

Report to

**THE INTERNATIONAL JOINT COMMISSION**

On

THE DIVISION OF THE WATERS OF

**THE ST. MARY AND MILK RIVERS**

**2004**



HD  
1694  
.A2  
R424  
2004

**Cover Photo:**

Battle Creek at International Boundary, looking towards Saskatchewan from U.S.A.,  
October, 2003.

*Photo by Dustin DeWulf, Water Survey Division, Regina, Saskatchewan.*

**REPORT TO**  
**THE INTERNATIONAL JOINT COMMISSION**  
**ON**  
**THE DIVISION OF THE WATERS OF**  
**THE ST. MARY AND MILK RIVERS**  
**FOR THE YEAR 2004**

**Submitted By**

**Timothy Goos**

**Representing Canada**

**And**

**William J. Carswell, Jr.**

**Representing the United States**

March 2005

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

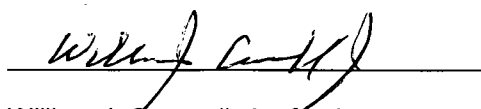
Commissioners:

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, 2004.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Timothy Goos", written over a horizontal line.

Timothy Goos  
Accredited Officer of Her Majesty

A handwritten signature in dark ink, appearing to read "William J. Carswell, Jr.", written over a horizontal line.

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

*This page intentionally left blank*

## **SYNOPSIS**

During the 2004 irrigation season the natural flows of the St. Mary River were 90 percent and of the Milk River 45 percent 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, 2004, was 639 000 cubic decametres ( $\text{dam}^3$ ) (518,000 acre-feet). Under the terms of the Boundary Waters Treaty, the Canadian share was 400 000  $\text{dam}^3$  (324,000 acre-feet). The total flow recorded at the International Boundary during the irrigation season was 103 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, 2004, was 62 000  $\text{dam}^3$  (50,300 acre-feet). Under terms of the Treaty, the United States' allotment was 42 300  $\text{dam}^3$  (34,300 acre-feet). The United States received 134 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 were 32 percent of the individual long-term average for the Lodge Creek at the International Boundary, 85 percent for the Battle Creek at the International Boundary, and 91 percent for the Frenchman River at the International Boundary.

The annual meeting of the Field Representatives was held at Cypress Hills, Alberta, on February 24, 2005. Mutual problems, future plans, and changes in computational procedures were discussed and a schedule of field operations for 2005 was adopted.

*This page intentionally left blank*

## **TABLE OF CONTENTS**

SYNOPSIS .....	i
TABLE OF CONTENTS.....	iii
INTRODUCTION .....	1
ST. MARY RIVER.....	3
MILK RIVER .....	9
SOUTHERN TRIBUTARIES OF THE MILK RIVER.....	15
EASTERN TRIBUTARIES OF THE MILK RIVER.....	17
LODGE CREEK .....	24
BATTLE CREEK .....	28
FRENCHMAN RIVER .....	32

## **LIST OF TABLES**

Table 1: Summary of St. Mary River Division for 2004* .....	5
Table 2: Summary of Milk River Division for 2004* .....	11
Table 3: Summary of Lodge Creek Division for 2004* .....	25
Table 4: Summary of Battle Creek Division for 2004* .....	29
Table 5: Summary of Frenchman River Division for 2004* .....	33



*This page intentionally left blank*

## **TABLE OF CONTENTS (CONTINUED)**

### **LIST OF FIGURES**

Figure 1.	St. Mary River Division, 2004	7
Figure 2.	Milk River Division, 2004	13
Figure 3.	Reservoirs in Lodge Creek, Battle Creek, and Frenchman River Basins Month-End Contents: 2003, 2004, and 1994-2003 Mean	19
Figure 4.	Lodge Creek Division, 2004	27
Figure 5.	Battle Creek Division, 2004	31
Figure 6.	Frenchman River Division, 2004	35

### **ANNEX**

A. 1921 Order of the International Joint Commission Respecting the St. Mary-Milk Rivers .....	37
B. Letter of Intent Respecting the St. Mary - Milk Rivers Streamflow Transfers .....	45
C. Conversion Factors .....	51
D. List of Gauging Stations .....	55

### **MAP**

Map of St. Mary and Milk River Drainage Basins

*This page intentionally left blank*

## 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 2004 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 the Accredited Officer of Her Majesty, was represented in the field by Mr. R.G. Boals, Chief, Water Survey Division, Prairie and Northern Region. Mr. Robert M. Hirsch, United States Geological Survey, as the 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 2002, 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, Water Survey 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 Cypress Hills, Alberta, on February 24, 2005. Mutual concerns, future plans, and changes in computational procedures were discussed and a schedule of field operations for 2005 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 10 100 dam<sup>3</sup> (8,190 acre-feet) on October 31, 2003. Storage increased to 26 800 dam<sup>3</sup> (21,700 acre-feet) on March 29, 2004, when the 2004 irrigation season releases began. Maximum storage was 66 400 dam<sup>3</sup> (53,800 acre-feet) on July 28, 2004 and storage decreased to 31 500 dam<sup>3</sup> (25,500 acre-feet) by the end of the irrigation season on October 31, 2004. The minimum storage occurred on May 2, 2004 when the contents of Lake Sherburne lowered to 12 100 dam<sup>3</sup> (9,810 acre-feet).

Water was diverted from the St. Mary River into the Milk River via the St. Mary Canal starting March 30. The canal was closed from July 24 to July 27, 2004 for repairs to the siphon, although minimal diversions were still reported. The final seasonal closure of the canal was September 22, 2004. The total flow recorded at the gauging station on the St. Mary Canal at St. Mary Crossing (station 05AE029) was 224 000 dam<sup>3</sup> (182,000 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, 2003 to October 31, 2004 was 701 000 dam<sup>3</sup> (568,000 acre-feet) of which 639 000 dam<sup>3</sup> (518,000 acre-feet) occurred during the irrigation season, April 1 to October 31, 2004. For the irrigation season, Canada's and the United States' shares were 400 000 dam<sup>3</sup> (324,000 acre-feet) and 239 000 dam<sup>3</sup> (194,000 acre-feet), respectively. During the irrigation season, a total discharge of 412 000 dam<sup>3</sup> (334,000 acre-feet) was recorded at the International Boundary, which was 103 percent of the Canadian share. The computed natural flow during the irrigation season was 90 percent of the average of the previous 101 years of record.

Deficit deliveries were recorded in five (5) of the 16 division periods during the 2004 irrigation season. In accordance with the 2001 Letter of Intent respecting the St. Mary and Milk Rivers streamflow transfers (a copy is available in Annex B of this report), the United States is allowed to accumulate a deficit on the St. Mary River of up to 4,000 cfs-days (9 800 dam<sup>3</sup>) (7,940 acre-feet) between March 1 and May 31 of each year which, at the discretion of the United States, may be reduced to no less than 2,000 cfs-days (4 900 dam<sup>3</sup>) (3,970 acre-feet) between June 1 and July 15 of each year with surplus deliveries of St. Mary River water. The incurred deficits on the St. Mary and Milk Rivers may be offset and the outstanding deficits as of September 15 will be equalized by October 31 of each year.

For the year 2004, no outstanding deficits remained on either the St. Mary River to Canada or on the Milk River to the United States as of September 15. During the last division period, an outstanding deficit of 292 dam<sup>3</sup> (237 acre-feet) occurred on the St. Mary River. This deficit was a result of an isolated rain event in the Swiftcurrent Creek basin and subsequent storage in Lake Sherburne.

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 2004\***  
**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	5,097	2,549	3,215	666	
MAR 16 - MAR 31	8,231	4,115	5,233	1,118	
APR 1 - APR 15	18,139	13,347	11,636		1,711
APR 16 - APR 30	32,724	22,425	19,855		2,570
MAY 1 - MAY 15	66,873	39,545	37,050		2,495
MAY 16 - MAY 31	65,782	39,406	36,754		2,652
JUNE 1 - JUNE 15	88,069	50,144	51,967	1,823	
JUNE 16 - JUNE 30	77,460	44,838	48,149	3,311	
JULY 1 - JULY 15	84,280	48,249	48,840	591	
JULY 16 - JULY 31	47,445	30,237	33,841	3,604	
AUG 1 - AUG 15	21,790	16,262	16,895	633	
AUG 16 - AUG 31	40,337	26,335	27,420	1,085	
SEP 1 - SEP 15	29,310	20,541	21,778	1,237	
SEP 16 - SEP 30	31,376	21,711	30,105	8,394	
OCT 1 - OCT 15	15,661	11,745	12,518	773	
OCT 16 - OCT 31	20,192	15,145	14,853		292
TOTAL	652,766	406,594	420,109		

\* 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, 2004: 9 428 dam<sup>3</sup> (7,643 acre-feet) (3,854 cfs-days)  
as of July 15, 2004: 4 900 dam<sup>3</sup> (3,970 acre-feet) (2,000 cfs-days)  
as of September 15, 2004: 0 dam<sup>3</sup> (0 acre-feet) (0 cfs-days)

U.S.A. share of Milk River waters outstanding as of September 15, 2004: 0 dam<sup>3</sup> (0 acre-feet) (0 cfs-days)

Allowable deficit carryovers, as per 2001 Letter of Intent respecting St. Mary-Milk Rivers streamflow transfers, are:

as of May 31, 2004: 9 800 dam<sup>3</sup> (7,940 acre-feet) (4,000 cfs-days)  
as of July 15, 2004: 4 900 dam<sup>3</sup> (3,970 acre-feet) (2,000 cfs-days).

Any deficits outstanding as of September 15 are to be equalized by October 31 of each year.



