

Report to  
THE INTERNATIONAL JOINT COMMISSION

on

THE DIVISION AND USE MADE OF THE WATERS OF  
**ST. MARY AND MILK RIVERS**

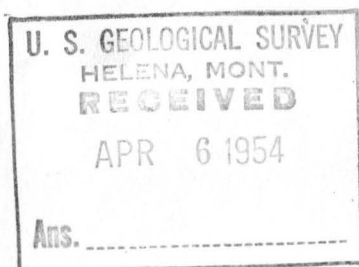
by

C. G. PAULSEN  
representing the United States

and

T. M. PATTERSON  
representing Canada

1953



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

Gentlemen:

In compliance with the Provisions of Clause VIII (c) of your Order of the 4th October, 1921, directing the division of the waters of 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, 1953.

Respectfully submitted,

C. G. Paulsen  
Accredited Officer of the United  
States.

T.M. Patterson  
for Accredited Officer of Her Majesty.

6 April, 1954.

## CONTENTS

	<u>Page</u>
Letter of Transmittal to the Commission	
Introduction.....	1
Water Supply - St. Mary River.....	2
Milk River - and its Eastern Tributaries.....	3
Division of Water - St. Mary River.....	4
Milk River.....	8
Eastern Tributaries of Milk River.	8
Description of Tables.....	10
Appendix.....	12

## TABLES

	<u>Table Number</u>
Natural Flow of St. Mary River and its use by Canada and the United States.....	1
Division of St. Mary River and its use by Canada - Division of St. Mary and Milk Rivers and their use by the United States.....	2
Determination of Natural Flow of Frenchman River at the International Boundary.....	3
Diversions from the Eastern Tributaries of Milk River in Canada.....	4
Measured diversions from the Eastern Tributaries of Milk River in United States.....	5
Monthly and Annual measured discharge in Acre-feet of Eastern Tributaries of Milk River at International Boundary.....	6

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List of gauging stations with map showing their locations  
in the river basins.

## Introduction

The field work incidental to the division and administration of the waters of the St. Mary and Milk Rivers in Alberta, Saskatchewan and Montana was conducted during the irrigation season of 1953 by representatives of the United States Geological Survey and the Water Resources Division (Canada).

Mr. C.G. Paulsen, Chief Hydraulic Engineer, United States Geological Survey, as accredited officer of the United States, was represented in the field by Mr. C.S. Heidel, Staff Engineer, Helena, Montana. The late Mr. I.R. Strome, Chief, Water Resources Division (Canada), in his capacity as accredited officer of Her Majesty, was represented in the field by Mr. E.P. Collier, District Engineer, Calgary, Alberta. Mr. Strome's successor has not yet been named,

The waters of the two rivers were divided between the two countries in accordance with the Order of the Commission dated at Ottawa, Canada, on the 4th day of October, 1921.

The hydrometric data upon which this report is based were collected and compiled jointly for 38 international stations by engineers of the United States Geological Survey under the supervision of Mr. Heidel and of the Water Resources Division (Canada) under the direction of Mr. Collier. Data for another 12 stations in Canada and eight stations in the United States were collected independently by the same engineers



in their respective countries. The United States Bureau of Reclamation furnished data for another eight canal stations in Montana.

Complete data for 50 of the stations mentioned above are contained in the appendix to this report; monthly quantities only for 11 canal stations in Montana are shown in Table 2, page 2, and Table 5. Data for five stations maintained by the United States Geological Survey in the St. Mary River basin are not used for purposes of division and are not included in either this report or its appendix.

This report has been compiled jointly by Mr. C. S. Heidel and Mr. E. P. Collier.

### Water Supply

#### St. Mary River

The thirty-second annual international survey of snow conditions on the headwaters of Swiftcurrent Creek, a mountainous area considered typical of the headwaters of the St. Mary River, showed the average snow cover at the observation points to be 83.7 inches or 137 percent of 61.1 inches, the mean for the previous 31 years of record. The water content was found to be 37.8 inches or 138 percent of 27.4 inches, the mean for the previous 31 years of record. The run-off during May, June and July, measured at the gauging station on Swiftcurrent Creek at Many Glacier was 87,300 acre-feet or 131 percent of 66,429 acre-feet, the average of the previous 30 years of record.

The total natural flow of the St. Mary River at the International Boundary for the year November 1, 1952 to October 31, 1953, was 849,505 acre-feet. Of this total, 786,960 acre-feet occurred during the irrigation season, April 1 to October 31. The natural flow during the irrigation season was 136 percent of 580,246 acre-feet, the average of the previous 50 years of record. Of the total natural flow there was delivered to Canada 731,380 acre-feet, 683,060 acre-feet during the irrigation season and 48,320 acre-feet during the balance of the year.

#### Milk River

The estimated natural flow of the Milk River at its eastern crossing of the International Boundary, during the open-water period of 1953, March 1 to October 31, was 257,290 acre-feet or 233 percent of 110,230 acre-feet the estimated average for the previous 41 years of record.

#### Eastern Tributaries of Milk River

The first annual snow survey in the basins of the Eastern Tributaries of the Milk River in Canada was conducted by the Water Resources Division, Canada, between February 23 and March 3, 1953. Data on snow cover at selected observation points on four courses were obtained and filed for future reference. No attempt will be made to correlate snow cover with subsequent run-off in the Eastern Tributaries until data for several years have been obtained.

The total quantity of water delivered to the United States by the Eastern Tributaries of the Milk River during the open-water period, March 1 to October 31, 1953, was 129,444 acre-feet or 90.5 percent of the average for the previous 26 years. The quantities delivered to the United States by the various tributaries are listed in Table 6.

During the season a total of 41,248 acre-feet was diverted from the Eastern Tributaries to irrigation canals or storage by Canadian users. The consumptive use was less than the total diversion shown because of return flow from irrigation projects.

#### Division of Water

##### St. Mary River

The division of the waters of the St. Mary River was carried out in accordance with the Order of the International Joint Commission dated October 4, 1921 which stipulates:

"(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."

The daily natural flow of the St. Mary River was determined in the following manner:

(1) Daily records were obtained at the following gauging and climatologic stations:

1. Swiftcurrent Creek at Many Glacier (Inflow to Sherburne Lake Reservoir).
2. Sherburne Lake Reservoir at Sherburne (Daily Storage Factors).
3. Swiftcurrent Creek at Sherburne (Outflow from Sherburne Lake Reservoir).
4. St. Mary Canal at St. Mary Crossing near Babb (United States Diversion from St. Mary River Basin).
5. St. Mary River near International Boundary (Quantity delivered to Canada).
6. Evaporation and Precipitation station near Babb, Montana.

(2a) When water was being stored in Sherburne Lake Reservoir, the natural flow of the St. Mary River at the International Boundary was considered to be the sum of the quantities measured at gauging stations 2, 4 and 5 above. This sum is the total of the water stored and diverted by the United States and delivered to Canada.

