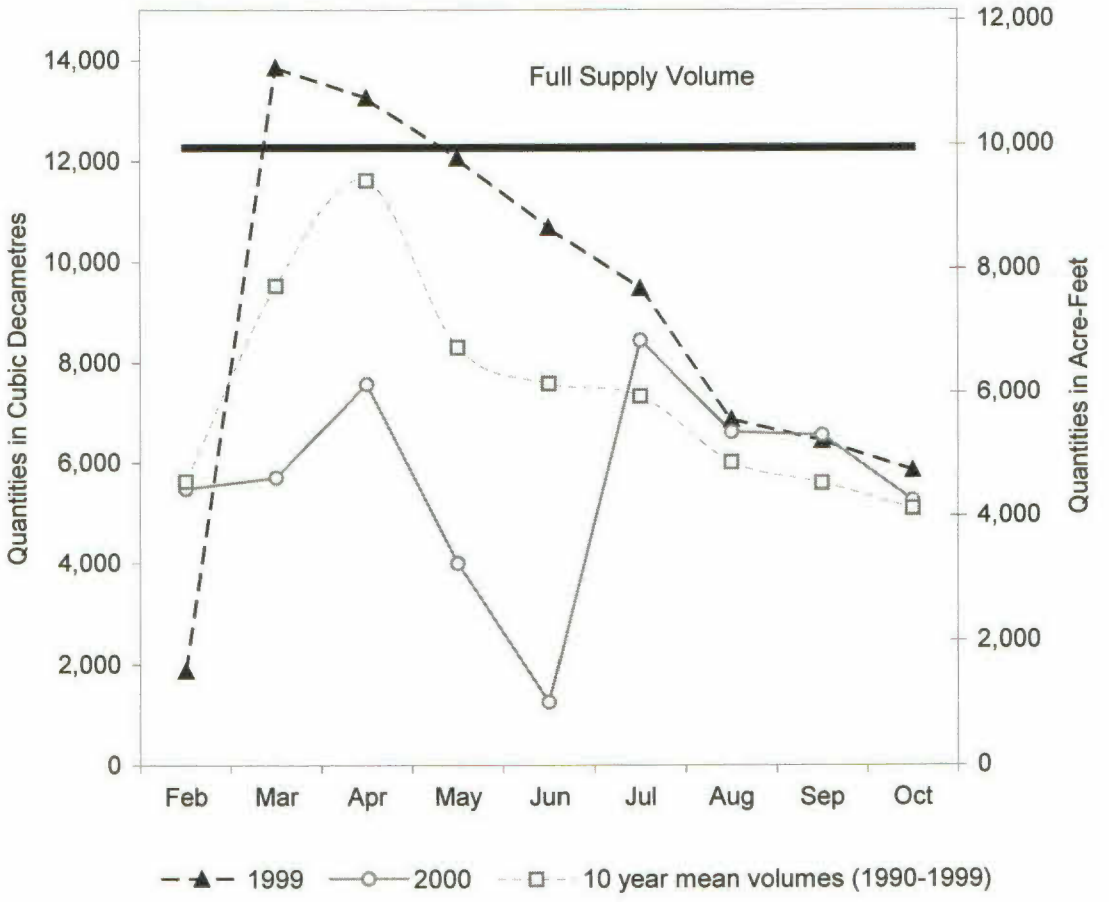


Figure 3. Reservoirs in Lodge, Battle, and Frenchman Basins Month-End Contents: 1999, 2000, and 1990-1999 Mean

Figure 3e. Newton Lake



LODGE CREEK

The computed natural flow of Lodge Creek at the International Boundary from March 1 to October 31, 2000 was 174 dam^3 (141 acre-feet). This volume is 0.5 percent of the average natural flow of the previous 50 years of record. Each country is entitled to 50 percent of the natural flow i.e., 87 dam^3 (71 acre-feet).

No flow was recorded at Lodge Creek below McRae Creek at the International Boundary (station 11AB083) from March to October 31, consequently; a deficit delivery was computed for each of the 7 of 16 division periods for which natural flow values were determined, totaling 87 dam^3 (70 acre-feet).

The division of the Lodge Creek natural flow is summarized in Tables 3 and 3A and Figure 4 which follow. The detailed computation of the natural flow is given in Table 10 and the historical summary is given in Table 11, both in Appendix A.

Table 3: Summary of Lodge Creek Division for 2000*
Quantities in Cubic Decametres

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	USA SHARE	RECEIVED BY USA	RECEIVED BY USA	
				ABOVE SHARE	BELOW
MAR 1 - MAR 15	14	7	0		7
MAR 16 – MAR 31	30	15	0		15
APR 1 - APR 15	4	2	0		2
APR 16 - APR 30	27	14	0		14
MAY 1 - MAY 15	11	5	0		5
MAY 16 – MAY 31	0	0	0	0	
JUNE 1 - JUNE 15	79	39	0		39
JUNE 16 - JUNE 30	9	5	0		5
JULY 1 - JULY 15	0	0	0	0	
JULY 16 – JULY 31	0	0	0	0	
AUG 1 - AUG 15	0	0	0	0	
AUG 16 - AUG 31	0	0	0	0	
SEP 1 - SEP 15	0	0	0	0	
SEP 16 - SEP 30	0	0	0	0	
OCT 1 - OCT 15	0	0	0	0	
OCT 16 - OCT 31	0	0	0	0	
TOTAL	174	87	0		

* This is a summary of data from Table 10, Appendix A.

Totals and shares may not add or subtract exactly as a result of rounding.

