Report to

THE INTERNATIONAL JOINT COMMISSION

on

THE DIVISION AND USE MADE OF THE WATERS OF

ST. MARY AND MILK RIVERS

by

J. T. JOHNSTON
representing Canada

and

N. C. GROVER
representing the United States

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

Gentlemen:-

In compliance with the provisions of Clause 10 of your order of the 4th of 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 of 1930.

Respectfully submitted,

Accredited officer of His Majesty

Accredited officer of the United States.

April 7th, 1931.

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 1930, by the same engineers as in previous years.

Dr. G. Otis Smith, Director of the United States Geological Survey, as accredited officer for the United States, was represented in the field by Mr. W. A. Lamb, District Engineer, Helena, Montana. Mr. J. T. Johnston, Director, Dominion Water Power and Hydrometric Bureau, as accredited officer of His Majesty, was represented by Mr. S. G. Dawson, Ottawa, Canada.

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

The hydrometric data, on which this report is based, were obtained in Montana, by engineers of the United States Geological Survey under the personal supervision of Mr. Lamb; while those from streams and ditches in Canada were collected by engineers of the Dominion Water Power and Hydrometric Bureau, under the supervision of the Commissioner of Irrigation, Calgary, Alberta. The joint international gauging stations were visited frequently by representatives of both countries.

When the natural flow of the St. Mary river fell below the combined capacity of the two canals diverting therefrom, and when the demand for water in each country was

equivalent to or in excess of its share of the flow of St. Mary river, which was from early in July until the closing of the canals, the field engineers were compelled to keep constantly informed as to the natural flow of the river, the water stored or released from storage and the quantity diverted by each country. Any discrepancy in the division was, therefore, discovered and adjustments made to allow each country its proper share. Weekly statements showing the daily division of the water were prepared and forwarded to the Superintendent, Lethbridge section, Canadian Pacific Irrigation System and to the Project Manager, United States Bureau of Reclamation, Malta, Montana.

Water from Swiftcurrent creek was stored in Sherburne Reservoir until the end of June and later released to augment the United States share of St. Mary river and satisfy the increased demand for irrigation water from the lands in the Lower Milk River valley in Montana.

Division of Water.

Owing to the necessity of temporary repairs to the Spider Lake flume, the United States St. Mary canal was not opened until the 6th of June but was kept in continuous operation until September 13 when it was closed for the season. An early closing of the canal was made to facilitate further permanent repairs to the flume. As the loss in the canal by seepage between the intake and the crossing of the St. Mary river, which was this year 18% of the water diverted at the headgates, is

assumed to return directly to the river channel and eventually become available to Canada, the discharge of 89,600 acre-feet passing in the Canal at St. Mary river is considered as the actual quantity diverted from St. Mary river by the United States. Of this quantity, 85,900 acre-feet were delivered to the Milk river and made available for irrigation in Montana. This 4% loss in the canal between St. Mary river crossing and Hudson Bay Divide, at the end of the canal, was largely due to excessive evaporation.

During the winter months and from the break-up early in April until the first of July a portion of the daily flow of Swiftcurrent creek was stored in Sherburne Reservoir. Early in July it was found that the share of the natural flow of the St. Mary river due to the United States was insufficient to fulfil the demands on the canal, consequently stored water was released to augment this share. As only 126 acre-feet were diverted from the Milk river basin in Canada during this season, the natural flow of the river is considered as being delivered to the United States. The total diversion for irrigation from Milk river in Montana was 183,416 acre-feet.

The total recorded flow crossing the International Boundary from the northern tributaries of Milk river during the irrigation season of 1930 was 98,400 acre-feet, which is about 20% in excess of the flow recorded in 1929.

The Canadian Pacific Railway canal, previously known as the Alberta Railway and Irrigation Company canal, at Kimball, Alberta, diverted 158,000 acre-feet from the St. Mary river during the period of operation from April 17 to October 16, to irrigate lands in Southern Alberta. Approximately 200 acre-feet were diverted from Rolph creek in the St. Mary river basin.

3,242 acre-feet were diverted from the northern tributaries of Milk river in Canada; 459 being from Lodge creek, 1,827 from Battle creek and 1,556 from Frenchman river. No water was diverted from the other tributaries of Milk river.