**Table 1A Summary of St. Mary River Division for 2004\***  
**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	4,132	2,066	2,606	540	
MAR 16 - MAR 31	6,673	3,336	4,242	906	
APR 1 - APR 15	14,705	10,820	9,433		1,387
APR 16 - APR 30	26,529	18,180	16,096		2,084
MAY 1 - MAY 15	54,214	32,059	30,036		2,023
MAY 16 - MAY 31	53,330	31,946	29,797		2,150
JUNE 1 - JUNE 15	71,398	40,652	42,130	1,478	
JUNE 16 - JUNE 30	62,797	36,350	39,034	2,684	
JULY 1 - JULY 15	68,326	39,116	39,595	479	
JULY 16 - JULY 31	38,464	24,513	27,435	2,922	
AUG 1 - AUG 15	17,665	13,184	13,697	513	
AUG 16 - AUG 31	32,701	21,350	22,229	880	
SEP 1 - SEP 15	23,762	16,653	17,655	1,003	
SEP 16 - SEP 30	25,437	17,601	24,406	6,805	
OCT 1 - OCT 15	12,696	9,522	10,148	627	
OCT 16 - OCT 31	16,370	12,278	12,041		237
TOTAL	529,198	329,626	340,583		

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

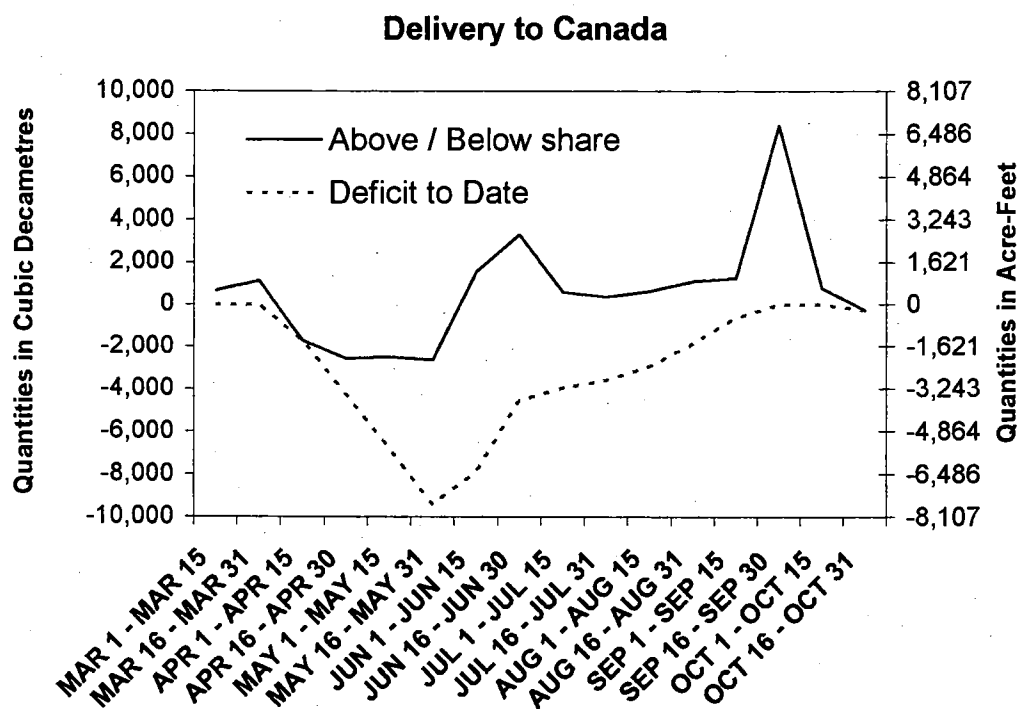
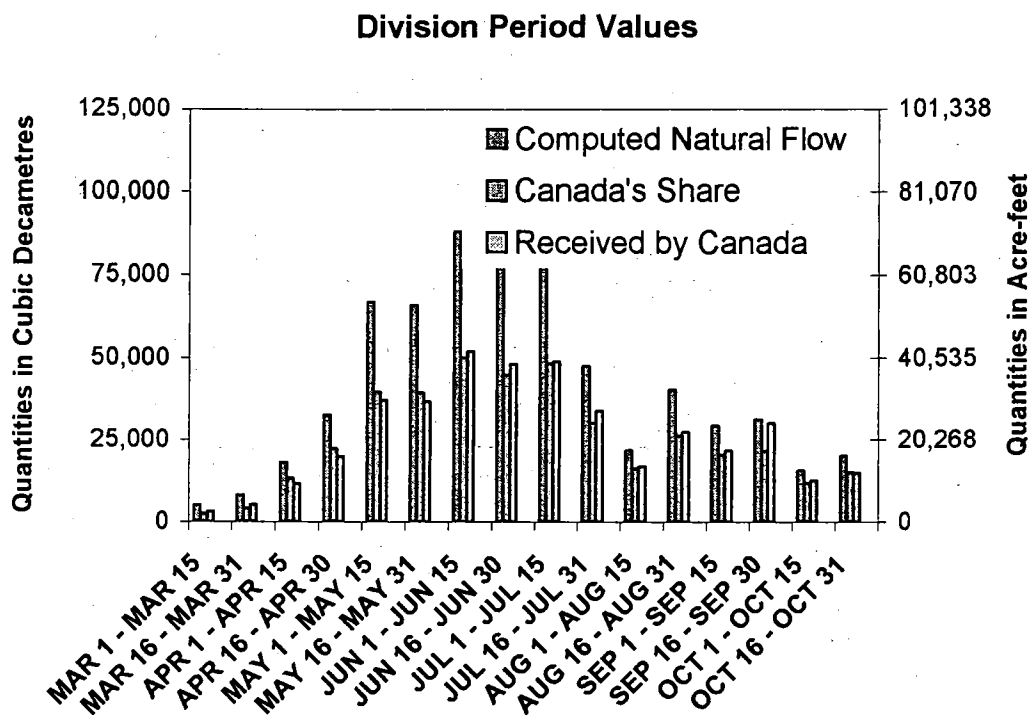
Note: Canadian share of St. Mary R. waters deficit outstanding  
as of May 31, 2004: 7,643 acre-feet (9 428 dam<sup>3</sup>) (3,854 cfs-days)  
as of July 15, 2004: 3,972 acre-feet (4 900 dam<sup>3</sup>) (2,000 cfs-days)  
as of September 15, 2004: 0 acre-feet (0 dam<sup>3</sup>) (0 cfs-days)

U.S.A. share of Milk River waters outstanding as of September 15, 2004: 0 acre-feet (0 dam<sup>3</sup>) (0 cfs-days)

Allowable deficit carryovers, as per 2001 Letter of Intent respecting St. Mary-Milk Rivers streamflow transfers, are:  
as of May 31, 2004: 7,940 acre-feet (9,800 dam<sup>3</sup>) (4,000 cfs-days)  
as of July 15, 2004: 3,970 acre-feet (4,900 dam<sup>3</sup>) (2,000 cfs-days).

Any deficits outstanding as of September 15 are to be equalized by October 31 of each year.

Figure 1. St. Mary River Division, 2004



*This page intentionally left blank*

## 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 an 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, again for the year 2004, evapo-transpiration was estimated using the Onefour pan evaporation data as an index of Morton's model results.

During 2004, the United States' and Canada's respective estimated consumptive uses were 5 050 dam<sup>3</sup> (4,090 acre-feet) and 5 160 dam<sup>3</sup> (4,180 acre-feet). An inter-basin transfer of 13 dam<sup>3</sup> (11 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, 2004 was 62 000 dam<sup>3</sup> (50,300 acre-feet). This flow was 45 percent of the average computed natural flow of the previous 92 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 42 300 dam<sup>3</sup> (34,300 acre-feet) and 19 600 dam<sup>3</sup> (15,900 acre-feet). The United States received 134 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 two (2) of the 16 division periods during the irrigation season. 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 allowed by the 2001 Letter of Intent respecting the St. Mary and Milk Rivers streamflow transfers (a copy of which is available in Annex B of this report) where Canada is allowed to accumulate a deficit on the Milk River of up to 2,000 cfs-days (4 900 dam<sup>3</sup>) (3,970 acre-feet) between June 1 and September 15 of each year. The incurred deficits on the St. Mary and Milk Rivers may be offset and the outstanding deficits as of September 15 will be equalized by October 31 of each year.

For the year 2004, no accumulated deficits remained as of September 15 on either the Milk River to the United States or on the St. Mary River to Canada.

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 2004\***  
**Quantities in Cubic Decametres**

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	U.S.A. SHARE	RECEIVED BY U.S.A.	RECEIVED BY U.S.A.	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 15	10,900	5,450	10,904	5,454	
MAR 16 - MAR 31	5,609	2,805	5,611	2,806	
APR 1 - APR 15	1,541	1,156	1,541	385	
APR 16 - APR 30	1,256	942	1,256	314	
MAY 1 - MAY 15	3,164	2,373	3,165	792	
MAY 16 - MAY 31	9,527	7,145	8,552	1,407	
JUNE 1 - JUNE 15	8,634	6,476	7,676	1,200	
JUNE 16 - JUNE 30	3,033	2,275	2,670	395	
JULY 1 - JULY 15	2,688	2,016	2,027	11	
JULY 16 - JULY 31	1,478	1,108	772		336
AUG 1 - AUG 15	2,107	1,580	1,562		18
AUG 16 - AUG 31	3,337	2,503	2,757	254	
SEP 1 - SEP 15	2,451	1,838	2,088	250	
SEP 16 - SEP 30	2,422	1,816	2,422	606	
OCT 1 - OCT 15	1,916	1,437	1,916	479	
OCT 16 - OCT 31	1,901	1,426	1,901	475	
TOTAL	61,964	42,346	56,820		

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

Note:

U.S.A. share of Milk River waters deficit outstanding

as of September 15, 2004: 0 dam<sup>3</sup> (0 acre-feet) (0 cfs-days)

Canadian share of St. Mary R. waters deficit outstanding

as of May 31, 2004: 9 428 dam<sup>3</sup> (7,643 acre-feet) (3,854 cfs-days)

Allowable deficit carryover from June 1 and September 15 as per 2001 Letter of Intent respecting St. Mary - Milk River streamflow transfers can not be less than the outstanding deficit to Canada on St. Mary River Division as of May 31st, nor exceeding 4,900 dam<sup>3</sup> (2,000 cfs-days) (3,970 acre-feet), whichever is less.