(2b) When water was being released from Sherburne Lake Reservoir, the natural flow of the St. Mary River at the International Boundary was considered to be the sum of the quantities measured at gauging stations 4 and 5 above, less the quantity measured at station 2 above; that is, the total of the water delivered to Canada and the water diverted by the United States was reduced by the quantity released from storage in Sherburne Lake Reservoir.

(3) In order to synchronize Sherburne Lake Reservoir operations with natural flow quantities at the International Boundary, a two day time lag was applied to data from stations 1, 2 and 3.

(4) The natural flow of the St. Mary River having been determined, the division of its waters was carried out in accordance with the above Order.

(5) Computed evaporation losses from Sherburne Lake Reservoir were charged against the United States share.

During the irrigation season, April 1 to October 31, field engineers of both countries made frequent computations of the daily natural flow of the river and each country's share thereof, in order that any appropriation by the United States in excess of their share could be adjusted by a subsequent delivery to Canada of an equivalent amount at the earliest opportunity. No such adjustment was necessary during the 1953 season, largely because of the close co-

operation given by the United States Bureau of Reclamation officials at Babb, Montana.

During the non-irrigation season, November 1, 1952 to March 31, 1953, no interim reports were made. The only United States use during this period is storage in Sherburne Lake Reservoir where the contributing drainage area is only about 13 percent of the total area of the St. Mary River drainage basin in the United States.

The United States St. Mary Canal was operated between April 24 and October 4 and water was delivered to the North Branch of the Milk River from April 25 to October 11.

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 discharge of 116,480 acre-feet which passed through the United States St. Mary Canal at St. Mary Crossing gauging station between April 24 and October 4 is considered to be the quantity diverted from the St. Mary River by the United States. A total of 115,517 acre-feet was delivered to the North Branch of the Milk River at Hudson Bay Divide during the season, from where it was conveyed to irrigation projects in Montana via the Milk River. The slight decrease in discharge between the gauging stations at St. Mary River Crossing and Hudson Bay Divide, at the end of the canal, was probably due to an excess of evaporation and seepage losses



over the local run-off entering the canal between the two points.

Storage in Lake Sherburne was 5,018 acre-feet on October 31, 1952 and had increased to 19,330 acre-feet by March 31, 1953 and to 56,084 acre-feet by July 15, 1953. Thereafter, water was released at varying rates of flow until the end of the season. On October 31, 1953, the storage had been reduced to 5,066 acre-feet.

Canada diverted 192,294 acre-feet of water from the St. Mary River Reservoir in 1953 as measured at the Canadian St. Mary Canal and Magrath Irrigation District Canal gauging stations near Spring Coulee.

#### Milk River

No division of the flow of Milk River at Eastern Crossing was made in 1953. There are only a few small unmeasured diversions from the Milk River above its eastern crossing of the International Boundary and it is considered that the total natural flow at Eastern Crossing was delivered to the United States.

#### Eastern Tributaries of Milk River

##### Minor Diversions

There are a number of small diversions from the Eastern Tributaries of Milk River in Saskatchewan for which only estimates of the quantities diverted are available. These estimates are obtained by the Water Rights Division of



the Province of Saskatchewan from the individual irrigators as the quantities diverted do not justify the expense of carrying out a regular survey of these small schemes. These estimates, being incomplete and of doubtful value, are not used in the Frenchman River division computations in Table 3. The estimated quantities reported to date for 1953 are, however, shown in Table 4 of this report.

#### Frenchman River

The Frenchman River was the only one of the Eastern Tributaries on which a formal division was made in 1953. The details of this division are shown in Table 3 of this report.

The computed natural flow of the Frenchman River at the International Boundary for the open-water season, March 1 to October 31, was 78,713 acre-feet, of which each country was entitled to fifty percent. Canada used 20,353 acre-feet, including an estimated 1674 acre-feet in minor diversions as shown in Table 4, and delivered 58,360 acre-feet to the United States.

#### Lodge Creek

Canada diverted or stored a total of 8918 acre-feet in the Lodge Creek basin during the open-water season, March 1 to October 31, 1953, and delivered 22,080 acre-feet to the United States. The figure for Canadian use above includes 1100 acre-feet diverted into the Spangler ditch near Govenlock, 7650 acre-feet stored in Middle Creek Reservoir

and an additional 168 acre-feet in minor diversions as shown in Table 4. No allowance for return flow from irrigation projects is included in these figures.

#### Battle Creek

Canada diverted or stored a total of 9584 acre-feet in the Battle Creek basin in the open-water season in 1953, including 684 acre-feet in minor diversions, and delivered 28,180 acre-feet to the United States.

#### Description of Tables

The six tables accompanying this report show the total water available in the St. Mary and Milk River basins, the manner in which this was divided, and the use made by each country of its share.

Table 1 deals with the natural flow of the St. Mary River at the Boundary and its division. It comprises seven pages, one for each month of the irrigation season. The table shows the computed daily natural flow and each country's share thereof. It also shows the recorded flow at the Boundary and the quantity diverted by the United States.

Table 2, Page 1 (upper table) shows the monthly discharge of the St. Mary River near the International Boundary, the contributions by Lee and Rolph Creeks in Canada and the total available to Canada at the St. Mary Reservoir near Spring Coulee.

Table 2, Page 1 (lower table) shows the monthly disposition made by Canada of its share of the natural flow of the St. Mary River at the International Boundary.

Table 2, Page 2 (upper table) shows the monthly disposition of the United States share of the St. Mary River at the International Boundary and includes the quantities stored in or released from Sherburne Lake Reservoir, diverted to the United States St. Mary Canal for delivery to the Milk River Basin, and the unused portion. The table also shows, by months, the measured discharge of the Milk River at Eastern Crossing. This discharge is the sum of the natural flow of the Milk River above its eastern crossing of the International Boundary and the water diverted from the St. Mary River in the United States. Thus it represents the total quantity available to the United States from the two basins during the irrigation season of 1953.

Table 2, Page 2 (lower table) shows the measured diversions, in acre-feet, from the Milk River to several canals in the United States. These records as well as the data for Fresno and Nelson Reservoirs were furnished by the Milk River Project of the United States Bureau of Reclamation.

Table 3 is a compilation, in ten-day periods, of the natural flow of the Frenchman River at the International Boundary. This table consists of three pages. Page 1 shows the quantity used by Canada in Cypress Lake Reservoir and at East End; Page 2 shows the quantity used by Canada at Val

Marie; and Page 3 shows the total quantity used by Canada, the natural flow of Frenchman River at the Boundary, the United States share, and the quantity delivered to the United States.

Table 4 summarizes the available information on the diversions from the Eastern Tributaries of Milk River in Canada.

Table 5 lists the larger canals in the United States which divert water from the Eastern Tributaries of the Milk River and shows the measured quantities diverted during 1953 in each case. No information is available on smaller diversions in these basins.