Any question as to the proper share of St. Mary river being delivered to either country was decided in the following manner. Current meter measurements were made of Swiftcurrent creek at Many Glacier and Canyon creek near Many Glacier, but the flow of the other small creeks entering Swiftcurrent above the Sherburne dam were estimated. The total flow of these creeks gave the inflow into Sherburne Reservoir. The evaporation and losses from the Reservoir were considered when estimating the flow from other small streams. A current meter measurement of the outflow from the reservoir was made at the gauging station below the dam. The difference between the inflow and outflow showed the quantity of water being stored or released from storage. A

measurement of the United States St. Mary Canal at St. Mary Crossing was made to find the water being diverted by the United States, and a measurement of the St. Mary River at Kimball to determine the water being delivered to Canada.

If water was being stored in Sherburne Reservoir the natural flow of St. Mary river at the Boundary was obtained by adding the water stored to that diverted by the St. Mary Canal and that received by Canada, a two day lag was allowed for the stored water to reach the Boundary. If stored water was being released, the quantity released was deducted from the combined flow of the St. Mary Canal and that in the river at Kimball to determine the natural flow.

The natural flow having been determined, the share to which each country was entitled was calculated on the following basis:-

(1) When the natural flow of St. Mary river was less than 666 cubic-feet per second, Canada was entitled, by the ruling of the Commission to three-quarters of that flow and the United States to one-quarter.

(2) When the natural flow of St. Mary river was greater than 666 cubic-feet per second, Canada was entitled to 500 cubic feet per second plus one-half of the increase over 666 cubic feet per second, and the United States was entitled to the remainder.

No actual division was made of the waters of Milk river and its northern tributaries.

Water Supply.

The precipitation on the drainage basins of the St. Mary and Milk rivers during the winter 1929-30 was again below normal. On the prairies, forming most of the drainage basin of Milk river and its tributaries break-up occurred in February, consequently by the beginning of the irrigation season a large portion of the annual run-off had occurred. The inflow to Milk river during the irrigation season was 70% of the average for the years of record. The flow from St. Mary river during the irrigation season was 87% of the 30-year average.

The ninth annual international survey of the snow conditions on the headwaters of Swiftcurrent creek, an area considered typical of the headwaters of the St. Mary river, indicated that the run-off from the area during May, June and July would be 44% of the average for the nine years. The long period of hot dry weather during these months caused a heavy drain on the glaciers which produced a run-off in excess of this prediction and almost equal to that of 1929.

For the first time in eight years the precipitation total in Southern Alberta was below the 28-year average. The 1930 total reached 12.34 inches as against an average of 15.78 inches. During April, May, June and July the rainfall was about one and one-half inches each month. This deficiency in rainfall during the growing season greatly increased the demand for

irrigation water which was only satisfied by careful conservation and rotation.

The twenty-three international gauging stations previously used in the determination of the daily flow of the streams in the St. Mary and Milk river basins were maintained and operated under the joint supervision of the field engineers.

Canada maintained the same stations as in previous years on international streams and canals diverting therefrom in Canada and from the records obtained at these stations may be determined the use made of the international waters.

An appendix to this report gives the results of current meter measurements, the daily gauge heights and discharge at all the gauging stations operated in the two drainage basins during 1930.

Description of Tables.

The tables following have been prepared to summarize the data on the division and use made of the waters in the St. Mary and Milk river basins.

Table No. 1 shows the method used to determine the natural flow of the St. Mary river during the irrigation season 1930, the water available for use and used by the United States and Canada. In this table there are four pages for each month from April to October inclusive.

Page 1 (water stored or released from Sherburne reservoir) shows the daily inflow to and the outflow from

Sherburne reservoir. The difference gives the quantity of water stored or released from storage. On this sheet the unrecorded inflow is determined by comparison with the recorded flows in Swiftcurrent and Canyon creeks and the use of the storage curve of Sherburne reservoir to give the gain or loss in storage after allowance has been made for evaporation and seepage losses. This estimate is put in column headed "unrecorded inflow".

Page 2 (determination of the natural flow of St. Mary river) shows the actual flow of St. Mary river at Kimball near the boundary, the quantity of water diverted, stored or released from storage by the United States and the computed natural flow of St. Mary river or that flow which would have crossed the international boundary had there been no interference. It has been estimated that approximately two days are required for stored water released from Sherburne reservoir to influence the flow at the international boundary, consequently a two day lag has been applied to the stored or released water.