**Table 2A: Summary of Milk River Division for 2004\***  
**Quantities in Acre-Feet**

DIVISION PERIOD  AT INTERNATIONAL BOUNDARY	NATURAL  FLOW	U.S.A.  SHARE	RECEIVED  BY  U.S.A.	RECEIVED BY U.S.A.	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 15	8,837	4,418	8,840	4,422	
MAR 16 - MAR 31	4,547	2,274	4,549	2,275	
APR 1 - APR 15	1,249	937	1,249	312	
APR 16 - APR 30	1,018	764	1,018	255	
MAY 1 - MAY 15	2,565	1,924	2,566	642	
MAY 16 - MAY 31	7,724	5,793	6,933	1,141	
JUNE 1 - JUNE 15	7,000	5,250	6,223	973	
JUNE 16 - JUNE 30	2,459	1,844	2,165	320	
JULY 1 - JULY 15	2,179	1,634	1,643	9	
JULY 16 - JULY 31	1,198	899	626		272
AUG 1 - AUG 15	1,708	1,281	1,266		15
AUG 16 - AUG 31	2,705	2,029	2,235	206	
SEP 1 - SEP 15	1,987	1,490	1,693	203	
SEP 16 - SEP 30	1,964	1,472	1,964	491	
OCT 1 - OCT 15	1,553	1,165	1,553	388	
OCT 16 - OCT 31	1,541	1,156	1,541	385	
TOTAL	50,234	34,330	46,064		

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

Note:

U.S.A. share of Milk River waters deficit outstanding

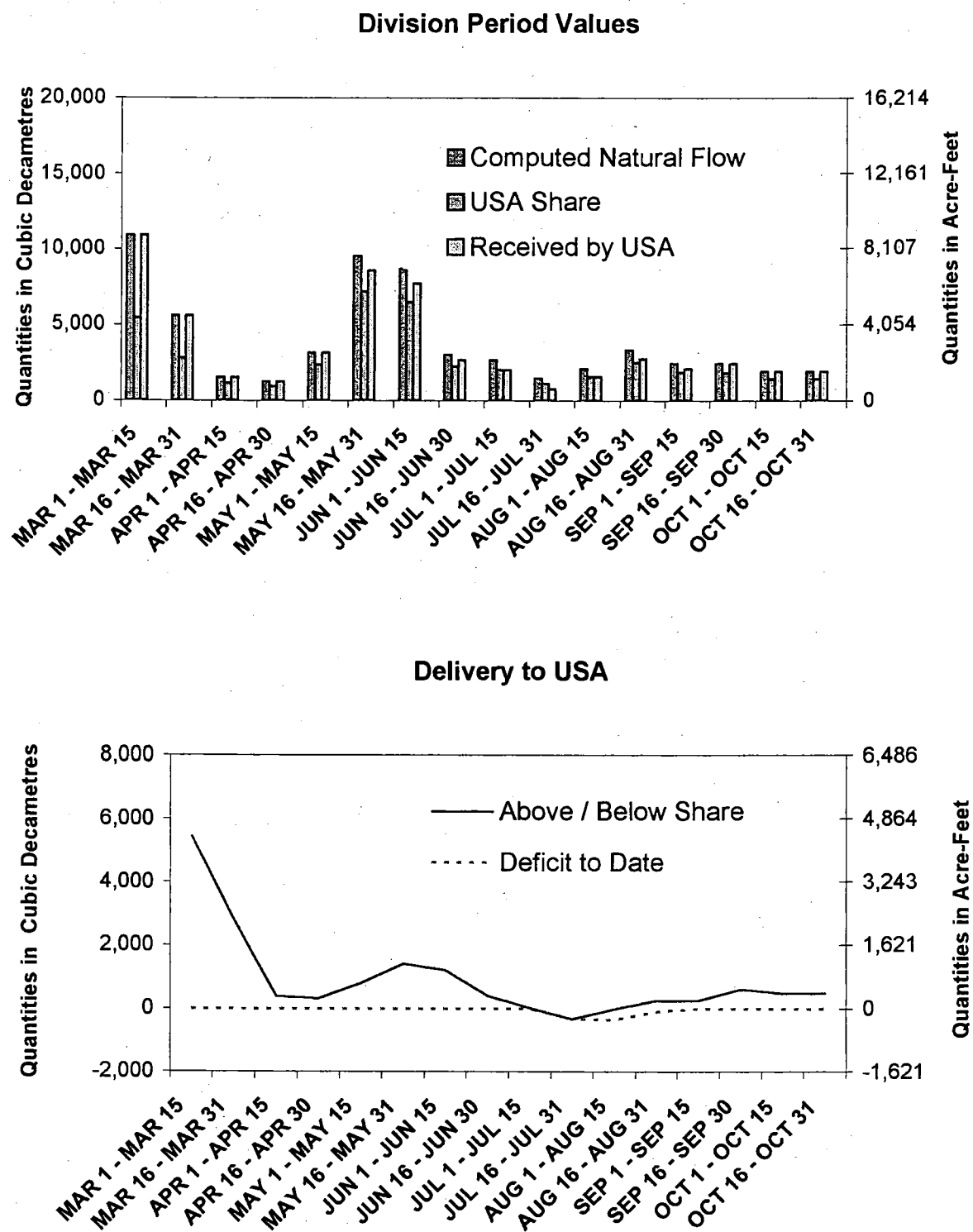
as of September 15, 2004: 0 acre-feet (0 dam<sup>3</sup>) (0 cfs-days)

Canadian share of St. Mary R. waters deficit outstanding

as of May 31, 2004: 7,643 acre-feet (9 428 dam<sup>3</sup>) (3,854 cfs-days)

Allowable deficit carryover from June 1 and September 15 as per 2001 Letter of Intent respecting St. Mary - Milk River streamflow transfers can not be less than the outstanding deficit to Canada on St. Mary River Division as of May 31st, nor exceeding 4,900 dam<sup>3</sup> (2,000 cfs-days) (3,970 acre-feet), whichever is less.

Figure 2. Milk River Division, 2004





*This page intentionally left blank*

## **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 the 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 2004.

Flows for March through October 2004 for the southern tributaries were as follows:

- o Bear Creek near International Boundary – 124 dam<sup>3</sup> (101 acre-feet).
- o Miners Coulee near International Boundary – 181 dam<sup>3</sup> (147 acre-feet).

*This page intentionally left blank*

## 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 (station 11AC063), and Newton Lake (station 11AC056) which 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.

Two modifications in the procedures for the computation of the natural flows on Lodge Creek were implemented in 2004. One modification adjusted the evaporation in the upper reservoirs for elevation. The other applied minor diversions to the channel reach area where they are diverted as opposed to at the border, allowing for channel losses to the minor diversions. Both modifications better reflect reality and decrease the likelihood of the computation of negative natural flows.

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. Total flows from March to October of 3 340 dam<sup>3</sup> (2,710 acre-feet) were recorded on Lyons Creek for the year 2004.

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 Watershed Authority, and for the Lodge Creek and Battle Creek basins in Alberta by Alberta Environment. Lists of reported diversions are contained in Appendix B.

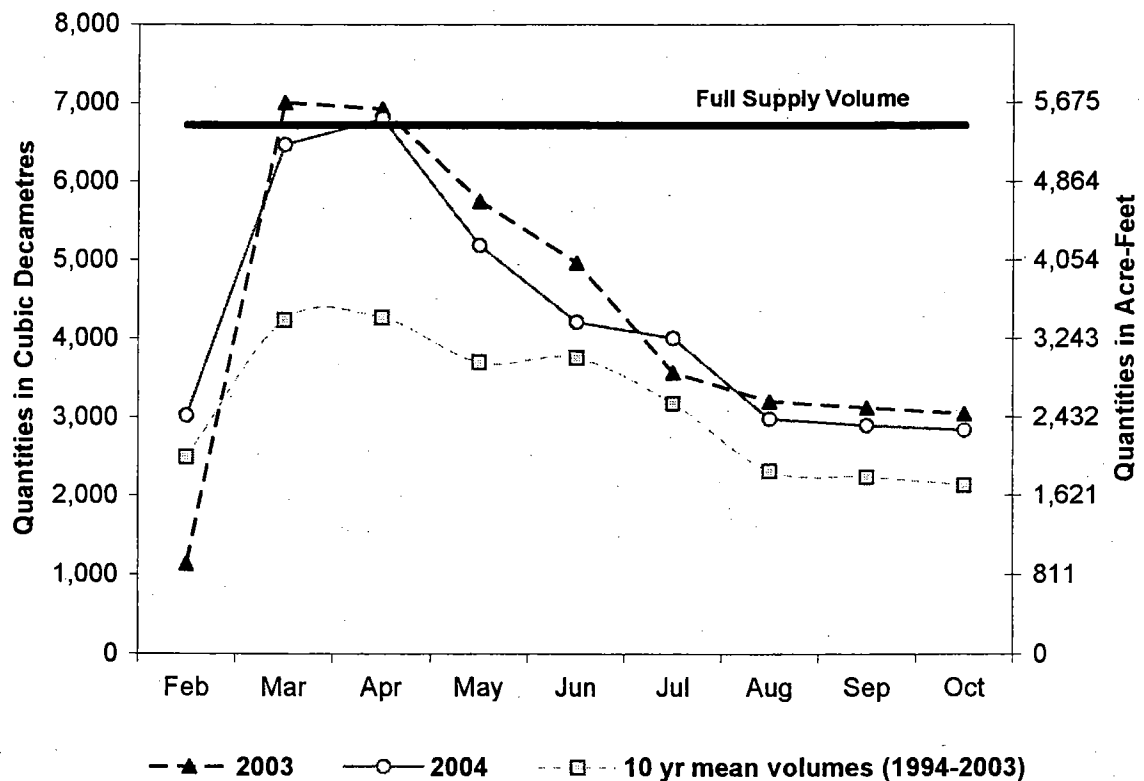
The winter of 2003-2004 began with good snow cover and the potential for a heavy runoff; however, relatively dry soil conditions coupled with a cool spring and mid-January thaw, caused much of the moisture to soak into the ground. There was enough snowmelt water to fill Altawan Reservoir in the Lodge Creek basin and all three reservoirs in the Frenchman River basin. Cypress Lake did not achieve even its dead storage elevation in the Battle Creek basin.