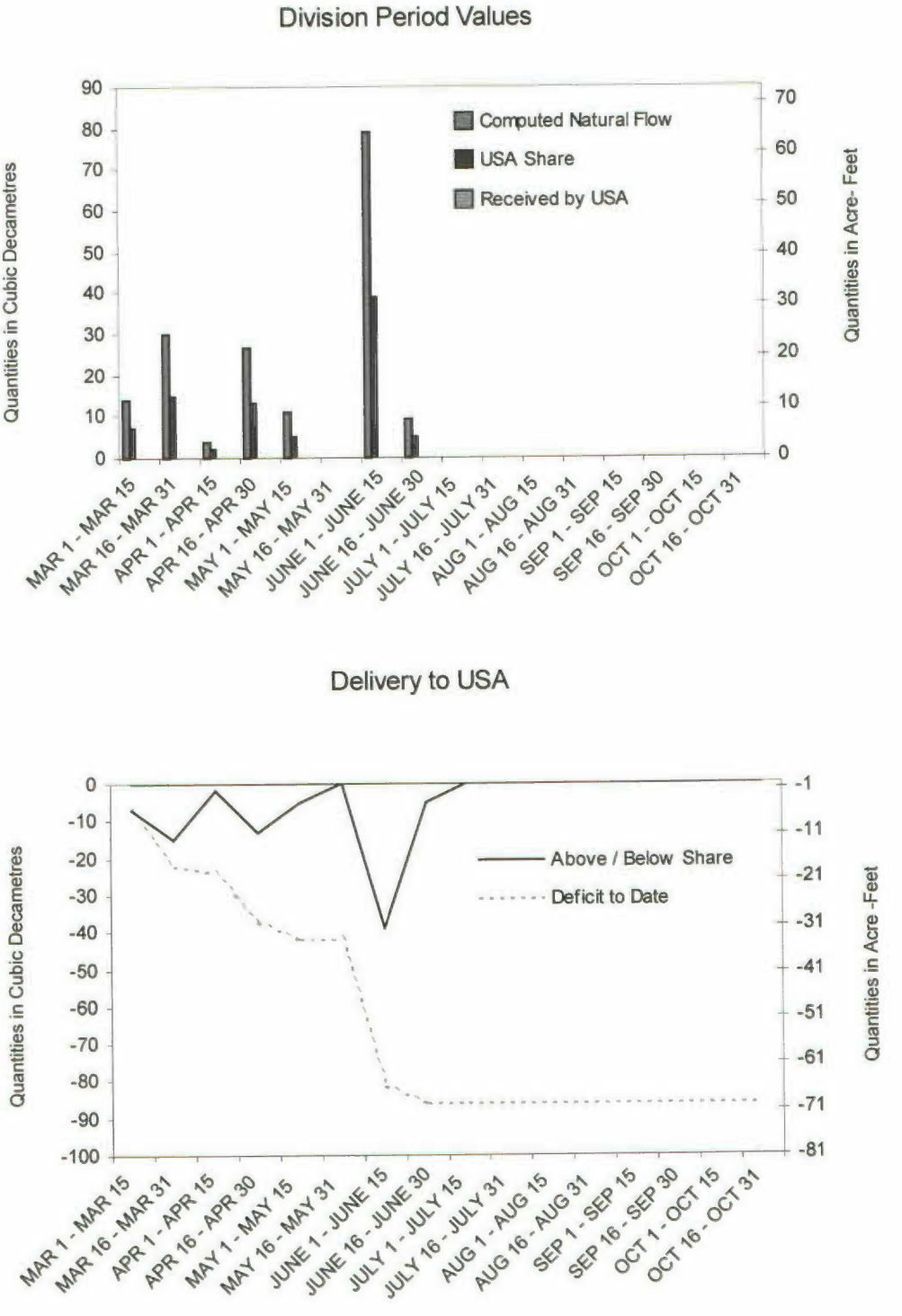
Table 3A: Summary of Lodge Creek Division for 2000*
Quantities in Acre-Feet

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	USA SHARE	RECEIVED BY USA	RECEIVED BY USA	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 15	11	6	0		6
MAR 16 - MAR 31	24	12	0		12
APR 1 - APR 15	3	2	0		2
APR 16 - APR 30	22	11	0		11
MAY 1 - MAY 15	9	4	0		4
MAY 16 - MAY 31	0	0	0	0	
JUNE 1 - JUNE 15	64	32	0		32
JUNE 16 - JUNE 30	8	4	0		4
JULY 1 - JULY 15	0	0	0	0	
JULY 16 - JULY 31	0	0	0	0	
AUG 1 - AUG 15	0	0	0	0	
AUG 16 - AUG 31	0	0	0	0	
SEP 1 - SEP 15	0	0	0	0	
SEP 16 - SEP 30	0	0	0	0	
OCT 1 - OCT 15	0	0	0	0	
OCT 16 - OCT 31	0	0	0	0	
TOTAL	141	70	0		

* All values are conversions of data from Table 3

Totals and shares may not add or subtract exactly as a result of rounding.

Figure 4. Lodge Creek Division, 2000



BATTLE CREEK

The computed natural flow of Battle Creek at the International Boundary from March 1 to October 31, 2000, was 5 670 dam^3 (4,690 acre-feet). This volume is 18 percent of the average natural flow of the previous 60 years of record. Each country is entitled to 50 percent of the natural flow i.e., 2 840 dam^3 (2,350 acre-feet). A total of 2 950 dam^3 (2,390 acre-feet) was recorded at Battle Creek at International Boundary (station 11AB027) from March 1 to October 31.

Deficit deliveries were recorded in 6 of the 16 division periods during the irrigation season. A deficit of 882 dam^3 (715 acre-feet) had accumulated by the end of April due to irrigation usage in Canada. Release to refund the deficit from Cypress Lake began in early May and by the end of the irrigation season the deficit had been refunded.