Page 3 (water available for use and used by the United States) shows the water available for use by the United States under the ruling of the Order of October 4th, 1921, the water diverted and stored and the excess or deficit in the quantity used over the quantity available.

Page 4 (water available for use and used by Canada) shows the natural flow of St. Mary river at the international

boundary, Canada's share by the ruling of the Commission, the actual discharge of St. Mary river at Kimball, which is the quantity available for use by Canada, the quantity used by Canada and the excess or deficit of the quantity received by Canada as compared with the share.

Table 2 is a statement showing the quantity in acre-feet taken in each month by each country and the quantity thereof applied to the land, the quantity diverted from St. Mary river, the loss or waste from the canals, and the diversions from Milk river in the United States.

Table 3 gives a summarization of the available data on the diversions in Canada from the northern tributaries of Milk river and the quantity which crossed the boundary into the United States.

Table 4 gives the diversions from the northern tributaries of Milk river in the United States.

Table 1

Division of St. Mary River

1930

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR
APRIL - 1930

Day	INFLOW TO SHERBURNE RESERVOIR: Recorded Inflow: Swift-current Creek	Canyon Creek	Un-recorded Inflow Estimated	Total Inflow	Outflow Swiftcurrent Creek at Sherburne	Stored in Reservoir Sec.ft.	Released from Reservoir Sec.ft.
1						110	
2						115	
3						120	
4						125	
5						130	
6						135	
7						364	
8						364	
9						364	
10						364	
11						180	
12						180	
13						180	
14						306	
15						306	
16						162	
17						-	
18						-	
19						-	
20						134	
21						135	
22						135	
23						220	
24						220	
25	No record available	No record available	No record available	No record available	No record available	167	No stored water released during April.
26						167	
27						111	
28						222	
29						222	
30						222	
Total Sec.ft.						5460	
Mean						182	
Ac.ft.						10,830	

DETERMINATION OF NATURAL FLOW ST.MARY RIVER
APRIL - 1930

Day	St.Mary River at Kimball	Diverted by U.S.B.R.	Stored by U.S.B.R.	Total in sec.ft.	Stored water Released	Natural Flow St.Mary River
1	795	No water diverted during April	119	914	No stored water released during April	914
2	834		110	944		944
3	795		110	905		905
4	834		115	949		949
5	834		120	954		954
6	795		125	920		920
7	834		130	964		964
8	818		135	953		953
9	795		364	1159		1159
10	872		364	1236		1236
11	795		364	1159		1159
12	834		364	1198		1198
13	850		180	1030		1030
14	1060		180	1240		1240
15	1200		180	1380		1380
16	1300		306	1606		1606
17	1340		306	1646		1646
18	1410		162	1572		1572
19	1500		-	1500		1500
20	1510		-	1510		1510
21	1480		-	1480		1480
22	1480		134	1614		1614
23	1440		135	1575		1575
24	1630		135	1765		1765
25	1810		220	2030		2030
26	1950		220	2170		2170
27	2090		167	2257		2257
28	2210		167	2377		2377
29	2460		111	2571		2571
30	2520		222	2742		2742
Total Sec.ft.	39075	-	5245	44320	-	44320
Mean	1300	-	175	1477	-	1477
Ac.ft.	77400	-	10400	87900	-	87900

10,403

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.
APRIL - 1930.