The construction initiated in 2003 on Bare Creek reservoir continued in 2004. Spring storage water had to be released down Lodge Creek to facilitate the completion of the reservoir. Subsequent summer storage was released to meet stock water demands. The Jaydot Reservoir riparian gate remained open for the season. Therefore only temporary storage in one period when inflows exceeded outflows occurred; during the next period, this storage in Jaydot Reservoir ebbed.

There were two irrigation releases from Altawan Reservoir in the Lodge Creek basin. The water supplied in the Battle Creek basin above Consul was pumped from Cypress Lake as the lake was too low to provide gravity feed. Irrigation was done in stages as the two diesel pumps could not meet the simultaneous demands of the irrigators. There were two irrigation releases in the Frenchman basin. The first irrigation was interrupted by a significant rain event near the end of May which prompted a short release from Newton Lake to compensate for the increased flow and reservoir storage.

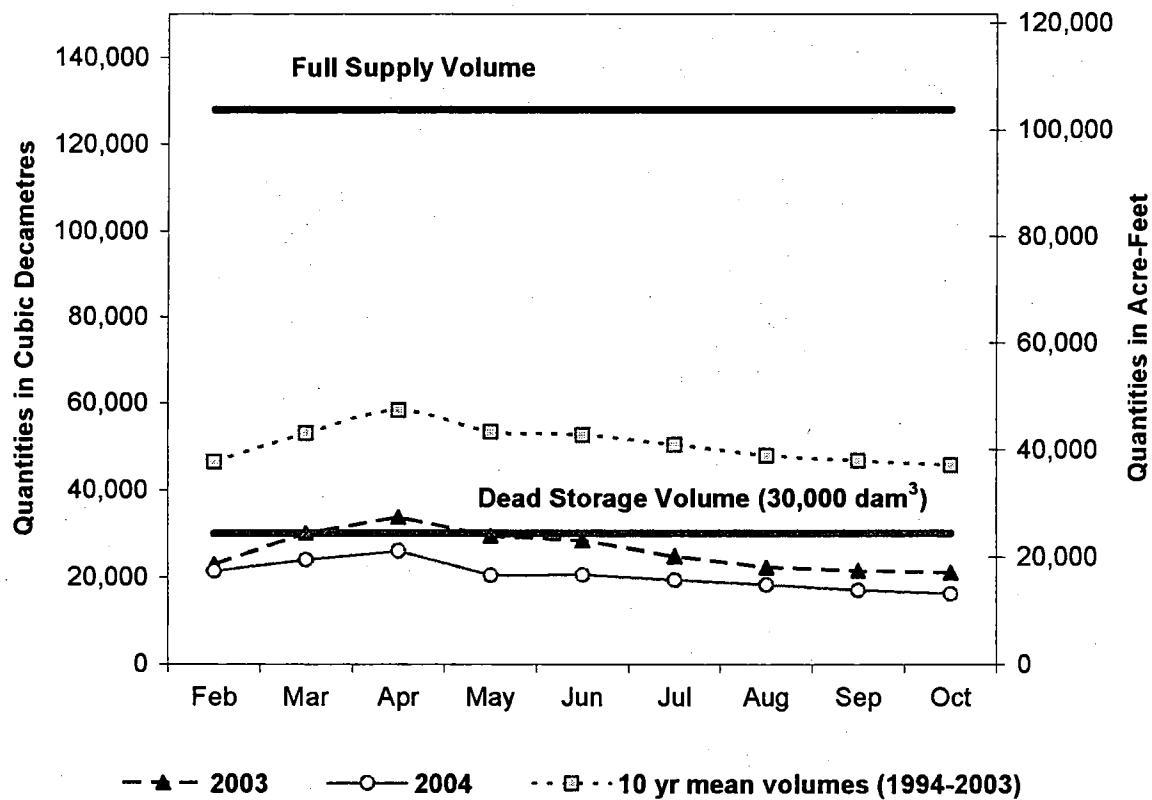
**Figure 3. Reservoirs in Lodge Creek, Battle Creek, and Frenchman River Basins**  
**Month-End Contents: 2003, 2004, and 1994-2003 Mean**

**Figure 3a. Altawan Reservoir**



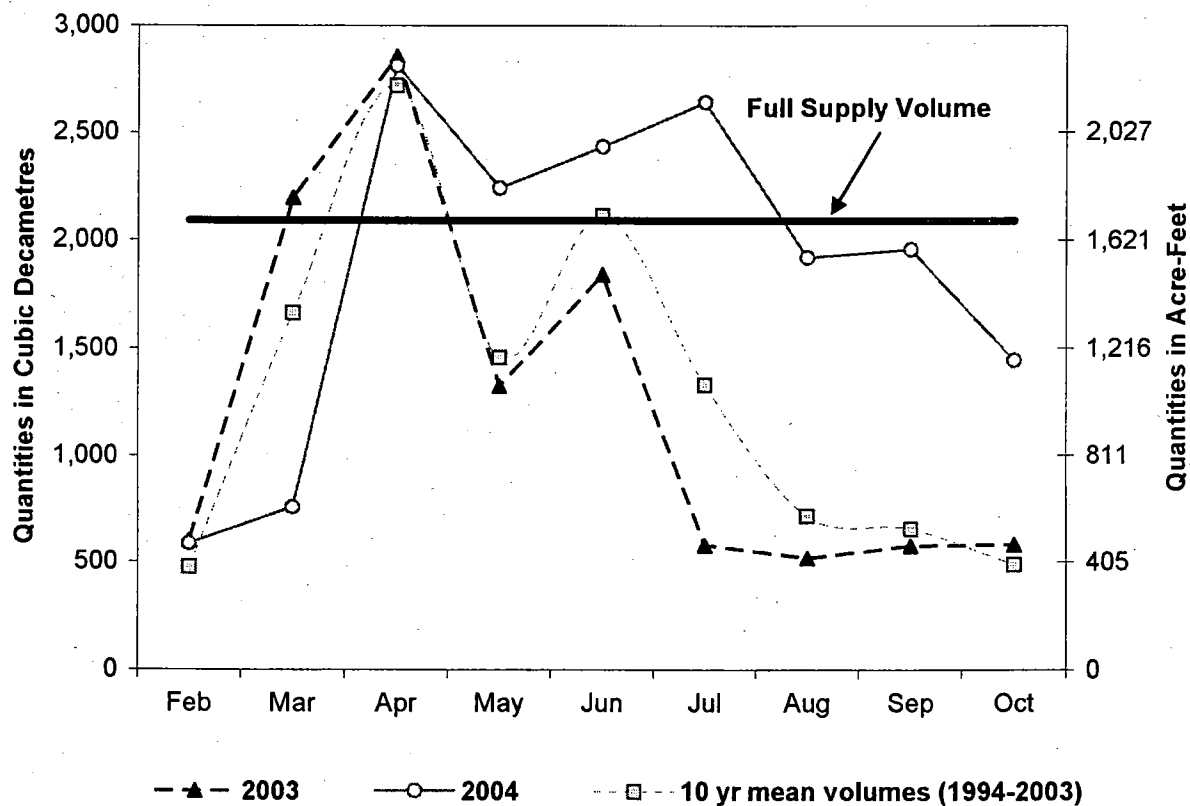
**Figure 3. Reservoirs in Lodge Creek, Battle Creek, and Frenchman River Basins**  
**Month-End Contents: 2003, 2004, and 1994-2003 Mean**

**Figure 3b. Cypress Lake**



**Figure 3. Reservoirs in Lodge Creek, Battle Creek, and Frenchman River Basins**  
**Month-End Contents: 2003, 2004, and 1994-2003 Mean**