Table 6 shows the monthly discharge in acre-feet of the Eastern Tributaries of Milk River at the International Boundary, for the season March to October.

Following the tables is a list of the gauging stations operated jointly by Canada and the United States in the Milk and St. Mary River drainage basins in 1953 and a list of other gauging stations in these basins operated independently by either the United States or Canada. A map showing the location of the stations in both lists is also included.

#### Appendix

Submitted with this report, under separate cover, is an appendix which lists, for each of fifty gauging stations

operated in the St. Mary and Milk River drainage basins during 1953, the discharge measurements, the daily gauge height and discharge and the monthly discharge summary.



NATURAL FLOW OF ST. MARY RIVER AND ITS USE BY CANADA AND UNITED STATES (Units in Cu. ft. per sec.)

Table 1.

1953 Day APRIL	Computed Nat. Flow St. Mary River at Int. Bdry.	Canada's share of St. Mary River	Recorded Flow of St. Mary River	Canada rec'd more (+); less (-); than share		U.S. share of St. Mary River.	U.S.B.R. Sherburne Res. (2-day lag applied) Stored   Rlsd.		Diverted by U.S. St. Mary Canal	Net Used by United States	U.S. used more (+); less (-) than share.	
				+	-		+	-				
1	282	212	237	25		70	45		0	45		25
2	276	207	231	24	24	69	45		0	45		24
3	263	197	218	21		66	45		0	45		21
4	266	200	221	21		66	45	0	0	45		21
5	310	232	265	33		78	45		0	45		33
6	313	235	258	23	78	78	55	0	0	55		23
7	286	214	231	17		72	55		0	55		17
8	256	192	201	9		64	55		0	55		9
9	246	184	191	7		62	55		0	55		7
10	240	180	185	5		60	55		0	55		5
11	230	172	175	3		58	55		0	55		3
12	232	174	177	3		58	55		0	55		3
13	237	178	182	4		59	55		0	55		4
14	252	189	197	8		63	55		0	55		8
15	271	203	216	13		68	55		0	55		13
16	282	212	227	15		70	55		0	55		15
17	252	189	197	8		63	55		0	55		8
18	256	192	201	9		64	55		0	55		9
19	256	192	201	9		64	55		0	55		9
20	292	219	237	18		73	55		0	55		18
21	710	522	655	133		188	55		0	55		133
22	927	630	872	242		297	55		0	55		242
23	1023	678	872	194		345	151		0	151		194
24	1197	765	769	4		432	378		50	428		4
25	1310	822	660		162	488	501		149	650	162	
26	1324	829	748		81	495	360		216	576	81	
27	1458	896	943	47		562	105		410	515		47
28	1792	1063	1150	87		729	144		498	642		87
29	2084	1209	1380	171		875	185		519	704		171
30	1934	1134	1310	176		800	101		523	624		176
31												
Total Sec.-ft.	19,057	12,521	13,607	1,329	243	6,536	3,085		2,365	5,450	243	1,329
Mean	635	417	454	44.3	8.1	218	103		78.8	182	8.1	44.3
Ac.-ft.	37,799	24,835	26,989	2,636	482	12,964	6,119		4,691	10,810	482	2,636



NATURAL FLOW OF ST. MARY RIVER AND ITS USE BY CANADA AND UNITED STATES (Units in Cu. ft. per sec.)

Table 1.

1953 Day MAY	Computed Nat. Flow St. Mary River at Int. Bdry.	Canada's share of St. Mary River	Recorded Flow of St. Mary River	Canada rec'd more (+); less (-); than share		U.S. share of St. Mary River.	U.S.B.R. Sherburne Res. (2-day leg applied) Stored   Rlsd.		Diverted by U.S. St. Mary Canal	Net Used by United States	U.S. used more (+); less (-) than share.	
				+	-		+	-				
1	1798	1066	1250	184		732	25		523	548		184
2	1708	1021	1230	209		687		45	523	478		209
3	1679	1006	1240	234		673		86	525	439		234
4	1716	1025	1300	275		691		115	531	416		275
5	1806	1070	1410	340		736		140	536	396		340
6	2023	1178	1570	392		845		87	540	453		392
7	2329	1331	1740	409		998	41		548	589		409
8	2724	1529	1940	411		1195	232		552	784		411
9	2951	1642	1980	338		1309	419		552	971		338
10	2801	1567	1960	393		1234	287		554	841		393
11	2480	1407	1910	503		1073	16		554	570		503
12	2244	1289	1850	561		955		158	552	394		561
13	1991	1162	1660	498		829		213	546	331		498
14	1927	1130	1520	390		797		135	542	407		390
15	1873	1103	1440	337		770		103	536	433		337
16	1822	1078	1370	292		744		83	535	452		292
17	1867	1100	1360	260		767		26	533	507		260
18	1959	1146	1400	254		813	26		533	559		254
19	2108	1221	1540	319		887	32		536	568		319
20	2502	1418	1820	402		1084	142		540	682		402
21	2909	1621	1940	319		1288	421		548	969		319
22	3158	1746	2040	294		1412	564		554	1118		294
23	2882	1608	2040	432		1274	288		554	842		432
24	2554	1444	2060	616		1110		60	554	494		616
25	3264	1799	2840	1041		1465		149	573	424		1041
26	4590	2462	4180	1718		2128		111	521	410		1718
27	4534	2434	3910	1476		2100	144		480	624		1476
28	4307	2320	3510	1190		1987	333		464	797		1190
29	4473	2403	3760	1357		2070	229		484	713		1357
30	4599	2466	3960	1494		2133	159		480	639		1494
31	4624	2479	3880	1401		2145	271		473	744		1401
Total Sec.-ft.	84,202	47,271	65,610	18,339		36,931	3,629	1,513	16,476	18,592		18,339
Mean	2,716	1,525	2,116	592		1,191	117	48.8	531	600		592
Ac.-ft.	167,012	93,761	130,136	36,375		73,252	7,198	3,001	32,680	36,877		36,375



NATURAL FLOW OF ST. MARY RIVER AND ITS USE BY CANADA AND UNITED STATES (Units in Cu. ft. per sec.)

Table 1.