The division of the Battle Creek natural flow is summarized in Tables 4 and 4A and Figure 5, which follow. The detailed computation of the natural flow is given in Table 12 and the historical summary is given in Table 13, both in Appendix A.

Table 4: Summary of Battle Creek Division for 2000*
Quantities in Cubic Decametres

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	USA SHARE	RECEIVED BY USA	RECEIVED BY USA	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 25	944	472	312		160
MAR 26 - APR 9	965	483	253		230
APR 10 - APR 24	777	388	183		205
APR 25 – MAY 9	763	381	94		287
MAY 10 - MAY 25	470	235	249	14	
MAY 26 - JUNE 9	539	270	1,011	741	
JUNE 10 - JUNE 24	645	322	419	97	
JUNE 25 - JULY 9	215	108	137	29	
JULY 10 - JULY 25	280	140	242	102	
JULY 26 – AUG 9	46	23	37	14	
AUG 10 - AUG 25	8	4	3		1
AUG 26 - SEP 9	3	2	0		2
SEP 10 - SEP 24	0	0	0	0	
SEP 25 - OCT 9	0	0	0	0	
OCT 10 - OCT 25	0	0	0	0	
OCT 26 - OCT 31	11	6	11	5	
TOTAL	5,667	2,834	2,951		

* This is a summary of data from Table 12, Appendix A.

Totals and shares may not add or subtract exactly as a result of rounding.

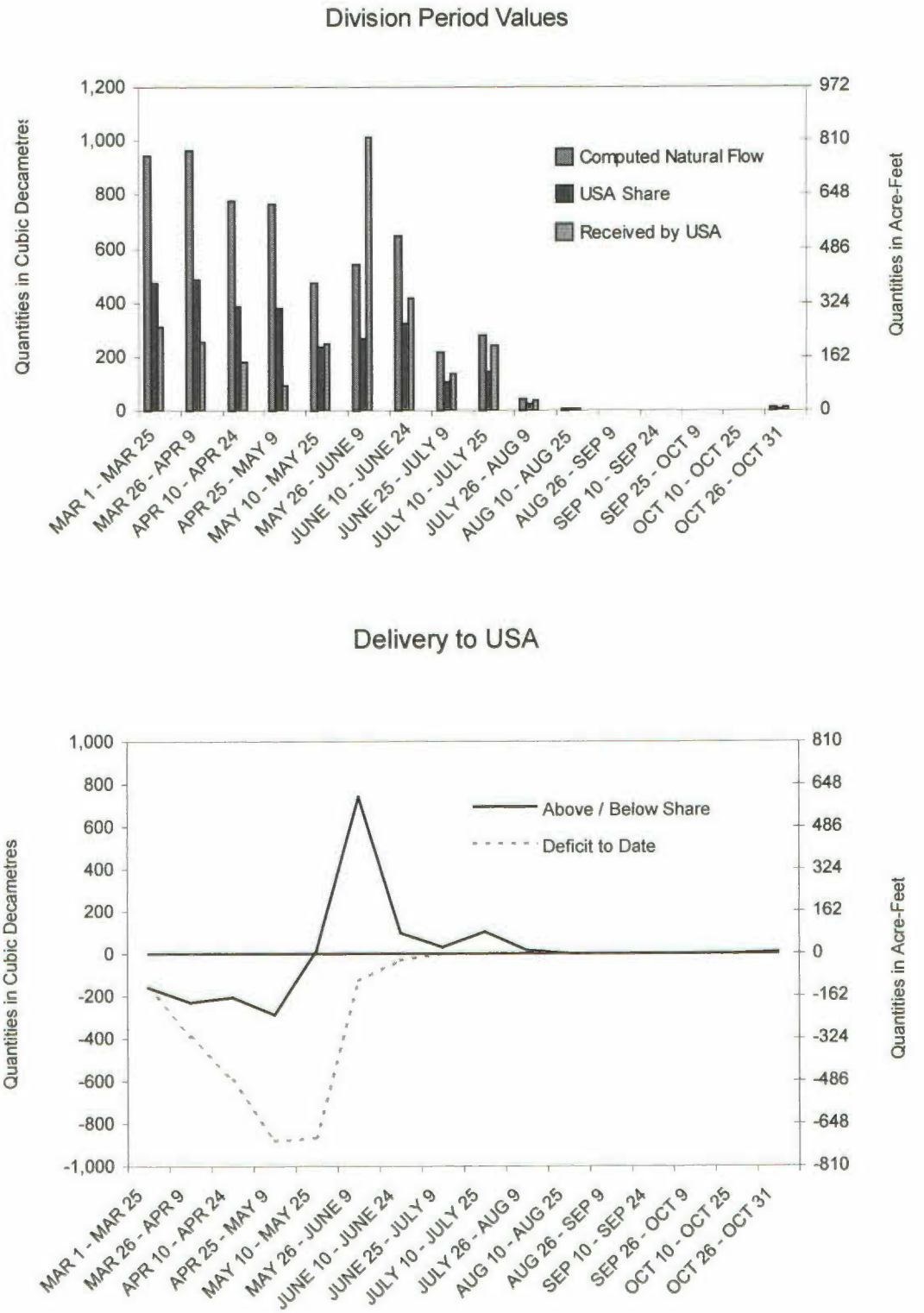
Table 4A: Summary of Battle Creek Division for 2000*
Quantities in Acre-Feet

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	USA SHARE	RECEIVED BY USA	RECEIVED BY USA	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 25	765	383	253		130
MAR 26 - APR 9	782	392	205		186
APR 10 - APR 24	630	315	148		166
APR 25 - MAY 9	619	309	76		233
MAY 10 - MAY 25	381	191	202	11	
MAY 26 - JUNE 9	437	219	820	601	
JUNE 10 - JUNE 24	523	261	340	79	
JUNE 25 - JULY 9	174	88	111	24	
JULY 10 - JULY 25	227	113	196	83	
JULY 26 - AUG 9	37	19	30	11	
AUG 10 - AUG 25	6	3	2		1
AUG 26 - SEP 9	2	2	0		2
SEP 10 - SEP 24	0	0	0	0	
SEP 25 - OCT 9	0	0	0	0	
OCT 10 - OCT 25	0	0	0	0	
OCT 26 - OCT 31	9	5	9	4	
TOTAL	4,594	2,298	2,393		

* All values are conversions of data from Table 4.