Day	Natural Flow St.Mary River	AVAILABLE FOR USE BY U.S.A U.S. Share	Released Storage	Total Available	USED BY U.S.A. Diverted	Stored	Total Used	Excess or Deficit of Share used.
1	914	290	No water released during April	290	No water diverted during April	119	119	No excess of share used during April 171
2	944	305		305		110	110	195
3	905	286		286		110	110	176
4	949	308		308		115	115	193
5	954	310		310		120	120	190
6	920	293		293		125	125	168
7	964	315		315		130	130	185
8	953	310		310		135	135	175
9	1159	413		413		364	364	49
10	1236	451		451		364	364	87
11	1159	413		413		364	364	49
12	1198	432		432		364	364	68
13	1030	348		348		180	180	168
14	1240	453		453		180	180	273
15	1380	523		523		180	180	343
16	1606	636		636		306	306	330
17	1646	656		656		306	306	350
18	1572	619		619		162	162	457
19	1500	583		583		-	-	583
20	1510	588		588		-	-	588
21	1480	573		573		-	-	573
22	1614	640		640		134	134	506
23	1575	621		621		135	135	486
24	1765	716		716		135	135	581
25	2030	848		848		220	220	628
26	2170	918		918		220	220	698
27	2257	962		962		167	167	795
28	2377	1022		1022		167	167	855
29	2571	1119		1119		111	111	1008
30	2742	1204		1204		222	222	982
Total Sec.ft.	44320	17155	-	17155	-	5245	5245	- 11910
Mean	1477	572	-	572	-	175	175	- 397
Ac.ft.	87900	34000	-	34000	-	10400	10400	- 23600

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA
APRIL - 1930

Day	Natural flow St. Mary R. at Boundary	Canada's Share Available	St. Mary R. at Kimball delivered	Diverted by Canada Used	Excess or Deficit of share delivered
1	914	624	795		171
2	944	639	834		195
3	905	619	795		176
4	949	641	834		193
5	954	644	834		190
6	920	627	795		168
7	964	649	834		185
8	953	643	818		175
9	1159	746	795		49
10	1236	785	872		87
11	1159	746	795		49
12	1198	766	834		68
13	1030	682	850		168
14	1240	787	1060	-	273
15	1380	857	1200	-	343
16	1606	970	1300	-	330
17	1646	990	1340	5	350
18	1572	953	1410	57	457
19	1500	917	1500	59	583
20	1510	922	1510	58	588
21	1480	907	1480	58	573
22	1614	974	1480	56	506
23	1575	954	1440	73	486
24	1765	1049	1630	112	581
25	2030	1182	1810	124	628
26	2170	1252	1950	132	698
27	2257	1295	2090	142	795
28	2377	1355	2210	178	855
29	2571	1452	2460	237	1008
30	2742	1538	2520	240	982
Total Sec.ft.	44320	27165	39075	1531	11910
Mean	1477	906	1300 (17-30)	109	397
Ac. ft.	87900	53900	77400	3030	23600

no deficit during April

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR
MAY - 1930

Day	INFLOW TO SHERBURNE RESERVOIR: Recorded Inflow: Swift-current Creek	Canyon Creek	Un-recorded Inflow Estimated	Total Inflow	Outflow Swiftcurrent Creek at Sherburne	Stored in Reservoir Sec.ft.	Released from Reservoir Sec.ft.
1				609	442	167	
2				624	442	182	
3				880	456	424	
4		86		841	353	488	
5		70		676	281	395	
6	336	56	154	546	229	317	
7	287	42	128	457	211	246	
8	254	39	115	408	162	246	
9	201	35	93	329	127	202	
10	201	31	91	323	120	203	
11	228	26	101	355	120	235	
12	207	26	92	325	108	217	
13	172	27	79	278	9	269	
14	177	35	85	297	9	288	
15	222	42	105	369	9	360	
16	270	38	79	387	9	378	
17	287	43	82	412	9	403	
18	336	55	100	491	9	482	
19	442	49	125	616	9	607	
20	885	85	248	1218	9	1209	
21	607	116	185	908	10	898	
22	420	68	125	613	9	604	
23	368	41	104	513	209	304	
24	343	41	98	482	398	84	
25	280	45	83	408	191	217	
26	235	41	46	322	71	251	
27	307	41	58	406	109	297	
28	310	58	61	429	73	356	
29	471	90	94	655	71	584	
30	467	100	95	662	68	594	
31	540	102	107	749	301	448	
Total Sec.ft.	8853	1528	2733	16588	4633	11955	
Mean	(6-31) 340	(4-31) 55	(6-31) 105	535	149	386	
Ac.ft	17500	3050	5410	32900	9160	23700	

No stored water released during May.