1953 Day JUNE	Computed Nat. Flow St. Mary River at Int. Bdry.	Canada's share of St. Mary River	Recorded Flow of St. Mary River	Canada rec'd more (+); less (-); than share		U.S. share of St. Mary River.	U.S.B.R. Sherburne Res. (2-day lag applied) Stored Rlsd.		Diverted by U.S. St. Mary Canal.	Net Used by United States	U.S. used more (+); less (-) than share.	
				+	-		+	-				
1	4526	2430	3840	1410		2096	189		497	686		1410
2	4873	2603	4270	1667		2270	53		550	603		1667
3	9502	4918	8840	3922		4584	131		531	662		3922
4	10030	5182	9410	4228		4848	374		246	620		4228
5	8751	4542	7810	3268		4209	775		166	941		3268
6	7277	3806	6340	2534		3471	797	140	140	937		2534
7	6355	3344	5900	2556		3011	323		132	455		2556
8	7464	3899	7260	3361		3565	35		169	204		3361
9	7580	3957	7130	3173		3623	303		147	450		3173
10	6670	3502	5970	2468		3168	660		40	700		2468
11	5941	3138	5480	2342		2803	433		28	461		2342
12	5727	3030	5400	2370		2697	304		23	327		2370
13	7116	3725	6370	2645		3391	720		26	746		2645
14	7996	4165	6890	2725		3831	1085		21	1106		2725
15	7845	4090	6760	2670		3755	1067		18	1085		2670
16	6546	3440	6350	2910		3106	179		17	196		2910
17	5909	3122	5930	2808		2787		37	16	- 21		2808
18	5597	2965	5510	2545		2632	73		14	87		2545
19	5367	2851	5170	2319		2516	184		13	197		2319
20	4857	2595	4730	2135		2262	114		13	127		2135
21	4161	2247	4200	1953		1914		50	11	- 39		1953
22	3567	1950	3640	1690		1617		83	10	- 73		1690
23	3263	1798	3260	1462		1465		7	10	33		1462
24	3033	1683	3000	1317		1350	23		10	33		1317
25	2845	1589	2690	1101		1256	143		12	155		1101
26	2798	1566	2440	874		1232	285		73	358		874
27	2592	1463	2280	817		1129	233		79	312		817
28	2484	1409	2120	711		1075	286		78	364		711
29	2634	1484	2120	636		1150	435		79	514		636
30	2717	1525	2190	665		1192	450		77	527		665
31												
Total Sec.-ft.	166,023	88,018	153,300	65,282		78,005	9,654	177	3,246	12,723		65,282
Mean	5,334	2,934	5,110	2,176		2,600	322	5.9	108	424		2,176
Ac.-ft.	329,302	174,581	304,066	129,485		154,721	19,148	351	6,438	25,236		129,485



NATURAL FLOW OF ST. MARY RIVER AND ITS USE BY CANADA AND UNITED STATES (Units in Cu. ft. per sec.)

Table 1.

1953 Day  JULY	Computed Net. Flow St. Mary River at Int. Bdry.	Canada's share of St. Mary River	Recorded Flow of St. Mary River	Canada rec'd more (+); less (-); than share		U.S. share of St. Mary River.	U.S.B.R. Sherburne Res. (2-day lag applied) Stored   Rlsd.		Diverted by U.S. St. Mary Canal	Net Used by United States	U.S. used more (+); less (-) than share.	
				+	-		+	-			+	-
1	2872	1603	2280	677		1269	515	77	77	592		677
2	3071	1702	2360	658		1369	635		76	711		658
3	3281	1807	2560	753		1474	645		76	721		753
4	3527	1930	2830	900		1597	619		78	697		900
5	2926	1630	2880	1250		1296		32	78	46		1250
6	2982	1658	2830	1172		1324	74		78	152		1172
7	2684	1509	2710	1201		1175		104	78	-26		1201
8	2817	1575	2660	1085		1242	81		76	1157		1085
9	2919	1626	2680	1054		1293	163		76	239		1054
10	3051	1692	2690	998		1359	285		76	361		998
11	2983	1658	2690	1032		1325	217		76	293		1032
12	3063	1698	2730	1032		1365	258		75	333		1032
13	3064	1699	2750	1051		1365	239		75	314		1051
14	3290	1812	2940	1128		1478	275		75	350		1128
15	3459	1896	3110	1214		1563	273		76	349		1214
16	3360	1847	3150	1303		1513	135		75	210		1303
17	3172	1753	3040	1287		1419	56		76	132		1287
18	2756	1545	2810	1265		1211		129	75	-54		1265
19	2491	1412	2530	1118		1079		113	74	-39		1118
20	2284	1309	2310	1001		975		99	73	-26		1001
21	2323	1328	2140	812		995	110		73	183		812
22	2024	1179	1800	621		845	63		161	224		621
23	1829	1081	1390	309		748		7	446	439		309
24	1735	1034	1270	236		701	12		453	465		236
25	1661	997	1190	193		664	20		451	471		193
26	1617	975	1150	175		642	18		449	467		175
27	1521	927	1060	133		594	17		444	461		133
28	1470	902	1030	128		568		4	444	440		128
29	1358	846	1000	154		512		88	446	358		154
30	1254	794	979	185		460		176	451	275		185
31	1252	793	959	166		459		160	453	293		166
Total Sec.-ft.	78,096	44,217	68,508	24,291		33,879	4,710	912	5,790	9,588		24,291
Mean	2,519	1,426	2,210	784		1,093	152	29.4	187	309		784
Ac.-ft.	154,901	87,703	135,884	48,180		67,198	9,342	1,809	11,484	19,018		48,180



NATURAL FLOW OF ST. MARY RIVER AND ITS USE BY CANADA AND UNITED STATES (Units in Cu. ft. per sec.)

Table 1.

1953 Day AUGUST	Computed Net. Flow St. Mary River at Int. Bdry.	Canada's share of St. Mary River	Recorded Flow of St. Mary River	Canada rec'd more (+); less (-); than share		U.S. share of St. Mary River.	U.S.B.R. Sherburne Res. (2-day lag applied) Stored   Rlsd.		Diverted by U.S. St. Mary Canal	Net Used by United States	U.S. used more (+); less (-) than share.	
				+	-		+	-				
1	1198	766	919	153		432		181	460	279		153
2	1181	757	889	132		424		166	458	292		132
3	1160	747	864	117		413		164	460	296		117
4	1171	752	872	120		419		163	462	299		120
5	1145	739	846	107		406		170	469	299		107
6	1135	734	830	96		401		182	487	305		96
7	1064	699	830	131		365		259	493	234		131
8	1047	690	821	131		357		280	506	226		131
9	1067	700	812	112		367		255	510	255		112
10	1110	722	821	99		388		221	510	289		99
11	1137	735	846	111		402		221	512	291		111
12	1055	694	821	127		361		276	510	234		127
13	949	641	797	156		308		356	508	152		156
14	930	632	783	151		298		361	508	147		151
15	900	617	762	145		283		370	508	138		145
16	907	620	734	114		287		333	506	173		114
17	868	601	714	113		267		352	506	154		113
18	823	578	694	116		245		375	504	129		116
19	776	555	674	119		221		400	502	102		119
20	763	548	648	100		215		387	502	115		100
21	746	540	622	82		206		378	502	124		82
22	748	541	608	67		207		358	498	140		67
23	724	529	615	86		195		371	480	109		86
24	708	521	577	56		187		367	498	131		56
25	659	494	558	64		165		396	497	101		64
26	641	481	527	46		160		383	497	114		46
27	654	490	527	37		164		371	498	127		37
28	576	432	527	95		144		449	498	49		95
29	568	426	521	95		142		450	497	47		95
30	532	399	510	111		133		476	498	22		111
31	547	410	475	65		137		423	495	72		65
Total Sec.-ft.	27,489	18,790	22,044	3,254		8,699		9,894	15,339	5,445		3,254
Mean	887	606	711	105		281		319	495	176		105
Ac.-ft.	54,524	37,269	43,724	6,454		17,254		19,624	30,424	10,800		6,454



NATURAL FLOW OF ST. MARY RIVER AND ITS USE BY CANADA AND UNITED STATES (Units in Cu. ft. per sec.)