Totals and shares may not add or subtract exactly as a result of rounding.

Figure 5. Battle Creek Division, 2000



FRENCHMAN RIVER

The computed natural flow of the Frenchman River at the International Boundary from March 1 to October 31, 2000, was 29 300 dam^3 (23,800 acre-feet) This volume is 31 percent of the average natural flow of the previous 60 years of record. Each country is entitled to 50 percent of the natural flow, i.e., 14 650 dam^3 (11,900 acre-feet). A total flow of 14 900 dam^3 (12,100 acre-feet) was recorded at Frenchman River at International Boundary (station 11AC041) from March 1 to October 31.

Deficit deliveries were recorded in 7 of 16 division periods during the irrigation season. A deficit of 2 780 dam^3 (2,250 acre-feet) had accumulated by mid-May. The majority of this deficit was refunded by the end of June, but the total deficit was not refunded until the end of October.

The division of the Frenchman River natural flow is summarized in Tables 5 and 5A and in Figure 6, which follow. The detailed computation of the natural flow is given in Table 14 and the historical summary is given in Table 15, both of Appendix A.

Table 5: Summary of Frenchman River Division for 2000*
Quantities in Cubic Decametres

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	USA SHARE	RECEIVED BY USA	RECEIVED BY USA	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 15	861	430	132		298
MAR 16 - MAR 31	968	484	50		434
APR 1 - APR 15	1,499	749	19		730
APR 16 - APR 30	1,930	965	5		960
MAY 1 - MAY 15	712	356	1		355
MAY 16 - MAY 31	2,051	1,025	1,219	194	
JUNE 1 - JUNE 15	3,340	1,670	2,474	804	
JUNE 16 - JUNE 30	1,091	545	1,813	1,268	
JULY 1 - JULY 15	14,535	7,267	7,081		186
JULY 16 - JULY 31	830	415	554	139	
AUG 1 - AUG 15	371	185	571	386	
AUG 16 - AUG 31	409	204	401	197	
SEP 1 - SEP 15	16	8	16	8	
SEP 16 - SEP 30	4	2	4	2	
OCT 1 - OCT 15	190	95	0		95
OCT 16 - OCT 31	450	225	607	382	
TOTAL	29,256	14,625	14,947		

* This is a summary of data from Table 14, Appendix A

Totals and shares may not add or subtract exactly as a result of rounding.

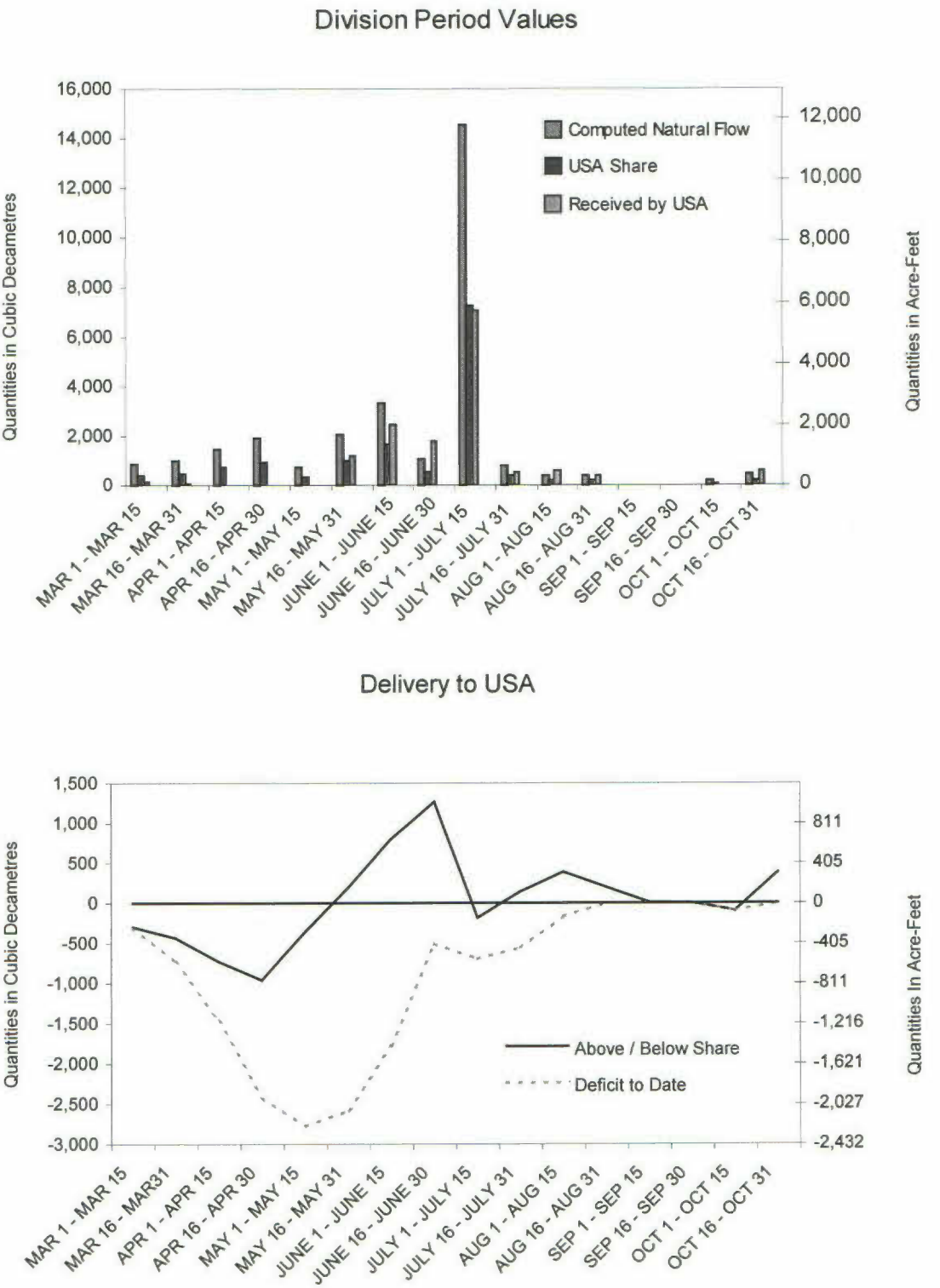
Table 5A: Summary of Frenchman River Division for 2000*
Quantities in Acre-Feet