DETERMINATION OF NATURAL FLOW ST.MARY RIVER
MAY - 1930

Day	St.Mary River at Kimball	Diverted by U.S.B.R.	Stored by U.S.B.R.	Total in sec.ft.	Stored Water Released	Natural flow St.Mary River
1	2390	No water diverted during May	222	2612	No stored water released during May	2612
2	2360		222	2582		2582
3	2420		167	2587		2587
4	2620		182	2802		2802
5	2540		424	2964		2964
6	2440		488	2928		2928
7	2310		395	2705		2705
8	2160		317	2477		2477
9	2090		246	2336		2336
10	2000		246	2246		2246
11	1980		202	2182		2182
12	2000		203	2203		2203
13	1870		235	2105		2105
14	1730		217	1947		1947
15	1590		269	1859		1859
16	1540		288	1828		1828
17	1550		360	1910		1910
18	1560		378	1938		1938
19	1560		403	1963		1963
20	1690		482	2172		2172
21	2130		607	2737		2737
22	2200		1209	3409		3409
23	2160		898	3058		3058
24	2240		604	2844		2844
25	2280		304	2584		2584
26	2100		84	2184		2184
27	1950		217	2167		2167
28	1970		251	2221		2221
29	1980		297	2277		2277
30	2100		356	2456		2456
31	2320		584	2904		2904
Total Sec.ft.	63830	-	11357	75187	-	75187
Mean	2060	-	366	2430	-	2430
Ac.ft.	127000	-	22500	149000	-	149000

149,100

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY UNITED STATES
MAY - 1930.

Day	Natural Flow St.Mary River	AVAILABLE FOR USE BY U.S.A. U.S. Share	Released Storage	Total Available	USED BY U.S.A. Diverted	Stored	Total Used	Excess or Deficit of Share used.
1	2612	1139	No stored water released during May	1139	No water diverted during May	222	222	No excess of share used in May 917
2	2582	1124		1124		222	222	902
3	2587	1127		1127		167	167	960
4	2802	1234		1234		182	182	1052
5	2964	1315		1315		424	424	891
6	2928	1297		1297		488	488	809
7	2705	1186		1186		395	395	791
8	2477	1072		1072		317	317	755
9	2336	1001		1001		246	246	755
10	2246	956		956		246	246	710
11	2182	924		924		202	202	722
12	2203	935		935		203	203	732
13	2105	886		886		235	235	651
14	1947	807		807		217	217	590
15	1859	763		763		269	269	494
16	1828	747		747		288	288	459
17	1910	788		788		360	360	428
18	1938	802		802		378	378	424
19	1963	815		815		403	403	412
20	2172	919		919		482	482	437
21	2737	1202		1202		607	607	595
22	3409	1538		1538		1209	1209	329
23	3058	1362		1362		898	898	464
24	2844	1255		1255		604	604	651
25	2584	1125		1125		304	304	821
26	2184	925		925		84	84	841
27	2167	917		917		217	217	700
28	2221	944		944		251	251	693
29	2277	972		972		297	297	675
30	2456	1061		1061		356	356	705
31	2904	1285		1285		584	584	701
Total Sec.ft.	75187	32423	-	32424	-	11357	11357	- 21066
Mean	2430	1046	-	1046	-	366	366	- 680
Ac.ft.	149000	64300	-	64300	-	22500	22500	- 41800
		64300						

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA
MAY - 1930

Day	Natural flow St. Mary R. at Boundary	Canada's Share Available	St. Mary R. at Kimball delivered	Diverted by Canada Used	Excess or Deficit of share delivered	
1	2612	1473	2390	212	917	
2	2582	1458	2360	208	902	
3	2587	1460	2420	246	960	
4	2802	1568	2620	283	1052	
5	2964	1649	2540	224	891	
6	2928	1631	2440	246	809	
7	2705	1519	2310	270	791	
8	2477	1405	2160	268	755	
9	2336	1335	2090	267	755	
10	2246	1290	2000	281	710	
11	2182	1258	1980	308	722	
12	2203	1268	2000	295	732	
13	2105	1219	1870	235	651	
14	1947	1140	1730	227	590	
15	1859	1096	1590	235	494	
16	1828	1081	1540	265	459	
17	1910	1122	1550	275	428	
18	1938	1136	1560	286	424	
19	1963	1148	1560	308	412	
20	2172	1253	1690	303	437	
21	2737	1535	2130	329	595	
22	3409	1871	2200	329	329	
23	3058	1696	2160	333	464	
24	2844	1589	2240	326	651	
25	2584	1459	2280	333	821	no deficit during May
26	2184	1259	2100	365	841	
27	2167	1250	1950	385	700	
28	2221	1277	1970	431	693	
29	2277	1305	1980	480	675	
30	2456	1395	2100	488	705	
31	2904	1619	2320	509	701	
Total Sec.ft.	75187	42764	63830	9550	21066	-
Mean	2430	1380	2060	308	680	-
Ac.ft.	149000	84900 84800	127000	18900	41800	-