Table 1.

1953 Day SEPTEMBER	Computed Nat. Flow St. Mary River at Int. Bdry.	Canada's share of St. Mary River	Recorded Flow of St. Mary River	Canada rec'd more (+); less (-); than share		U.S. share of St. Mary River.	U.S.B.R. Sherburne Res. (2-day lag applied)		Diverted by U.S. St. Mary Canal	Net Used by United States	U.S. used more (+); less (-); than share.	
				+	-		Stored	Reled.			+	-
1	511	383	464	81		128		446	493	47		81
2	567	425	515	90		142		443	495	52		90
3	574	430	510	80		144		434	498	64		80
4	581	436	504	68		145		423	500	77		68
5	572	429	492	63		143		420	500	80		63
6	518	388	480	92		130		460	498	38		92
7	508	381	470	89		127		460	498	38		89
8	523	392	454	62		131		429	498	69		62
9	526	394	475	81		132		449	500	51		81
10	489	367	480	113		122		491	500	9		113
11	499	374	470	96		125		473	502	29		96
12	442	332	454	122		110		510	498	-12		122
13	442	332	428	96		110		484	498	14		96
14	453	340	428	88		113		475	500	25		88
15	416	312	424	112		104		508	500	-8		112
16	414	310	419	109		104		505	500	-5		109
17	439	329	414	85		110		475	500	25		85
18	397	298	410	112		99		515	502	-13		112
19	384	288	401	113		96		517	500	-17		113
20	379	284	392	108		95		511	498	-13		108
21	370	278	371	93		92		498	497	-1		93
22	369	277	354	77		92		480	495	15		77
23	386	290	334	44		96		443	495	52		44
24	362	272	319	47		90		452	495	43		47
25	356	267	300	33		89		442	498	56		33
26	347	260	290	30		87		441	498	57		30
27	328	246	272	26		82		442	498	56		26
28	340	255	272	17		85		432	500	68		17
29	316	237	261	24		79		414	469	55		24
30	318	238	315	77		80		395	398	3		77
31												
Total Sec.-ft.	13,126	9,844	12,172	2,328		3,282		13,867	14,821	954		2,328
Mean	438	328	406	77.6		109		462	494	31.8		77.6
Ac.-ft.	26,035	19,525	24,143	4,618		6,510		27,505	29,397	1,892		4,618



NATURAL FLOW OF ST. MARY RIVER AND ITS USE BY CANADA AND UNITED STATES (Units in Cu. ft. per sec.)

Table 1.

1953 Day OCTOBER	Computed Nat. Flow St. Mary River at Int. Bdry.	Canada's share of St. Mary River	Recorded Flow of St. Mary River	Canada rec'd more (+); less (-); than share		U.S. share of St. Mary River.	U.S.B.R. Sherburne Res. (2-day lag applied) Stored   Rlsd.		Diverted by U.S. St. Mary Canal	Net Used by United States	U.S. used more (+); less (-) than share.	
				+	-		+	-				
1	313	235	362	127		78		379	330	49		127
2	304	228	433	205		76		361	232	129		205
3	313	235	521	286		78		326	118	208		286
4	305	229	570	341		76		274	9	265		341
5	321	241	515	274		80		194	0	194		274
6	349	262	459	197		87		110	0	110		197
7	359	269	428	159		90		69	0	69		159
8	334	250	396	146		84		62	0	62		146
9	323	242	367	125		81		44	0	44		125
10	320	240	350	110		80		30	0	30		110
11	314	236	334	98		78		20	0	20		98
12	307	230	319	89		77		12	0	12		89
13	300	225	312	87		75		12	0	12		87
14	286	214	297	83		72		11	0	11		83
15	278	208	286	78		70		8	0	8		78
16	304	228	272	44		76	32		0	32		44
17	419	314	251		63	105	168		0	168	63	
18	436	327	237		90	109	199		0	199	90	
19	292	219	234	15		73	58		0	58		15
20	255	191	224	33		64	31		0	31		33
21	246	184	214	30		62	32		0	32		30
22	232	174	201	27		58	31		0	31		27
23	225	169	195	26		56	30		0	30		26
24	217	163	182	19		54	35		0	35		19
25	210	158	175	17		52	35		0	35		17
26	214	160	179	19		54	35		0	35		19
27	207	155	172	17		52	35		0	35		17
28	204	153	169	16		51	35		0	35		16
29	192	144	157	13		48	35		0	35		13
30	195	146	160	14		49	35		0	35		14
31	192	144	157	13		48	35		0	35		13
Total Sec.-ft.	8,766	6,573	9,128	2,708	153	2,193	861	1,912	689	-362	153	2,708
Mean	283	212	294	87.4	4.9	70.7	27.8	61.7	22.2	-11.7	4.9	87.4
Ac.-ft.	17,387	13,037	18,105	5,371	303	4,350	1,708	3,792	1,367	-718	303	5,371





DIVISION OF ST. MARY AND MILK RIVERS  
WATER AVAILABLE TO UNITED STATES  
1953

Table 2  
Page 2

Quantities in Acre-feet

Month:	St. Mary River Basin						Milk River	
	U.S. Share	Lake Sherburne Stored	Released	Total Available for Diversion	Diverted	Unused	Measured Flow Eastern Crossing	
1953								
April	12964	6119	-	6845	4691	2154	48570	
May	73252	7198	3001	69055	32680	36375	83050	
June	154721	19148	351	135924	6438	129486	132000	
July	67198	9342	1809	59665	11484	48181	27260	
Aug.	17254	-	19624	36878	30424	6454	34560	
Sept.	6510	-	27505	34015	29397	4618	33220	
Oct.	4350	1708	3792	6434	1367	5067	13180	
<b>Total</b>	<b>336249</b>	<b>43515</b>	<b>56082</b>	<b>348816</b>	<b>116481</b>	<b>232335</b>	<b>371840</b>	

Storage in Lake Sherburne on March 31 = 19,330 acre-feet  
 October 31 = 5,066 acre-feet  
 Storage in Fresno Reservoir on March 31 = 85,916 acre-feet  
 October 31 = 75,452 acre-feet  
 The water stored in Lake Sherburne includes the amount lost by evaporation.