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	USA SHARE	RECEIVED BY USA	RECEIVED BY USA	
				ABOVE	BELOW SHARE
MAR 1 - MAR 15	698	349	107		242
MAR 16 - MAR 31	785	392	41		352
APR 1 - APR 15	1,215	607	15		592
APR 16 - APR 30	1,565	782	4		778
MAY 1 - MAY 15	577	289	1		288
MAY 16 - MAY 31	1,663	831	988	157	
JUNE 1 - JUNE 15	2,708	1,354	2,006	652	
JUNE 16 - JUNE 30	884	442	1,470	1,028	
JULY 1 - JULY 15	11,783	5,891	5,741		151
JULY 16 - JULY 31	673	336	449	113	
AUG 1 - AUG 15	301	150	463	313	
AUG 16 - AUG 31	332	165	325	160	
SEP 1 - SEP 15	13	6	13	6	
SEP 16 - SEP 30	3	2	3	2	
OCT 1 - OCT 15	154	77	0		77
OCT 16 - OCT 31	365	182	492	310	
TOTAL	23,718	11,857	12,118		

* All values are conversions of data from Table 5.

Totals and shares may not add or subtract exactly as a result of rounding.

Figure 6. Frenchman River Division, 2000



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ANNEX A

1921 Order Of The International Joint Commission

Respecting The St. Mary-Milk Rivers

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INTERNATIONAL JOINT COMMISSION

ORDER

IN THE MATTER OF THE MEASUREMENT AND APPORTIONMENT OF THE WATERS OF THE ST. MARY AND MILK RIVERS AND THEIR TRIBUTARIES IN THE STATE OF MONTANA AND THE PROVINCES OF ALBERTA AND SASKATCHEWAN.

Whereas by Article VI of the Treaty entered into between the United States of America and His Majesty, the King of the United Kingdom of Great Britain and Ireland and of the British Dominions beyond the Seas, Emperor of India, signed at Washington on the 11th of January 1909, it is provided as follows:

> The High Contracting Parties agree that the St. Mary and Milk Rivers and their tributaries (in the State of Montana and the Provinces of Alberta and Saskatchewan) are to be treated as one stream for the purposes of irrigation and power, and the waters thereof shall be apportioned equally between the two countries, but in making such equal apportionment more than half may be taken from one river and less than half from the other by either country so as to afford a more beneficial use to each. It is further agreed that in the division of such waters during the irrigation season, between the 1st of April and 31st of October, inclusive, annually, the United States is entitled to a prior appropriation of 500 cubic feet per second of the waters of the Milk River, or so much of such amount as constitutes three-fourths of its natural flow, and that Canada is entitled to a prior appropriation of 500 cubic feet per second of the flow of St. Mary River, or so much of such amount as constitutes three-fourths of its natural flow.
>
> The channel of the Milk River in Canada may be used at the convenience of the United States for the conveyance, while passing through Canadian territory, of waters diverted from the St. Mary River. The provisions of Article II of this treaty shall apply to any injury resulting to property in Canada from the conveyance of such waters through the Milk River.
>
> The measurement and apportionment of the water to be used by each country shall from time to time be made jointly by the properly constituted reclamation officers of the United States and the properly constituted irrigation officers of His Majesty under the direction of the International Joint Commission.

And whereas, the said Reclamation and Irrigation Officers have been unable to agree as to the manner in which the waters mentioned in the said Article VI should be measured and apportioned;

And whereas, before giving directions as to the measurement and apportionment of the said waters, the International Joint Commission deemed it proper to hear such representations and suggestions thereon as the Governments of the United States and Canada, the Provinces of Alberta and Saskatchewan, and the State of Montana, and as corporations and persons interested might see fit to make, and for such purposes sittings of the Commission were held at the following times and places: At the city of St. Paul, in the State of Minnesota, on the 24th, 25th, 26th, 27th, and 28th days of May, 1915; at the city of Detroit, in the State of Michigan, on the 15th, 16th, and 17th days of May, 1917; at the city of Ottawa, in the Province of Ontario, on the 3rd, 4th, and 5th days of May, 1920; at the village of Chinook, in the State of Montana, on the 15th day of September 1921; and at the city of Lethbridge, in the Province of Alberta, on the 17th day of September, 1921, when counsel and representatives of the said Governments, corporations, and persons appeared and presented their views;