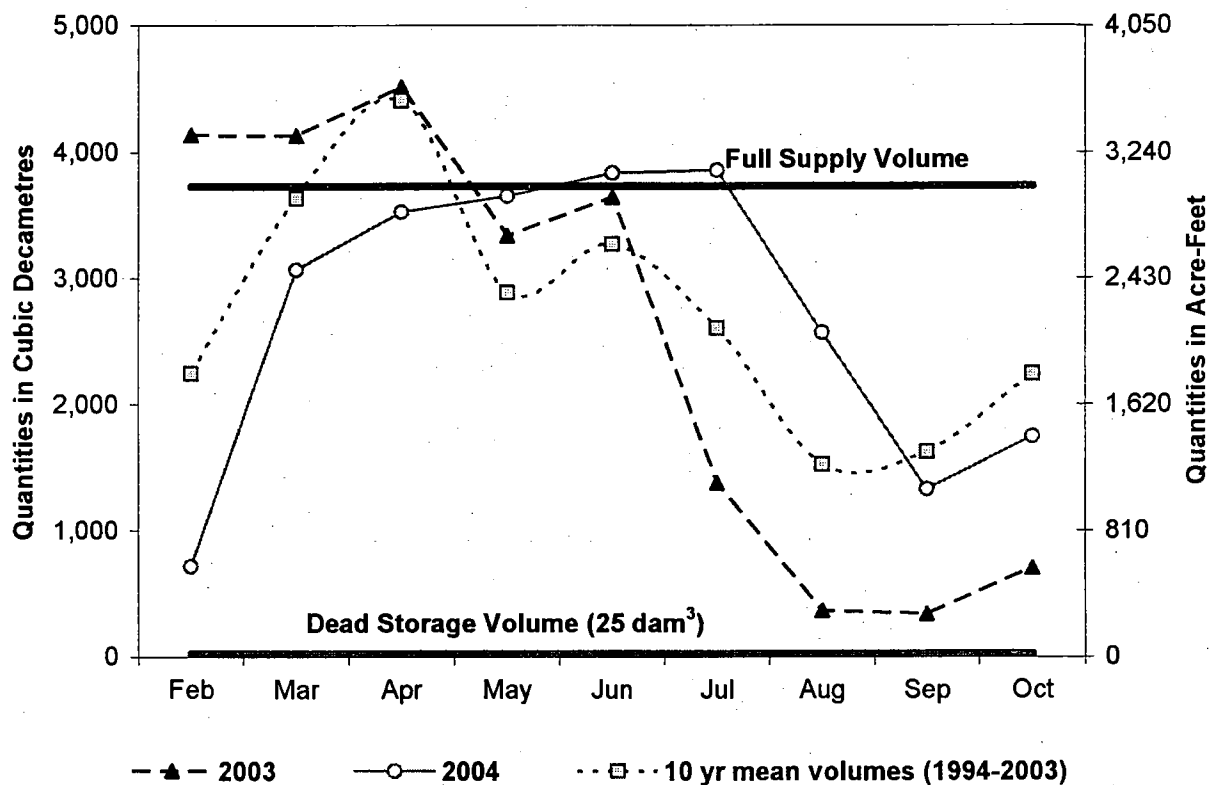
**Figure 3c. Eastend Reservoir**





**Figure 3. Reservoirs in Lodge Creek, Battle Creek, and Frenchman River Basins**  
**Month-End Contents: 2003, 2004, and 1994-2003 Mean**

**Figure 3d. Huff Lake**

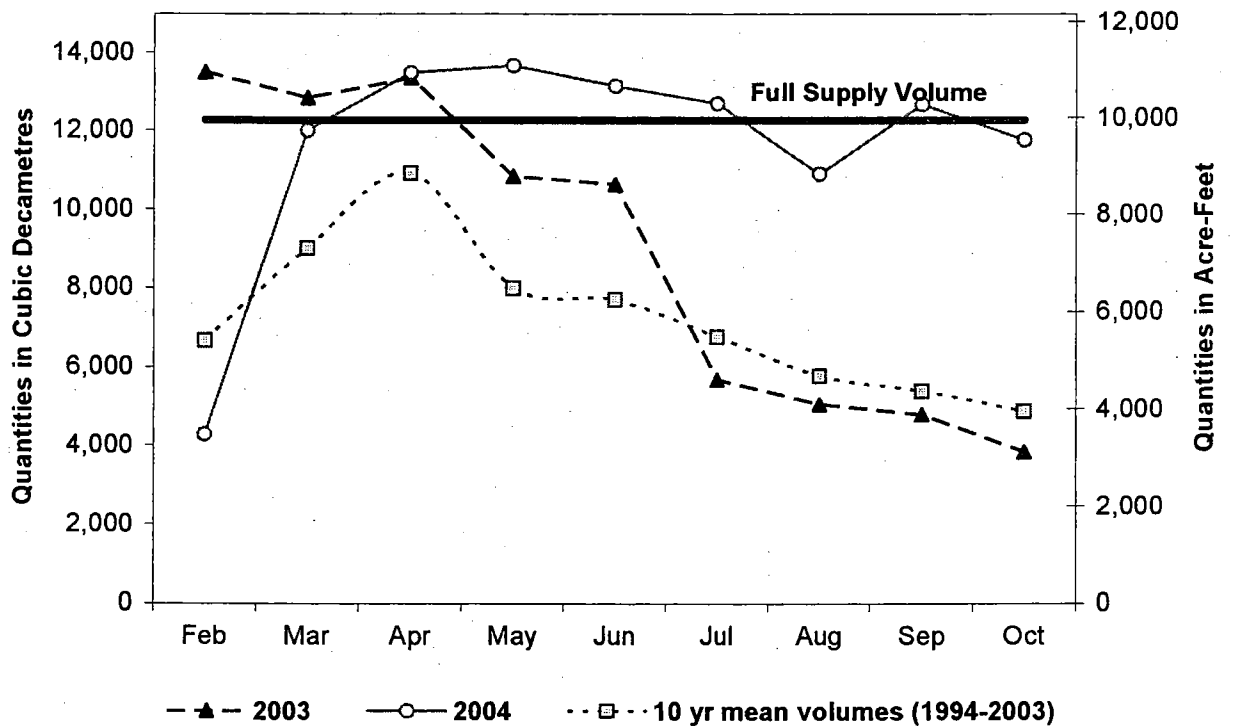


Huff Lake stage-storage table was revised in 2004, increasing the dead storage and decreasing the full supply storage volumes from previous years.

# Figure 3. Reservoirs in Lodge Creek, Battle Creek, and Frenchman River Basins

Month-End Contents: 2003, 2004, and 1994-2003 Mean

Figure 3e. Newton Lake



## LODGE CREEK

The computed natural flow of Lodge Creek at the International Boundary from March 1 to October 31, 2004 was 9 630 dam<sup>3</sup> (7,810 acre-feet). This volume is 32 percent of the average natural flow of the previous 54 years of record. Each country is entitled to 50 percent of the natural flow or 4 815 dam<sup>3</sup> (3,900 acre-feet) for the irrigation season. A total of 5 440 dam<sup>3</sup> (4,410 acre-feet) was recorded at Lodge Creek below McRae Creek at the International Boundary (station 11AB083) from March 1 to October 31.

Deficit deliveries were recorded for three (3) of the 16 division periods during the irrigation season. An outstanding deficit of 10 dam<sup>3</sup> (8 acre-feet) remained at the end of October 2004.

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 2004\***  
**Quantities in Cubic Decametres**

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	U.S.A. SHARE	RECEIVED BY U.S.A.	RECEIVED BY U.S.A.	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 15	924	462	735	273	
MAR 16 - MAR 31	5,486	2,743	1,945		798
APR 1 - APR 15	2,404	1,202	760		442
APR 16 - APR 30	210	105	269	164	
MAY 1 - MAY 15	79	39	89	50	
MAY 16 - MAY 31	24	12	338	326	
JUNE 1 - JUNE 15	372	186	1,244	1,058	
JUNE 16 - JUNE 30	128	64	31		33
JULY 1 - JULY 15	4	2	20	18	
JULY 16 - JULY 31	0	0	3	3	
AUG 1 - AUG 15	0	0	1	1	
AUG 16 - AUG 31	1	1	1		
SEP 1 - SEP 15	0	0	1	1	
SEP 16 - SEP 30	0	0	0		
OCT 1 - OCT 15	0	0	0		
OCT 16 - OCT 31	1	1	1		
TOTAL	9,633	4,817	5,438		

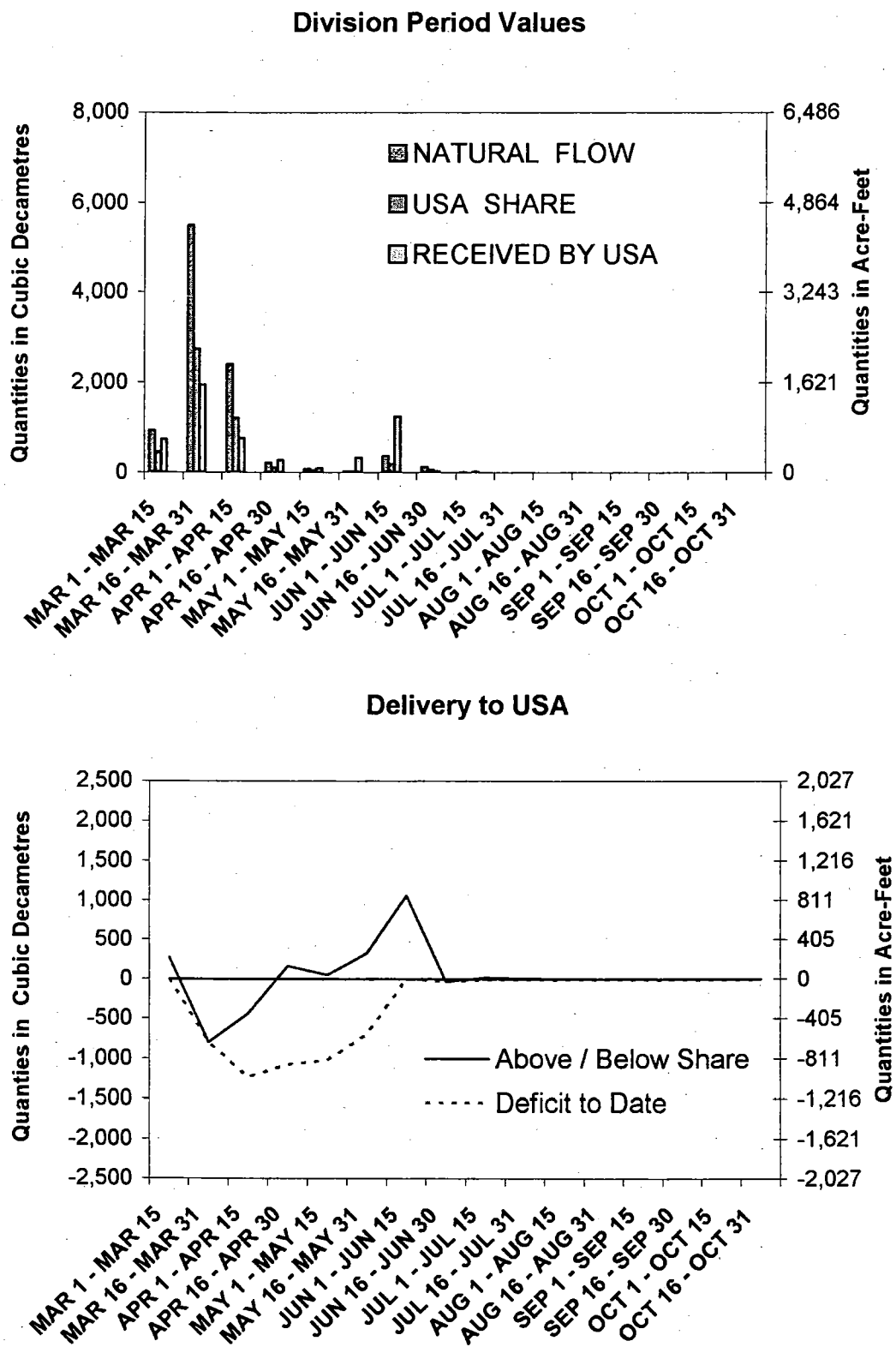
\* This is a summary of data from Table 10, Appendix A. Totals and shares may not add or subtract exactly as a result of rounding.