DIVERSIONS FROM MILK RIVER  
IN UNITED STATES  
1953

Quantities in Acre-feet

Month:	Fort Belknap Canal	Paradise Canal	Harlem Canal	Harlem No. 2	Agency Canal	Dodson North	Dodson South	Van-dalia Canal	Total
April	7160	843	3330	565	1960	793	10440	--	25090
May	11590	5760	1940	415	4570	2350	16460	--	43080
June	3390	444	476	--	184	635	6980	--	12110
July	18790	5340	4520	791	3590	7500	13770	7850	62150
Aug.	15450	6730	3410	1060	2900	5070	19830	8760	63210
Sept.	9410	2250	1190	528	--	3690	14600	6590	38260
Oct.	298	--	119	--	--	--	9220	992	10630
Nov.	--	--	--	--	--	--	893	--	890
<b>Total</b>	<b>66090</b>	<b>21370</b>	<b>14980</b>	<b>3360</b>	<b>13200</b>	<b>20040</b>	<b>92190</b>	<b>24190</b>	<b>255420</b>

Storage in Nelson Reservoir on March 31 = 29,699 acre-feet  
 October 31 = 45,161 acre-feet



DETERMINATION OF NATURAL FLOW OF FRENCHMAN RIVER  
AT INTERNATIONAL BOUNDARY  
1953

Water Used by Canada at Cypress Lake and East End  
Quantities in Second-feet

Date at	Used at Cypress:		Used at East End			:Return:		Total
Int'l.	:	:	:	:	:	:	:	Used
Boundary:	Stored:	Released:	Stored:	Released:	Diverted:	Flow:	:	
March								
1 - 10	0	0	5		0	0		5.0
11 - 20	0	0	3		0	0		3.0
21 - 31	0	0		1	0	0		-1.0
April								
1 - 10	26.0	0	12		0	0		38.0
11 - 20	66.6	0		7	0	0		59.6
21 - 30	51.1	0	136		0	0		187.1
May								
1 - 10	1710.0	93.8	127		0	0		1743.2
11 - 20	984.6	51.7	296		0	0		1228.9
21 - 31	250.4	151.1	208		0	0		307.3
June								
1 - 10	334.3	246.3		43	0	0		45.0
11 - 20	321.2	394.2		8	0	0		-81.0
21 - 30	116.2	164.0	49		0	0		1.2
July								
1 - 10	141.6	37.0	6		0	0		110.6
11 - 20	122.0	30.7		40	22.8	6.8		67.3
21 - 31	0	5.4		130	361.6	108.5		117.7
Aug.								
1 - 10	0	5.8	32		178.4	53.5		151.1
11 - 20	0	2.0		60	103.2	31.0		10.2
21 - 31	0	2.3		58	70.4	21.1		-11.0
Sept.								
1 - 10	0	0.3	9		19.2	5.8		22.1
11 - 20	0	0	9		0	0		9.0
21 - 30	0	0		49	0	0		-49.0
Oct.								
1 - 10	0	0.8	47		0	0		46.2
11 - 20	0	5.2	81		0	0		75.8
21 - 31	0	8.9	97		0	0		88.1
<hr/>								
Total	4124.0	1199.5	1117	396	755.6	226.7		4174.4
Mean	16.8	4.9	4.6	1.6	3.1	0.9		17.0
Acre-ft.	8180	2379	2216	785	1499	450		8280

DETERMINATION OF NATURAL FLOW OF FRENCHMAN RIVER  
AT INTERNATIONAL BOUNDARY  
1953

Water Used by Canada at Val Marie  
Quantities in Second-feet

Date at Int'l Boundary:	Used at Lower Val Marie:			Used at Lower Val Marie:			Return: Flow	Total Used
	Stored:	Rls'd:	Diverted:	Stored:	Rls'd:	Diverted:		
March								
1-10	130		0		3	0	0	127.0
11-20	2		0	0		0	0	2.0
21-31	75		0	188		62.0	18.6	306.4
April								
1-10		438	0	2798		27.5	8.2	2379.3
11-20	262		0	922		0	0	1184.0
21-30	342		9.2		187	0	2.8	161.4
May								
1-10	218		29.9	262		16.4	13.9	512.4
11-20		25	24.0	299		153.9	53.4	398.5
21-31	117		11.3	70		142.6	46.2	294.7
June								
1-10	27		0	15		97.3	29.2	110.1
11-20		152	0		265	44.8	13.4	-385.6
21-30	12		0	99		0	0	111.0
July								
1-10		25	0		124	0	0	-149.0
11-20		79	35.3		300	221.3	77.0	-199.4
21-31	22		201.4		668	582.5	235.1	-97.2
Aug.								
1-10		57	288.4		228	370.1	197.6	175.9
11-20		38	166.5		183	201.1	110.2	36.4
21-31		29	117.9		27	57.5	52.6	66.8
Sept.								
1-10		37	94.4		4	18.8	33.9	46.3
11-20		83	128.2		31	33.9	48.6	-0.5
21-30	22		48.1		2	50.4	29.6	88.9
Oct.								
1-10		23	20.9		53	10.9	9.5	-53.7
11-20	48		0		60	0	0	-12.0
21-31	71		0	68		0	0	139.0
<hr/>								
Total	1348	986	1175.5	4725	2131	2091.0	979.8	5242.7
Mean	5.5	4.0	4.8	19.3	8.7	8.5	4.0	21.4
Acre-feet	2674	1956	2332	9372	4227	4147	1943	10399