And whereas, pending final decision as to the proper method of measuring and apportioning said waters, interim orders with reference thereto have been made by the International Joint Commission from time to time, the last of such orders bearing the date of 5th day of April, 1921;

And whereas the members of the International Joint Commission have unanimously determined that the said Reclamation and Irrigation Officers should be guided in the measurement and apportionment of said waters by the directions and instructions hereinafter set forth;

IT IS THEREFORE ORDERED AND DIRECTED by the Commission in pursuance of the powers conferred by the said Article VI of the said Treaty that the Reclamation and Irrigation Officers of the United States and Canada shall, until this order is varied, modified, or withdrawn by the Commission, make jointly the measurement and apportionment of the water to be used by the United States and Canada in accordance with the following rules:

St. Mary River

I. (a) During the irrigation season when the natural flow of the St. Mary River at the point where it crosses the international boundary is six hundred and sixty-six (666) cubic feet per second or less Canada shall be entitled to three-fourths and the United States to one-fourth of such flow.

(b) During the irrigation season when the natural flow of the St. Mary River at the point where it crosses the international boundary is more than six hundred and sixty-six (666) cubic feet per second Canada shall be entitled to a prior appropriation of five hundred (500) cubic feet per second, and the excess over six hundred and sixty-six (666) cubic feet per second shall be divided equally between the two countries.

(c) During the non-irrigation season the natural flow of the St. Mary River at the point where it crosses the international boundary shall be divided equally between the two countries.

Milk River

II. (a) During the irrigation season when the natural flow of the Milk River at the point where it crosses the international boundary for the last time (commonly and hereafter called the Eastern Crossing) is six hundred and sixty-six (666) cubic feet per second or less, the United States shall be entitled to three-fourths and Canada to one-fourth of such natural flow.

(b) During the irrigation season when the natural flow of the Milk River at the Eastern Crossing is more than six hundred and sixty-six (666) cubic feet per second the United States shall be entitled to a prior appropriation of five hundred (500) cubic feet per second and the excess over six hundred and sixty-six (666) cubic feet per second shall be divided equally between the two countries.

(c) During the non-irrigation season the natural flow of the Milk River at the Eastern Crossing shall be divided equally between the two countries.

Eastern Tributaries of Milk River

III. The natural flow of the eastern (otherwise known as the Saskatchewan or northern) tributaries of the Milk River at the points where they cross the international boundary shall be divided equally between the two countries.

Waters not naturally crossing the boundary

IV. Each country shall be apportioned such waters of the said rivers and of any tributaries thereof as rise in that country but do not naturally flow across the international boundary.

V. For the purpose of carrying out the apportionment directed in Paragraphs I, II, and III hereof the said Reclamation and Irrigation Officers shall jointly take steps:

(a) To ascertain and keep a daily record of the natural flow of the St. Mary River at the international boundary, of the Milk River at the Eastern Crossing, and of the eastern tributaries of the Milk River at the international boundary by measurement in each case:

(1) At the gauging station at the international boundary;

(2) At all places where any of the waters which would naturally flow across the international boundary at that particular point are diverted in either country prior to such crossing;

(3) At all places where any of the waters which would naturally flow across the international boundary at that particular point are stored, or the natural flow thereof increased or decreased prior to such crossing;

(b) To fix the amount of water to which each country is entitled in each case by applying the directions contained in paragraphs 1, 2, and 3 hereof to the total amount of the natural flow so ascertained in each case.

(c) To communicate the amount so fixed to all parties interested, so that the apportionment of the said waters may be fully carried out by both countries in accordance with the said directions.

VI. Each country may receive its share of the said waters as so fixed at such point or points as it may desire. A gauging station shall be established and maintained by the Reclamation or Irrigation Officers of the country in which any diversion, storage, increase or decrease of the natural flow shall be made at every point where such diversion, storage, increase, or decrease takes place.

VII. International gauging stations shall be maintained at the following points:

St. Mary River near international boundary; the north branch of Milk River near international boundary; the south branch of Milk River near international boundary; Milk River at Eastern Crossing; Lodge Creek, Battle Creek, and Frenchman River, near international boundary; and gauging stations shall be established and maintained at such other points as the Commission may from time to time approve.

VIII. The said Reclamation and Irrigation Officers are hereby further authorized and directed:

(a) To make such additional measurements and to take such further and other steps as may be necessary or advisable in order to insure the apportionment of the said waters in accordance with the directions herein set forth.

(b) To operate the irrigation works of either country in such a manner as to facilitate the use by the other country of its share of the said waters and subject hereto to secure to the two countries the greatest beneficial use thereof.

(c) To report to the Commission the measurements made at all international and other gauging stations established pursuant to this order.

IX. In the event of any disagreement in respect to any matter or thing to be done under this order the said Reclamation and Irrigation Officers shall report to the Commission, setting forth fully the points of difference and the facts relating thereto.

X. The said order of the Commission dated the 6th day of April 1921, is hereby withdrawn, except with respect to the report to be furnished to the Commission thereunder.

Dated at Ottawa, Canada, this 4th day of October, 1921.

O. GARDNER,

C.A. MAGRATH,

C.D. CLARK,

HENRY A. POWELL,

W.H. HEARST,

MARK A. SMITH.