**Table 3A: Summary of Lodge Creek Division for 2004\***  
**Quantities in Acre-Feet**

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	U.S.A. SHARE	RECEIVED BY U.S.A.	RECEIVED BY U.S.A.	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 15	749	375	596	221	
MAR 16 - MAR 31	4,448	2,224	1,577		647
APR 1 - APR 15	1,949	974	616		358
APR 16 - APR 30	170	85	218	133	
MAY 1 - MAY 15	64	32	72	41	
MAY 16 - MAY 31	19	10	274	264	
JUNE 1 - JUNE 15	302	151	1,009	858	
JUNE 16 - JUNE 30	104	52	25		27
JULY 1 - JULY 15	3	2	16	15	
JULY 16 - JULY 31	0	0	2	2	
AUG 1 - AUG 15	0	0	1	1	
AUG 16 - AUG 31	1	1	1		
SEP 1 - SEP 15	0	0	1	1	
SEP 16 - SEP 30	0	0	0		
OCT 1 - OCT 15	0	0	0		
OCT 16 - OCT 31	1	1	1		
TOTAL	7,809	3,905	4,409		

\* 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, 2004



## BATTLE CREEK

The computed natural flow of Battle Creek at the International Boundary from March 1 to October 31, 2004, was 25 800 dam<sup>3</sup> (20,900 acre-feet). This volume is 85 percent of the average natural flow of the previous 64 years of record. Each country is entitled to 50 percent of the natural flow i.e., 12 900 dam<sup>3</sup> (10,500 acre-feet). A total of 17 200 dam<sup>3</sup> (13,900 acre-feet) was recorded at Battle Creek at International Boundary (station 11AB027) from March 1 to October 31.

Deficit deliveries were recorded in three (3) of the 16 division periods during the irrigation season. All deficit deliveries were refunded by the end of the irrigation season.

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 2004\***  
**Quantities in Cubic Decametres**

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	U.S.A. SHARE	RECEIVED BY U.S.A.	RECEIVED BY U.S.A.	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 25	6,924	3,462	5,319	1,857	
MAR 26 - APR 9	4,960	2,480	1,567		913
APR 10 - APR 24	2,229	1,115	698		417
APR 25 - MAY 9	1,202	601	382		219
MAY 10 - MAY 25	1,409	705	811	106	
MAY 26 - JUNE 9	2,074	1,037	1,760	723	
JUNE 10 - JUNE 24	1,707	854	1,832	978	
JUNE 25 - JULY 9	892	446	560	114	
JULY 10 - JULY 25	648	324	522	198	
JULY 26 - AUG 9	572	286	564	278	
AUG 10 - AUG 25	631	316	628	312	
AUG 26 - SEP 9	570	285	567	282	
SEP 10 - SEP 24	486	243	484	241	
SEP 25 - OCT 9	558	279	556	277	
OCT 10 - OCT 25	641	321	639	318	
OCT 26 - OCT 31	287	144	287	143	
TOTAL	25,790	12,898	17,176		

\* 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.

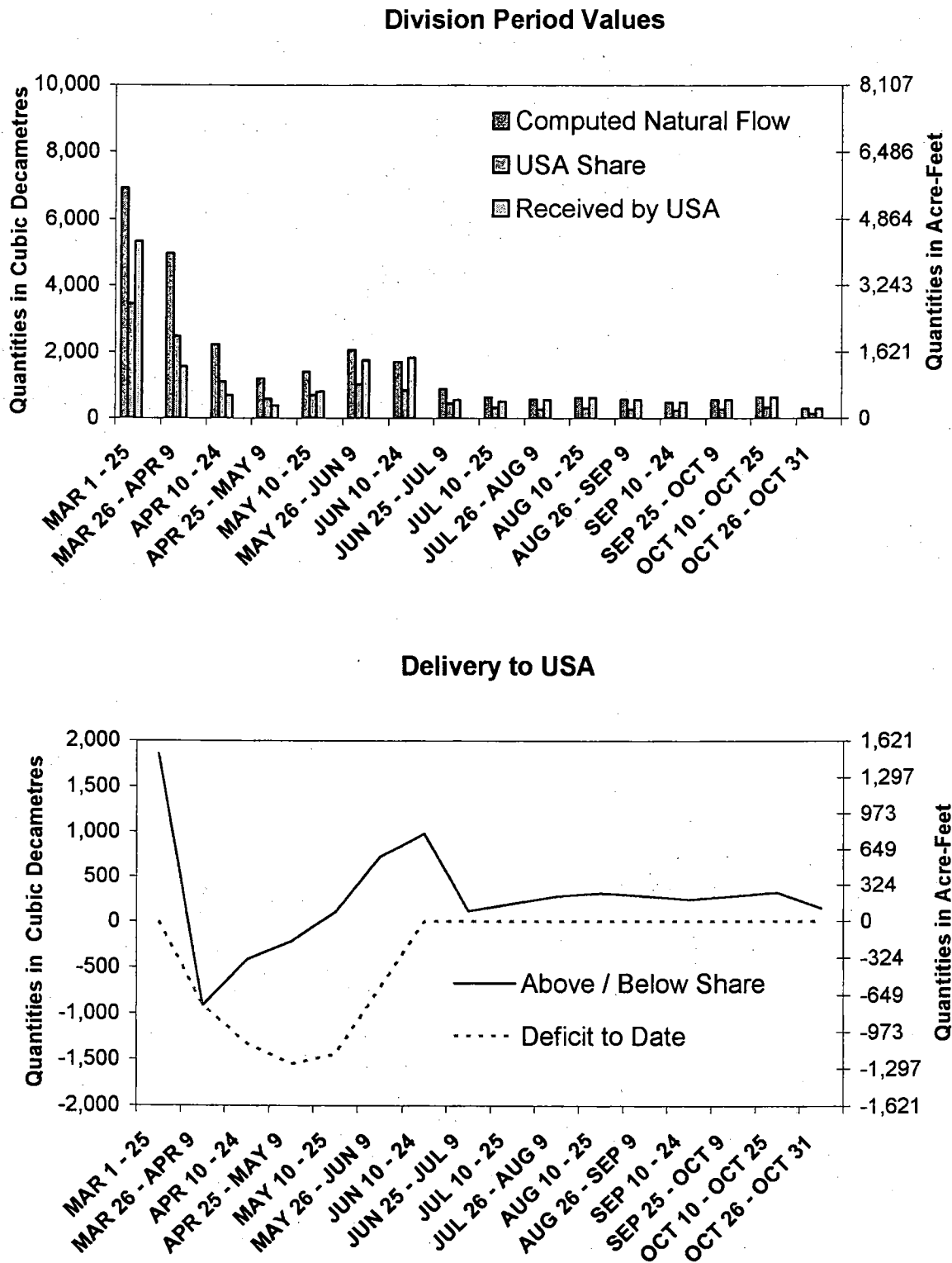


**Table 4A: Summary of Battle Creek Division for 2004\***  
**Quantities in Acre-Feet**

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	U.S.A. SHARE	RECEIVED BY U.S.A.	RECEIVED BY U.S.A.	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 25	5,613	2,807	4,312	1,505	
MAR 26 - APR 9	4,021	2,011	1,270		740
APR 10 - APR 24	1,807	904	566		338
APR 25 - MAY 9	974	487	310		178
MAY 10 - MAY 25	1,142	572	657	86	
MAY 26 - JUNE 9	1,681	841	1,427	586	
JUNE 10 - JUNE 24	1,384	692	1,485	793	
JUNE 25 - JULY 9	723	362	454	92	
JULY 10 - JULY 25	525	263	423	161	
JULY 26 - AUG 9	464	232	457	225	
AUG 10 - AUG 25	512	256	509	253	
AUG 26 - SEP 9	462	231	460	229	
SEP 10 - SEP 24	394	197	392	195	
SEP 25 - OCT 9	452	226	451	225	
OCT 10 - OCT 25	520	260	518	258	
OCT 26 - OCT 31	233	117	233	116	
TOTAL	20,908	10,456	13,925		

\* 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, 2004



## **FRENCHMAN RIVER**

The computed natural flow of the Frenchman River at the International Boundary from March 1 to October 31, 2004, was 71 700 dam<sup>3</sup> (58,100 acre-feet). This volume of natural flow is 91 percent of the average natural flow of the previous 64 years of record. Each country is entitled to 50 percent of the natural flow, i.e., 35 850 dam<sup>3</sup> (29,060 acre-feet). A total flow of 48 200 dam<sup>3</sup> (39,080 acre-feet) was recorded at Frenchman River at International Boundary (station 11AC041) from March 1 to October 31.

Deficit deliveries were recorded in six (6) of 16 division periods during the irrigation season. All deficit deliveries were refunded by October 31, 2004.