DETERMINATION OF NATURAL FLOW OF FRENCHMAN RIVER  
AT INTERNATIONAL BOUNDARY  
1953

Quantities in Second-feet

Date at	Used by Canada		Total	Frenchman River		United States	
Int'l. Boundary	Cypress L.	Val Marie	Used by Canada	Flow at Bdy.	Natural Flow	Share	Received + or -
March							
1 - 10	5.0	127.0	132.0	90.0	222.0	111.0	-21.0
11 - 20	3.0	2.0	5.0	126.0	131.0	65.5	60.5
21 - 31	-1.0	306.4	305.4	1160.0	1465.4	732.7	427.3
April							
1 - 10	38.0	2379.3	2417.3	1145.0	3562.3	1781.2	-636.2
11 - 20	59.6	1184.0	1243.6	191.0	1434.6	717.3	-526.3
21 - 30	187.1	161.4	348.5	809.7	1158.2	579.1	230.6
May							
1 - 10	1743.2	512.4	2255.6	4814.8	7070.4	3535.2	1279.6
11 - 20	1228.9	398.5	1627.4	1674.2	3301.6	1650.8	23.4
21 - 31	307.3	294.7	602.0	5269.0	5871.0	2935.5	2333.5
June							
1 - 10	45.0	110.1	155.1	7624.0	7779.1	3889.6	3734.4
11 - 20	-81.0	-385.6	-466.6	3482.0	3015.4	1507.7	1974.3
21 - 30	1.2	111.0	112.2	956.6	1068.8	534.4	422.2
July							
1 - 10	110.6	-149.0	-38.4	789.4	751.0	375.5	413.9
11 - 20	67.3	-199.4	-132.1	531.2	399.1	199.6	331.6
21 - 31	117.7	-97.2	20.5	308.8	329.3	164.6	144.2
Aug.							
1 - 10	151.1	175.9	327.0	181.1	508.1	254.0	-72.9
11 - 20	10.2	36.4	46.6	125.2	171.8	85.9	39.3
21 - 31	-11.0	66.8	55.8	40.8	96.6	48.3	-7.5
Sept.							
1 - 10	22.1	46.3	68.4	14.7	83.1	41.6	-26.9
11 - 20	9.0	-0.5	8.5	4.5	13.0	6.5	-2.0
21 - 30	-49.0	88.9	39.9	3.9	43.8	21.9	-18.0
Oct.							
1 - 10	46.2	-53.7	-7.5	2.4	-5.1	-2.6	5.0
11 - 20	75.8	-12.0	63.8	2.0	65.8	32.9	-30.9
21 - 31	88.1	139.0	227.1	77.0	304.1	152.0	-75.0
Total	4174.4	5242.7	9417.1	29423.3	38840.4	19420.2	10003.1
Mean	17.0	21.4	38.4	120.1	158.5	79.3	40.8
Acre-feet	8280	10399	18679	58360	77039	38519	19841
Estimated Acre-feet	Total		of Minor Diversions				
Shown in Table 4			1674		1674	837	-837
			20353		78713	39356	19004

DIVERSIONS FROM THE EASTERN TRIBUTARIES  
OF MILK RIVER IN CANADA

Quantities in Acre-feet

Lodge Creek Tributary Basin

Spangler Ditch near Govenlock		1100
Middle Creek near Alberta Boundary	&	7650
Total of 4 Minor Diversions, detailed in Appendix	#	<u>168</u>
Total Diverted by Canada		8918

# - 900 acre-feet Used by Mitchell Ranching Company and listed as a Minor Diversion in Appendix is included in Middle Creek near Alberta Boundary.

& - Total flow of this station stored in Middle Creek Reservoir.  
(Lodge Creek at International Boundary = 22,080 acre-feet)

22,080  
30,998

Battle Creek Tributary Basin

Diverted by Cypress Lake West Inflow Canal		7200
Returned by Cypress Lake West Outflow Canal	<u>3550</u>	3650
Vidora Ditch near Consul		1360
Richardson Ditch near Consul		1030
McKinnon Ditch near Consul		1070
Stirling and Nash Ditch near Consul		1790
Total of 26 Minor Diversions Detailed in Appendix		<u>684</u>
		9584

(Battle Creek at International Boundary = 28,180 acre-feet)

Frenchman River Tributary Basin

Diverted to Cypress Lake Reservoir (includes natural overflow stored)		8180
Returned by Cypress Lake East Outflow Canal	<u>2380</u>	5800
Diverted to East End Reservoir	2216	
Released from East End Reservoir	<u>785</u>	1431
Diverted to Val Marie Reservoirs	12046	
Released from Val Marie Reservoirs	<u>6183</u>	5863
East End Irrigation District Canal	1499	
Val Marie Irrigation District West Canals	2332	
Val Marie Main Canal	<u>4147</u>	
	7978	
Estimated Return Flow	<u>2393</u>	5585
Total of 48 Minor Diversions detailed in Appendix		<u>1674</u>

(Frenchman at International Boundary = 58,360 acre-feet)

9,584  
37,764

58360  
78,113

MEASURED DIVERSIONS FROM THE EASTERN TRIBUTARIES  
OF MILK RIVER IN THE UNITED STATES

1953

Quantities in Acre-feet

Irrigator	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Total
<u>Lodge Creek</u>									
North Chinook Canal	0	1010	4600	285	45	0	0	0	5940
<u>Battle Creek</u>									
Matheson Canal Pumping	0	125	189	18	185	153	0	0	670 a200
<u>Frenchman River</u>									
Frenchman Canal	3.6	420	1450	46	1900	924	0	0	4740
Total	-	-	-	-	-	-	-	-	11550

a - Computed from operator's records of pumping from Battle Creek to land under the Matheson Canal.

Monthly and Annual Measured Discharge in Acre-feet of Eastern Tributaries of  
Milk River at International Boundary 1953

Station	: March	: April	: May	: June	: July	: Aug.	: Sept.	: Oct.	: Total
Lodge Creek	0	2840	8730	10410	94	4.6	0	0	22080
Woodpile Coulee	0	0.6	1.4	0.2	0	0	0	0	2.2
Battle Creek	831	1090	6840	14300	2500	1230	532	856	28180 *
Lyons Coulee	0	0	0	0	0	0	0	0	0
East Br. Battle Cr.	19	0	0	58	14	0	0	0	91
Whitewater Creek	312	99	400	239	9.3	0	0.2	4.6	1060
Frenchman River	2730	4560	23200	23930	3230	688	46	161	58540
McEachern Creek	83	595	2320	3140	164	0	0	0	6300
Horse Creek	35	557	732	1290	64	0.6	0	0	2680
Rock Creek	1020	2750	2470	3030	893	75	82	184	10500.0*
									129433.2
Totals	5030	12491.6	44693.4	56397.2	6968.3	1998.2	660.2	1205.6	129444.5

\* - Measured discharge in Rock Creek for month of November was 272 acre-feet  
and for Battle Creek, November 1 to 8, was 315 acre-feet



GAUGING STATIONS OPERATED JOINTLY BY  
CANADA AND UNITED STATES  
IN ST. MARY AND MILK RIVER DRAINAGE BASINS

1953

Map Index	Stream and Location	Remarks
<u>St. Mary River Basin</u>		
5AE <sub>1</sub>	St. Mary River near International Boundary	Int. <sup>a</sup>
5AE <sub>0.5</sub>	Swiftcurrent Creek at Many Glacier, Mont.	Int. <sup>a</sup>
5AE <sub>0.9</sub>	Lake Sherburne at Sherburne, Mont.	Int. <sup>RA</sup>
5AE <sub>0.6</sub>	Swiftcurrent Creek at Sherburne, Mont.	Int. <sup>a</sup>
5AE <sub>0.2</sub>	United States St. Mary Canal at St. Mary Crossing, near Babb, Mont.	Int. <sup>a</sup>
5AE <sub>0.3</sub>	United States St. Mary Canal at Hudson Bay Divide near Browning, Mont.	Int. <sup>a</sup>
<u>Milk River Basin</u>		
11AA <sub>5</sub>	Milk River at Milk River, Alta.	Int. <sup>a</sup>
11AA <sub>0.2</sub>	Milk River at Eastern Crossing of International Boundary	Int. <sup>a</sup>
11AA <sub>0.3</sub>	North Branch of Milk River above St. Mary Canal, near Browning, Mont.	Int. <sup>a</sup>
11AA <sub>1</sub>	North Branch of Milk River near Int. Bdy.	Int. <sup>a</sup>
11AA <sub>25</sub>	South Branch of Milk River near Int. Bdy.	Int. <sup>a</sup>
11AD <sub>0.1</sub>	Whitewater Creek near International Bdy.	Int. <sup>a</sup>
<u>Lodge Creek Tributary Basin</u>		
11AB <sub>83</sub>	Lodge Creek below McRae Coulee at Int. Bdy.	Int. <sup>a</sup>
<u>Battle Creek Tributary Basin</u>		
11AB <sub>76</sub>	Battle Creek above Cypress Lake West Inflow Canal near West Plains, Sask.	Int. <sup>a</sup>
11AB <sub>27</sub>	Battle Creek at International Boundary	Int. <sup>a</sup>
11AB <sub>0.1</sub>	Woodpile Coulee near International Bdy.	Int. <sup>a</sup>