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ANNEX B

Letter of Intent Respecting

The St. Mary - Milk Rivers Streamflow Transfers

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LETTER OF INTENT

To better utilize the waters of the St. Mary and Milk Rivers, to provide beneficial use to each country, the signatories to this letter agree to the following procedures for a St. Mary - Milk River Streamflow Transfer. In signing this letter, the parties recognize this agreement is within the 1921 Order of the International Joint Commission. Additionally, the parties recognize this annex will form part of the St. Mary - Milk River Procedural Manual.

R. A. Halliday
Accredited Officer of
Her Majesty

Philip Cohen
Accredited Officer of the
United States

Whereas the United States finds it beneficial to use more than its share of the St. Mary River in the March-May period each year to supply water to U.S. Milk River irrigators;

And whereas, Canada finds it beneficial to use more than its share of the Milk River in the July-September period each year to supply water to Canadian Milk River irrigators;

And whereas, the Boundary Waters Treaty of 1909 and the International Joint Commission Order of 1921 authorizes the Reclamation and Irrigation Officers of the United States and Canada to make the greatest beneficial use of the waters of the St. Mary and Milk Rivers;

It is therefore ordered and directed by said Irrigation and Reclamation Officers that the United States be allowed to accumulate a deficit on the St. Mary River of up to 2,000 cfs-days (4,900 dam^3) between March 1 and May 31 of each year, and that Canada be allowed to accumulate a similar deficit on the Milk River between July 1 and September 31 of each year. Outstanding deficits as of October 1 will be equalized by October 31 of each year under administration by the Field Representatives of the Accredited Officers.

Termination of this procedure will be allowed upon request by either the United States or Canada notifying the other party in writing two months prior to the commencement of the irrigation season (April 1st as specified by the 1921 Order).

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ANNEX C

Conversion Factors

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FACTORS FOR CONVERSION BETWEEN INCH-POUND UNITS AND INTERNATIONAL SYSTEM (SI) UNITS

Since 1975, the Report to the International Joint Commission on the Division of the Waters of the St. Mary and Milk Rivers has used dual units (SI and inch-pound).

The two inch-pound units that were used in previous reports were cfs-days and acre-feet.

1 cfs-day = 86,400 cubic feet

1 acre-foot = 43,560 cubic feet

1 cfs-day = 1.9835 acre-feet

The SI unit replacing the inch-pound units is the cubic decametre (dam^3).