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 2004\***  
**Quantities in Cubic Decametres**

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	U.S.A. SHARE	RECEIVED BY U.S.A.	RECEIVED BY U.S.A.	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 15	289	145	214	69	
MAR 16 - MAR 31	9,889	4,945	4,306		639
APR 1 - APR 15	22,987	11,494	13,414	1,920	
APR 16 - APR 30	3,356	1,678	2,540	862	
MAY 1 - MAY 15	1,599	800	734		66
MAY 16 - MAY 31	19,586	9,793	16,920	7,127	
JUNE 1 - JUNE 15	4,901	2,451	3,117	666	
JUNE 16 - JUNE 30	2,391	1,196	2,149	953	
JULY 1 - JULY 15	2,991	1,495	2,246	751	
JULY 16 - JULY 31	915	458	931	473	
AUG 1 - AUG 15	151	76	151	75	
AUG 16 - AUG 31	702	351	297		54
SEP 1 - SEP 15	671	336	31		305
SEP 16 - SEP 30	278	139	4		135
OCT 1 - OCT 15	389	195	3		192
OCT 16 - OCT 31	568	284	1,118	834	
TOTAL	71,665	35,836	48,175		

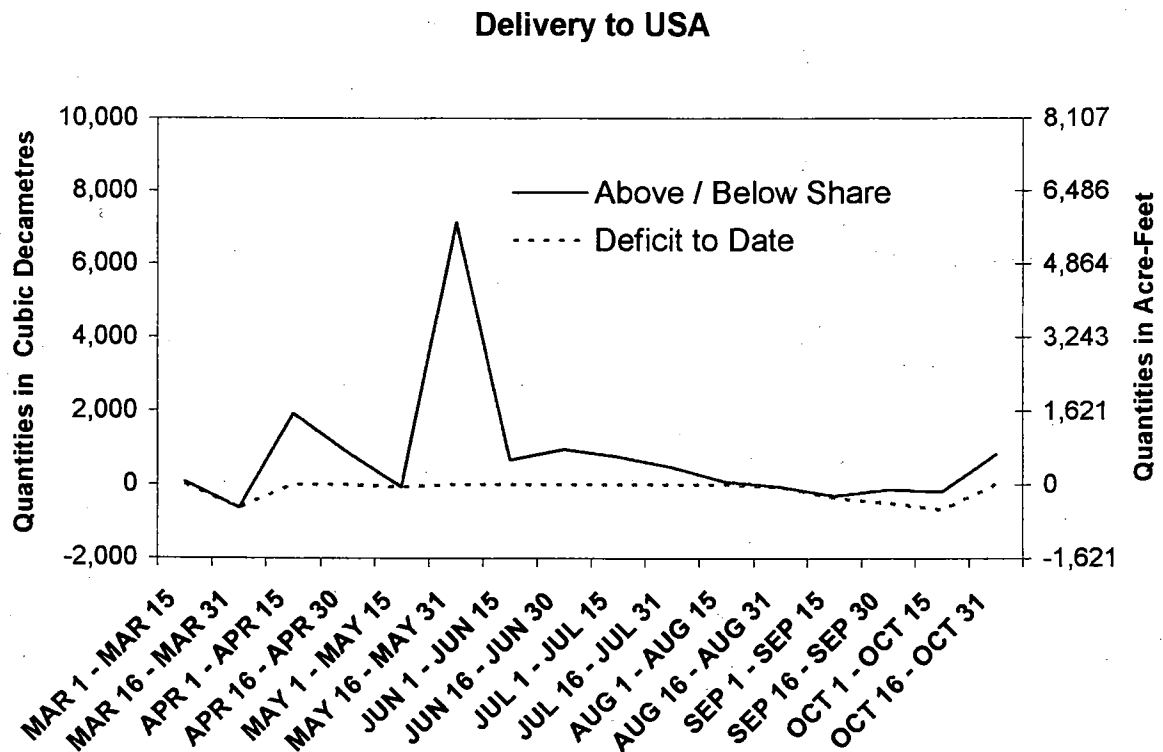
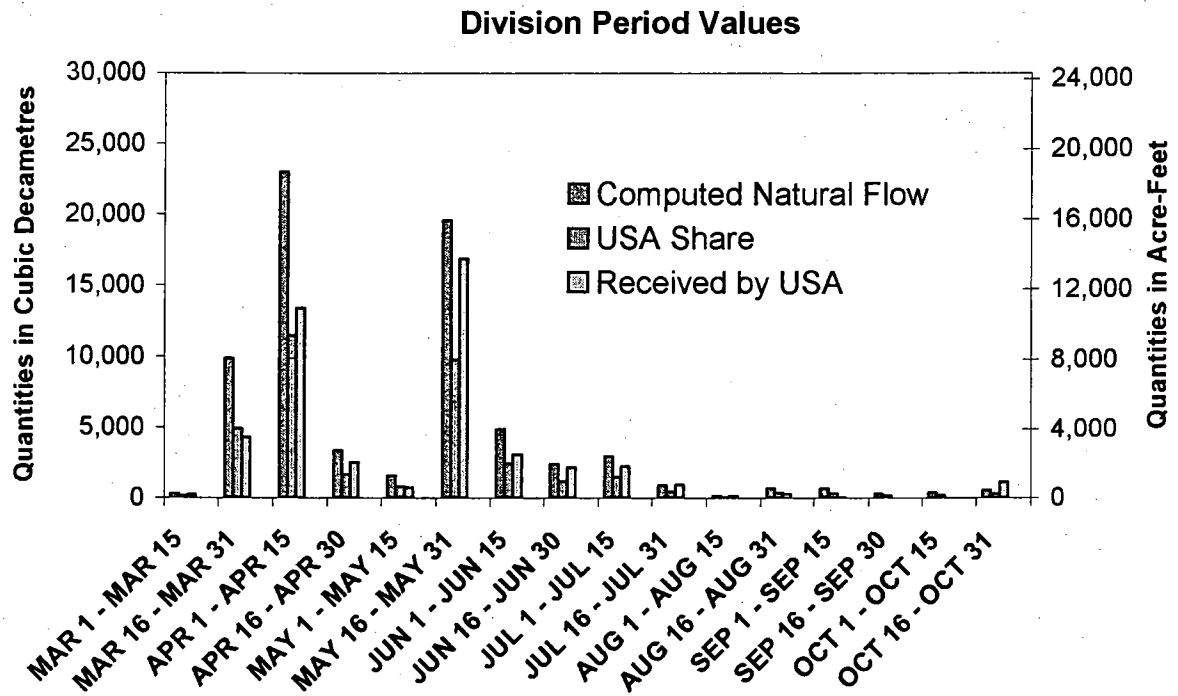
\* This is a summary of data from Table 14, Appendix A. Totals and shares may not add or subtract exactly as a result of rounding.

**Table 5A: Summary of Frenchman River Division for 2004\***  
**Quantities in Acre-Feet**

DIVISION PERIOD AT INTERNATIONAL BOUNDARY	NATURAL FLOW	U.S.A. SHARE	RECEIVED BY U.S.A.	RECEIVED BY U.S.A.	
				ABOVE SHARE	BELOW SHARE
MAR 1 - MAR 15	234	118	173	56	
MAR 16 - MAR 31	8,017	4,009	3,491		518
APR 1 - APR 15	18,636	9,318	10,875	1,557	
APR 16 - APR 30	2,721	1,360	2,059	699	
MAY 1 - MAY 15	1,297	649	595		54
MAY 16 - MAY 31	15,878	7,939	13,717	5,778	
JUNE 1 - JUNE 15	3,974	1,987	2,527	540	
JUNE 16 - JUNE 30	1,938	970	1,742	773	
JULY 1 - JULY 15	2,425	1,212	1,821	609	
JULY 16 - JULY 31	742	371	755	383	
AUG 1 - AUG 15	122	62	122	61	
AUG 16 - AUG 31	569	285	241		44
SEP 1 - SEP 15	544	272	25		247
SEP 16 - SEP 30	225	113	3		109
OCT 1 - OCT 15	316	158	2		156
OCT 16 - OCT 31	460	230	906	676	
TOTAL	58,098	29,052	39,055		

\* 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, 2004



*This page intentionally left blank*

ANNEX A

1921 Order of the International Joint Commission  
Respecting the St. Mary-Milk Rivers



*This page intentionally left blank*

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.

*This page intentionally left blank*

ANNEX B

Letter of Intent Respecting  
the St. Mary - Milk Rivers  
Streamflow Transfers



*This page intentionally left blank*

**LETTER OF INTENT  
TO BETTER UTILIZE THE WATERS OF THE ST. MARY AND MILK RIVERS**

Whereas Article VI of the Boundary Waters Treaty of 1909 states that the St. Mary and Milk Rivers and their tributaries are to be treated as one for the purposes of irrigation and power;

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 (currently designated as the Accredited Officers of the United States and Canada) to make the greatest beneficial use of the waters of the St. Mary and Milk Rivers;

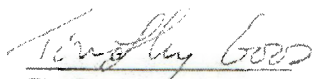
And whereas, Canada finds it beneficial to use more than its share of the Milk River in the June-September period each year to supply water to Canadian Milk River irrigators;

And 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 United States Milk River irrigators;

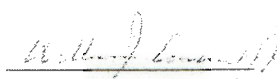
It is therefore ordered and directed by said Accredited Officers or their designates that the United States be allowed to accumulate a deficit on the St. Mary River of up to 4,000 cfs-days (9 800 dam<sup>3</sup>) between March 1 and May 31 of each year which, at the discretion of the United States, may be reduced to no less than 2,000 cfs-days (4 900 dam<sup>3</sup>) between June 1 and July 15 of each year with surplus deliveries of St. Mary River water, and that Canada be allowed to accumulate a deficit on the Milk River of up to 2,000 cfs-days (4 900 dam<sup>3</sup>) between June 1 and September 15 of each year. The incurred deficits on the St. Mary and Milk Rivers can be offsetting and the outstanding deficits as of September 15 will be equalized by October 31 of each year under administration by Field Representatives of the Accredited Officers. Detailed accounting procedures for the computation of deficit and surplus deliveries under this Letter Of Intent are outlined in Appendix A, "Procedures for the Computation of Deficit and Surplus Deliveries to Better Utilize Waters of the St. Mary and Milk Rivers".

In signing this letter, the parties recognize this agreement is within the 1921 Order of the International Joint Commission. Additionally, the parties recognize that this Letter of Intent and Appendix A will form part of the St. Mary - Milk River Procedural Manual.