Map Index	Stream and Location	Remarks
<u>Battle Creek Tributary Basin</u>		
11AB <sub>0.3</sub>	East Branch of Battle Creek near Int. Bdy.	Int. <sup>a</sup>
11AB <sub>75</sub>	Lyons Coulee at International Boundary	Int. <sup>a</sup>
11AB <sub>78</sub>	Cypress Lake West Inflow Canal, near West Plains, Sask.	Int. <sup>a</sup>
11AB <sub>77</sub>	Cypress Lake West Outflow Canal, near West Plains, Sask.	Int. <sup>a</sup>
<u>Frenchman River Tributary Basin</u>		
11AC <sub>37</sub>	Cypress Lake Reservoir near Vidora, Sask.	Int.R <sup>a</sup>
11AC <sub>64</sub>	Belanger Creek Diversion to Cypress Lake, near Vidora, Sask.	Int. <sup>a</sup>
11AC <sub>60</sub>	Cypress Lake East Outflow Canal, near Vidora, Sask.	Int. <sup>a</sup>
11AC <sub>18</sub>	Frenchman River above East End Reservoir at East End, Sask.	Int. <sup>a</sup>
11AC <sub>55</sub>	East End Reservoir at East End, Sask.	Int.R <sup>a</sup>
11AC <sub>52</sub>	East End Canal at East End, Sask.	Int. <sup>a</sup>
11AC <sub>1</sub>	Frenchman River below East End Reservoir at East End, Sask.	Int. <sup>a</sup>
11AC <sub>57</sub>	Frenchman River at Morrison's near East End, Sask.	Int. <sup>a</sup>
11AC <sub>23</sub>	Frenchman River at 50 Mile near Bracken, Sask.	Int. <sup>a</sup>
11AC <sub>63</sub>	Val Marie West Reservoir, near Val Marie Sask.	Int.R. <sup>a</sup>
11AC <sub>65</sub>	Val Marie West Gravity Canal, near Val Marie, Sask.	Int. <sup>a</sup>
11AC <sub>56</sub>	Val Marie Reservoir near Val Marie, Sask.	Int.R <sup>a</sup>
11AC <sub>54</sub>	Val Marie Main Canal, near Val Marie, Sask.	Int. <sup>a</sup>
11AC <sub>51</sub>	Frenchman River below Val Marie, Sask.	Int. <sup>a</sup>

Map Index	Stream and Location	Remarks
<u>Frenchman River Tributary Basin</u>		
11AC <sub>41</sub>	Frenchman River at International Boundary	Int. <sup>a</sup>
<u>Rock Creek Tributary Basin</u>		
11AE <sub>0.2</sub>	Rock Creek at International Boundary	Int. <sup>a</sup>
11AE <sub>0.3</sub>	Horse Creek near International Boundary	Int. <sup>a</sup>
11AE <sub>0.4</sub>	McEachern Creek near International Boundary	Int. <sup>a</sup>
GAUGING STATIONS OPERATED INDEPENDENTLY BY CANADA OR UNITED STATES IN ST. MARY AND MILK RIVER DRAINAGE BASINS 1953		
<u>St. Mary River Basin</u>		
	Grinnell Creek near Many Glacier	U.S. <sup>c</sup>
	St. Mary River near Babb, Montana	U.S. <sup>c</sup>
	St. Mary Lake near St. Mary, Montana	U.S. <sup>c</sup>
	Lower St. Mary Lake near Babb, Montana	U.S. <sup>c</sup>
5AE <sub>0.1</sub>	United States St. Mary Canal at Intake near Babb, Montana	U.S. <sup>c</sup>
5AE <sub>5</sub>	Rolph Creek near Kimball, Alta.	Canada <sup>a</sup>
5AE <sub>2</sub>	Lee Creek at Cardston, Alta.	Canada <sup>a</sup>
5AE <sub>25</sub>	St. Mary Reservoir near Spring Coulee, Alta.	Canada R <sup>a</sup>
5AE <sub>26</sub>	Canadian St. Mary Canal near Spring Coulee, Alta.	Canada <sup>a</sup>
5AE <sub>21</sub>	Magrath Irrigation District Canal near Spring Coulee, Alta.	Canada <sup>a</sup>

Map Index	Stream and Location	Remarks
<u>Milk River Basin</u>		
<u>Lodge Creek Tributary Basin</u>		
11AB <sub>9</sub>	Middle Creek near Alberta Boundary	Canada <sup>a</sup>
11AB <sub>72</sub>	Spangler Ditch near Govenlock, Sask.	Canada <sup>a</sup>
2	North Chinook Canal near Havre, Montana	U.S. <sup>b</sup>
<u>Battle Creek Tributary Basin</u>		
11AB <sub>84</sub>	Vidora Ditch near Consul, Sask.	Canada <sup>a</sup>
11AB <sub>58</sub>	Richardson Ditch near Consul, Sask.	Canada <sup>a</sup>
11AB <sub>44</sub>	McKinnon Ditch near Consul, Sask.	Canada <sup>a</sup>
11AB <sub>18</sub>	Stirling and Nash Ditch near Consul, Sask.	Canada <sup>a</sup>
3	Matheson Canal near Chinook, Montana	U.S. <sup>b</sup>
<u>Frenchman River Tributary Basin</u>		
11AC <sub>66</sub>	Val Marie West Pumping Canal near Val Marie, Sask.	Canada <sup>a</sup>
4	Frenchman Canal near Saco, Montana	U.S. <sup>b</sup>

Int. - International Gauging Station

Int. R - International Station on Reservoir

United States - Denotes operation by United States Geological Survey.

Canada - Denotes operation by Water Resources Division, Department of Northern Affairs and National Resources, Canada.

a - Monthly and daily discharge data and stream measurements contained in Appendix.

b - Monthly Discharge data only tabulated in report.

c - Data not used for division purposes and not included in report or appendix.