1 dam^3 = 1 000 cubic metres

1 cubic metre = 35.315 cubic feet

1 dam^3 = 35,315 cubic feet

1 acre-foot = 1.2335 dam^3

1 cfs-day = 2.4466 dam^3

1 dam^3 = 0.8107 acre-feet

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ANNEX D

List of Gauging Stations

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INTERNATIONAL GAUGING STATIONS OPERATED JOINTLY

BY

THE UNITED STATES AND CANADA

ST. MARY AND MILK RIVER BASINS

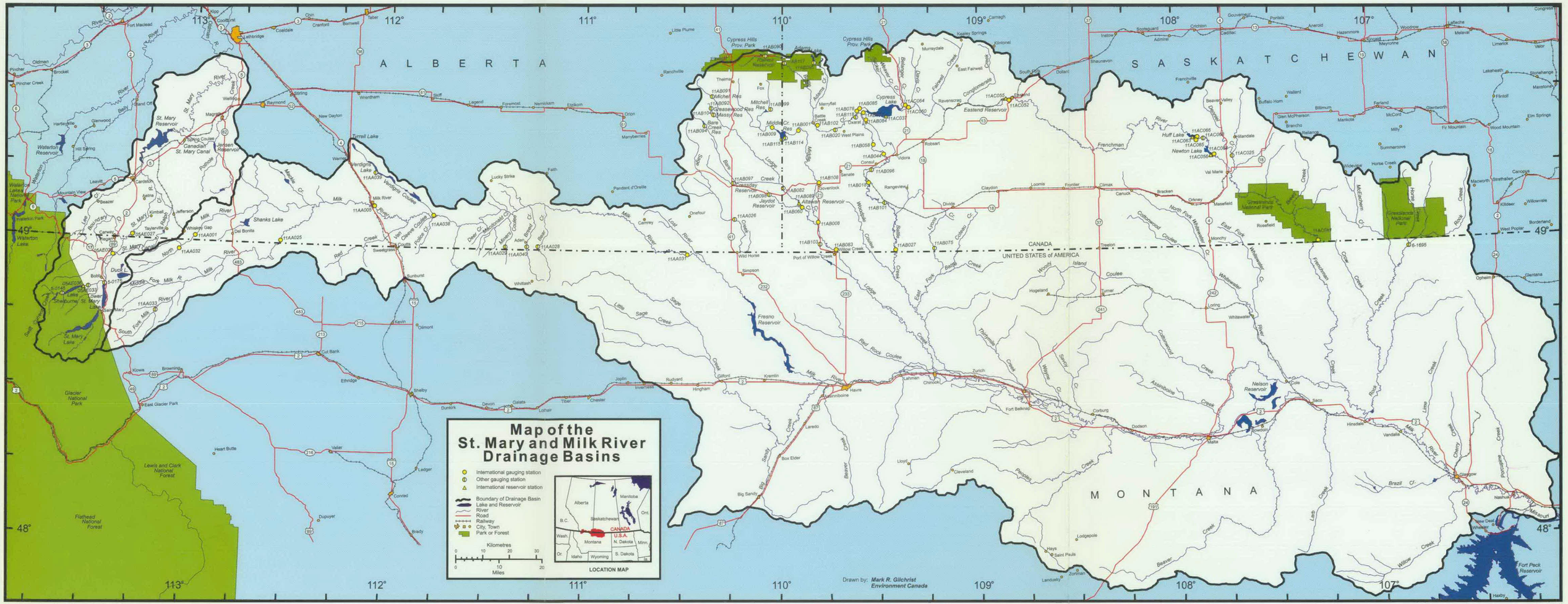
2000

Map Index	Station Name
	ST. MARY RIVER BASIN
05AE027	St. Mary River at International Boundary
05AE029	St. Mary Canal at St. Mary Crossing near Babb, Montana
05AE036	Lake Sherburne at Sherburne, Montana
	MILK RIVER BASIN
11AA001	North Milk River near International Boundary
11AA005	Milk River at Milk River, Alberta
11AA025	Milk River at Western Crossing of International Boundary
11AA031	Milk River at Eastern Crossing of International Boundary
11AA032	N. Fork Milk River above St. Mary Canal near Browning, Montana
11AA038	Verdigris Coulee near the Mouth
	LODGE CREEK TRIBUTARY BASIN
11AB008	Middle Creek above Lodge Creek
11AB001	Middle Creek below Middle Creek Reservoir
11AB108	Middle Creek near Govenlock
11AB009	Middle Creek near Saskatchewan Boundary
11AB060	Spangler Ditch near Govenlock
11AB083	Lodge Creek below McRae Creek at International Boundary
11AB089	Altawan Reservoir near Govenlock
	BATTLE CREEK TRIBUTARY BASIN
11AB018	Nashlyn Canal near Consul
11AB027	Battle Creek at International Boundary
11AB044	McKinnon Ditch near Consul
11AB058	Richardson Ditch near Consul
11AB077	Cypress Lake West Outflow Canal
11AB078	Cypress Lake West Inflow Canal
11AB084	Vidora Ditch near Consul
11AB085	Cypress Lake West Inflow Canal Drain
11AB102	Gaff Ditch near Merryflat
	FRENCHMAN RIVER TRIBUTARY BASIN
11AC037	Cypress Lake
11AC041	Frenchman River at International Boundary
11AC052	Eastend Canal near Eastend
11AC054	Newton Lake Main Canal
11AC055	Eastend Reservoir
11AC056	Newton Lake
11AC060	Cypress Lake East Outflow Canal
11AC063	Huff Lake
11AC064	Belanger Creek Diversion to Cypress Lake
11AC065	Huff Lake Gravity Canal
11AC066	Huff Lake Pumping Canal

GAUGING STATIONS OPERATED INDEPENDENTLY
BY EITHER
THE UNITED STATES OR CANADA
ST. MARY AND MILK RIVER BASINS
2000

*Data for these stations are not included in this report or appendices

Map Index	Station Name	Operated by
	ST. MARY RIVER BASIN	
5-0145*	Swiftcurrent Creek at Many Glacier, Montana	U.S.A.
5-0160*	Swiftcurrent Creek at Sherburne, Montana	U.S.A.
5-0175*	St. Mary River near Babb, Montana	U.S.A.
	MILK RIVER BASIN	
6-1322*	South Fork Milk River near Babb, Montana	U.S.A.
11AA028*	Bear Creek near International Boundary	Canada
11AA029*	Miners Coulee near International Boundary	Canada
	LODGE CREEK TRIBUTARY BASIN	
11AB082*	Lodge Creek at Alberta Boundary	Canada
11AB091	Michel Reservoir near Elkwater	Canada
11AB092	Greasewood Reservoir near Elkwater	Canada
11AB094	Bare Creek Reservoir near Elkwater	Canada
11AB097	Cressday Reservoir near Cressday	Canada
11AB098	Jaydot Reservoir near Jaydot	Canada
11AB099	Mitchell Reservoir near Elkwater	Canada
11AB103	Squaw Coulee near Willow Creek	Canada
11AB104	Massy Reservoir near Elkwater	Canada
11AB114	Middle Creek Reservoir Bedford Outlet	Canada
11AB115	Middle Creek Reservoir Flood Spillway	Canada
	BATTLE CREEK TRIBUTARY BASIN	
11AB020*	Shepherd Ditch near Consul	Canada
11AB075	Lyons Creek at International Boundary	Canada
11AB090	Reesor Reservoir near Elkwater	Canada
11AB095*	Adams Lake	Canada
11AB096*	Battle Creek near Consul	Canada
11AB101*	Battle Creek below Nashlyn Project	Canada
11AB117*	Battle Creek at Alberta Boundary	Canada
11AB118*	Battle Creek below Wilson's Weir	Canada
	FRENCHMAN RIVER TRIBUTARY BASIN	
11AC001*	Frenchman River Below Eastend Reservoir	Canada
11AC025*	Denniel Creek near Val Marie	Canada
11AC062*	Frenchman River below Newton Lake	Canada
11AC068*	Val Marie Pump No. 1	Canada
	ROCK CREEK TRIBUTARY BASIN	
6-1695*	Rock Creek below Horse Creek near International Boundary	U.S.A.


Map of the
St. Mary and Milk River
Drainage Basins
International gauging station
Other gauging station
International reservoir station
Boundary of Drainage Basin
Lake and Reservoir
River
Road
Railway
City, Town
Park or Forest
Kilometres
0 10 20 30
0 10 20
Miles
LOCATION MAP
Alberta
Saskatchewan
Manitoba
Ont.
B.C.
CANADA
U.S.A.
Montana
N. Dakota
Minn.
Wash.
Or.
Idaho
Wyoming
S. Dakota
ALBERTA
SASKATCHEWAN
MONTANA
CANADA
UNITED STATES of AMERICA
Drawn by: Mark R. Gilchrist
Environment Canada
113°
112°
111°
110°
109°
108°
107°
49°
48°

HD
1694
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R424
2000

Report to the International Joint Commission on the division and use of the waters of the St. Mary and Milk Rivers...