Termination of this Letter Of Intent 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).



Tim Goos  
Accredited Officer of Her Majesty  
Dated this 8<sup>th</sup> day of February, 2001



William J. Carswell, Jr. for the  
Accredited Officer of the United States  
Dated this 8<sup>th</sup> day of February, 2001

## PROCEDURES FOR THE COMPUTATION OF DEFICIT AND SURPLUS DELIVERIES TO BETTER UTILIZE WATERS OF THE ST. MARY AND MILK RIVERS

### ST. MARY RIVER

As of January 2001, the accounting procedures for the computation of deficit and surplus deliveries during March 1 through September 15 of each year on the St. Mary River are:

1. During March 1 through May 31 of each year, deficit deliveries from the United States to Canada at the end of each division period will carry over from one division period to another for the year, are cumulative for the year, and are allowed up to a cumulative total of 4,000 cfs-days (9 800 dam<sup>3</sup>). Deficit deliveries greater than the allowed cumulative total of 4,000 cfs-days (9 800 dam<sup>3</sup>) are to be refunded in the subsequent division period. Surplus deliveries at the end of a division period are not cumulative, cannot be used to reduce the accumulated deficit from previous division periods to below the allowed total deficit of 4,000 cfs-days (9 800 dam<sup>3</sup>), and cannot be used as a credit to make up future deficits. Exceptions to these procedures for this period are allowed only if agreed upon in writing by the Field Representative for Canada.
2. During June 1 through July 15 of each year, the United States, at its discretion, may reduce the deficit accumulated in the March 1 through May 31 period to 2,000 cfs-days (4 900 dam<sup>3</sup>) by making surplus deliveries of St. Mary River water. The remaining deficit is not refundable until after September 15 of that year unless agreed upon in writing by the Field Representative for Canada.
3. During June 1 through September 15 of each year, deficit deliveries from the United States to Canada at the end of each division are not to be incurred. However, if deficits are incurred, they are to be refunded by surplus deliveries in the subsequent division period or at a time agreed upon by both parties. Surplus deliveries do not carry over from one division period to another, are not cumulative, and cannot be used as a credit to make up future deficits.
4. On September 15 of each year, outstanding deficits are to be determined using the best available data, even though those data may be provisional. Any outstanding deficits as of September 15 are to be equalized by October 31 of each year. Deficit deliveries accumulated by Canada on the Milk River can be used to offset deficit deliveries accumulated by the United States on the St. Mary River.
5. The United States Bureau of Reclamation shall contact Canada (Environment Canada), the United States (U.S. Geological Survey), Montana (Montana Department of Natural Resources and Conservation), and Alberta (Alberta Environment) when they plan to begin deficit deliveries during the March 1 through May 31 period and when they plan to make surplus deliveries to reduce the accumulated deficits to 2,000 cfs-days (4 900 dam<sup>3</sup>) during June 1 through July 15. On or about July 1, and again by September 15 of each year, the parties shall participate in a conference call or meeting to discuss refund of remaining deficit deliveries.

## MILK RIVER

As of January 2001, the accounting procedures for the computation of deficit and surplus deliveries during March 1 through September 15 of each year on the Milk River are:

1. During March 1 through May 31 of each year, deficit deliveries from Canada to the United States at the end of each division period are not to be incurred. However, if deficits are incurred, they are to be refunded by surplus deliveries in the subsequent division period or at a time agreed upon by both parties. Surplus deliveries do not carry over from one division period to another, are not cumulative, and cannot be used as a credit to make up future deficits.
2. During June 1 through September 15 of each year, deficit deliveries from Canada to the United States at the end of each division period will carry over from one division period to another for the year, are cumulative for the year, and are allowed up to a cumulative total of 2,000 cfs-days (4 900 dam<sup>3</sup>). Deficit deliveries greater than the allowed total of 2,000 cfs-days (4 900 dam<sup>3</sup>) are to be refunded in the subsequent division period. Surplus deliveries at the end of a division period cannot be used to reduce the deficit accumulated during the June 1 through September 15 period to below the lesser of the allowed total deficit of 2,000 cfs-days (4 900 dam<sup>3</sup>) or the outstanding United States' deficit accumulated on the St. Mary River in the March 1 through May 31 period, and cannot be used as credits to make up future deficits. The remaining deficit is not refundable until after September 15 of that year unless agreed upon in writing by the Field Representative for the United States.
3. On September 15 of each year, outstanding deficits are to be determined using the best available data, even though those data may be provisional. Any outstanding deficits as of September 15 are to be equalized by October 31 of each year. Deficit deliveries accumulated by Canada on the Milk River can be used to offset deficit deliveries accumulated by the United States on the St. Mary River.
4. Canada (Environment Canada), the United States (U.S. Bureau of Reclamation and U.S. Geological Survey), Alberta (Alberta Environment) and Montana (Montana Department of Natural Resources and Conservation) shall participate in a conference call or meeting on or about July 1, and again by September 15 of each year to decide on the approach to be used to reconcile outstanding deficit deliveries.

*This page intentionally left blank*

ANNEX C

Conversion Factors

*This page intentionally left blank*

## 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 for volume is the cubic decametre ( $\text{dam}^3$ ).

1  $\text{dam}^3$  = 1 000 cubic metres

1 cubic metre = 35.315 cubic feet

1  $\text{dam}^3$  = 35,315 cubic feet

1 acre-foot = 1.2335  $\text{dam}^3$

1 cfs-day = 2.4466  $\text{dam}^3$

1  $\text{dam}^3$  = 0.8107 acre-feet



*This page intentionally left blank*

ANNEX D

List of Gauging Stations

*This page intentionally left blank*

INTERNATIONAL GAUGING STATIONS OPERATED JOINTLY  
BY  
THE UNITED STATES AND CANADA  
ST. MARY AND MILK RIVER BASINS  
2004

---

**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

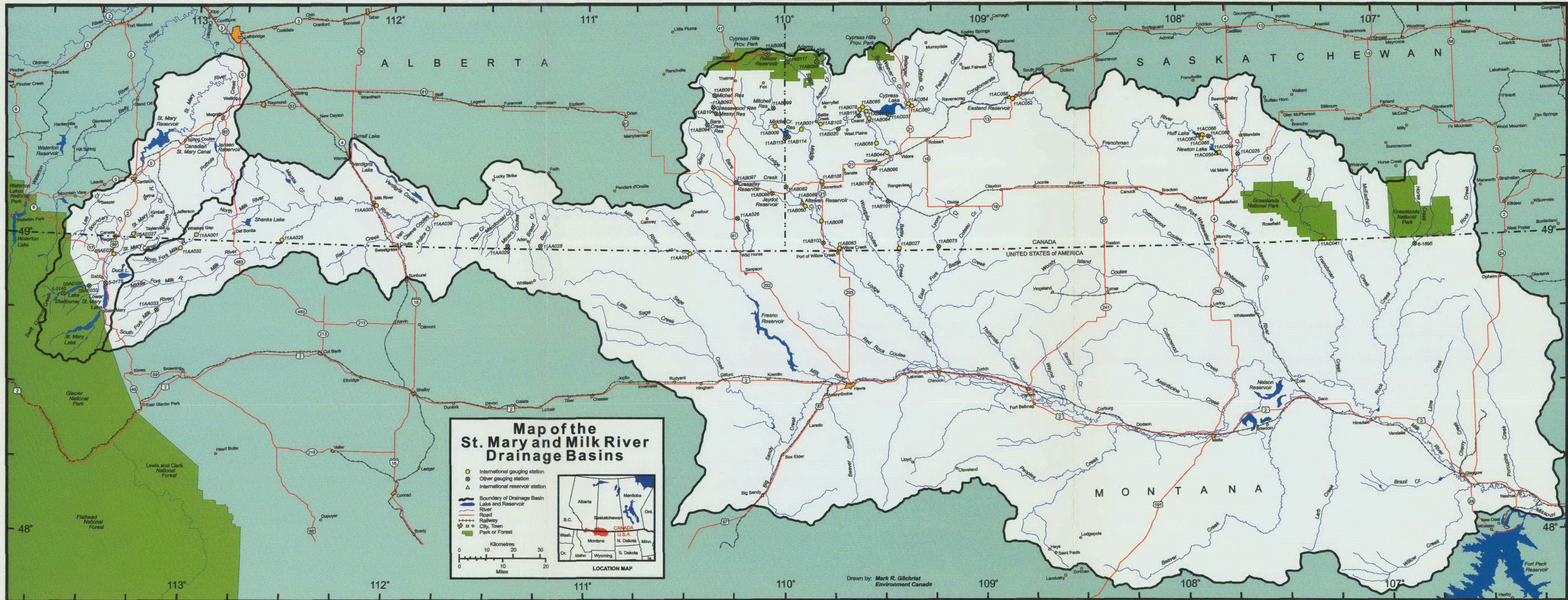
11AC037 Cypress Lake  
11AC041 Frenchman River at International Boundary  
11AC052 Eastend Canal near Eastend  
11AC054 Newton Lake Main Canal  
11AC055 Eastend Reservoir  
11AC056 Newton Lake  
11AC060 Cypress Lake East Outflow Canal  
11AC063 Huff Lake  
11AC064 Belanger Creek Diversion to Cypress 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  
2004

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

Map Index	Station Name	Operated by
<u>ST. MARY RIVER BASIN</u>		
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.
<u>MILK RIVER BASIN</u>		
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
<u>LODGE CREEK TRIBUTARY BASIN</u>		
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
<u>BATTLE CREEK TRIBUTARY BASIN</u>		
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
<u>FRENCHMAN RIVER TRIBUTARY BASIN</u>		
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
<u>ROCK CREEK TRIBUTARY BASIN</u>		
6-1695*	Rock Creek below Horse Creek near International Boundary	U.S.A.







HD  
1694  
.A2  
R424  
2004

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

---

HD  
1694  
.A2  
R424  
2004

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

ENVIRONMENT CANADA LIBRARY  
CALGARY



33500481