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR
JUNE - 1930

Day	INFLOW TO SHERBURNE RESERVOIR: Recorded Inflow: Swift-current Creek	Canyon Creek	Un-recorded Inflow Estimated	Total Inflow	Outflow Swiftcurrent Creek at Sherburne	Stored in Reservoir Sec.ft.	Released from Reservoir Sec.ft.
1	507	87	99	693	471	222	-
2	431	72	94	587	558	29	-
3	427	74	84	585	677	-	92
4	392	67	77	536	741	-	205
5	360	76	73	509	654	-	145
6	385	93	104	582	495	87	-
7	478	110	127	715	486	229	-
8	559	123	148	830	570	260	-
9	559	100	143	802	644	158	-
10	552	104	142	798	710	88	-
11	603	119	156	878	856	22	-
12	507	94	130	731	921	-	190
13	368	66	94	528	925	-	397
14	264	49	68	381	921	-	540
15	222	48	59	329	791	-	462
16	241	58	65	364	609	-	245
17	330	71	87	488	483	5	-
18	310	57	80	447	262	185	-
19	274	50	70	394	197	197	-
20	251	47	65	363	202	161	-
21	357	67	92	516	202	314	-
22	417	60	104	581	373	208	-
23	371	60	93	524	511	13	-
24	323	50	81	454	6	448	-
25	303	49	76	428	336	92	-
26	313	52	56	421	400	21	-
27	313	51	55	419	336	83	-
28	320	57	57	434	564	-	130
29	297	52	53	402	532	-	130
30	260	47	47	354	644	-	290
Total Sec.ft.	11294	2110	2679	16073	16077	2822	2826
Mean	376	70	90	536	536	94	94
Ac.ft.	22400	4170	5360	31900	31900	5590	5590

DETERMINATION OF NATURAL FLOW ST.MARY RIVER
JUNE - 1930

Day	St.Mary River at Kimball	Diverted by U.S.B.R.	Stored by U.S.B.R.	Total in Sec.ft.	Stored Water Released	Natural Flow St.Mary River
1	2510	-	594	3104	-	3104
2	2560	-	448	3008	-	3008
3	2800	-	222	3022	-	3022
4	2900	-	29	2929	-	2929
5	2660	106	-	2766	92	2674
6	2520	146	-	2666	205	2461
7	2440	192	-	2632	145	2487
8	2540	244	87	2871	-	2871
9	2610	242	229	3081	-	3081
10	2670	244	260	3174	-	3174
11	2870	246	158	3274	-	3274
12	3050	288	88	3426	-	3426
13	3050	288	22	3360	-	3360
14	2760	288	-	3048	190	2858
15	2570	285	-	2855	397	2458
16	2360	283	-	2643	540	2103
17	2090	313	-	2403	462	1941
18	1910	316	-	2226	245	1981
19	1680	347	5	2032	-	2032
20	1500	398	185	2083	-	2083
21	1420	444	197	2061	-	2061
22	1500	456	161	2117	-	2117
23	1570	476	314	2360	-	2360
24	1410	482	208	2100	-	2100
25	1350	484	13	1847	-	1847
26	1330	510	448	2288	-	2288
27	1320	520	92	1932	-	1932
28	1330	531	21	1882	-	1882
29	1360	533	83	1976	-	1976
30	1370	535	-	1905	130	1775
Total Sec.ft.	64010	9197	3864	77071	2406	74665
Mean	2130	354(5-30)	125	2570	80	2490
Ac.ft.	127000	18300	7440	153000	4760	148000

148100

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY UNITED STATES
JUNE - 1930.

Day	Natural Flow St.Mary River	AVAILABLE FOR USE BY U S.A U.S. Share	Released Storage	Total Available	USED BY U.S.A. Diverted	Stored	Total Used	Excess or Deficit of Share used
1	3104	1385	-	1385	-	594	594	791
2	3008	1337	-	1337	-	448	448	889
3	3022	1344	-	1344	-	222	222	1122
4	2929	1298	-	1298	-	29	29	1269
5	2674	1170	92	1262	106	-	106	1156
6	2461	1064	205	1269	146	-	146	1123
7	2487	1077	145	1222	192	-	192	1030
8	2871	1269	-	1269	244	87	331	938
9	3081	1374	-	1374	242	229	471	903
10	3174	1420	-	1420	244	260	504	916
11	3274	1470	-	1470	246	158	404	1066
12	3426	1546	-	1546	288	88	376	1170
13	3360	1513	-	1513	288	22	310	1203
14	2858	1262	190	1452	288	-	288	1164
15	2458	1062	397	1459	285	-	285	1174
16	2103	885	540	1425	283	-	283	1142
17	1941	804	462	1266	313	-	313	953
18	1981	824	245	1069	316	-	316	753
19	2032	849	-	849	347	5	352	497
20	2083	875	-	875	398	185	583	292
21	2061	864	-	864	444	197	641	223
22	2117	892	-	892	456	161	617	275
23	2360	1013	-	1013	476	314	790	223
24	2100	883	-	883	482	208	690	193
25	1847	757	-	757	484	13	497	260
26	2288	977	-	977	510	448	958	19
27	1932	799	-	799	520	92	612	187
28	1882	774	-	774	531	21	552	222
29	1976	821	-	821	533	83	616	205
30	1775	721	130	851	535	-	535	316
Total Sec.ft.	74665	32329	2406	34735	9197	3864	13061	- 21674
Mean	2490	~~1080~~ 1078	80	1160	354	125	435	- 722
Ac-ft.	148000	64300 64100	4760 4770	69000	18300 18240	7~~40~~ 660	25900	- 43000

No excess of share used during June

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA
JUNE - 1930

Day	Natural flow St. Mary R. at Boundary	Canada's Share Available	St.Mary R. at Kimball delivered	Diverted by Canada Used	Excess or Deficit Of share delivered
1	3104	1719	2510	515	791
2	3008	1671	2560	498	889
3	3022	1678	2800	571	1122
4	2929	1631	2900	517	1269
5	2674	1504	2660	498	1156
6	2461	1397	2520	515	1123
7	2487	1410	2440	515	1030
8	2871	1602	2540	555	938
9	3081	1707	2610	606	903
10	3174	1754	2670	622	916
11	3274	1804	2870	649	1066
12	3426	1880	3050	686	1170
13	3360	1847	3050	698	1203
14	2858	1596	2760	743	1164
15	2458	1396	2570	763	1173
16	2103	1218	2360	780	1142
17	1941	1137	2090	806	953
18	1981	1157	1910	820	753
19	2032	1183	1680	820	497
20	2083	1208	1500	813	292
21	2061	1197	1420	846	223
22	2117	1225	1500	856	275
23	2360	1347	1570	838	223
24	2100	1217	1410	823	193
25	1847	1090	1350	838	260
26	2288	1311	1330	846	19
27	1932	1133	1320	886	187
28	1882	1108	1330	915	222
29	1976	1155	1360	926	205
30	1775	1054	1370	929	316
Total Sec.ft.	74665	42336	64010	21693	21674
Mean	2490	1410	2130	723	722
Ac.ft.	148000	83900	127000	43000	43000

no deficit during June

84000

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR
JULY - 1930

Day	INFLOW TO SHERBURNE RESERVOIR: Recorded Inflow: Swift-current Creek	Canyon Creek	Un-recorded Inflow Estimated	Total Inflow	Outflow Swiftcurrent Creek at Sherburne	Stored in Reservoir Sec.ft.	Released from Reservoir Sec.ft.
1	257	49	47	353	442	-	89
2	297	57	54	408	397	11	-
3	297	53	53	403	346	57	-
4	241	49	44	334	346	-	12
5	232	48	42	322	350	-	28
6	238	49	43	330	348	-	18
7	254	48	46	348	348	-	-
8	235	44	42	321	320	1	-
9	238	45	42	325	324	1	-
10	241	46	43	330	324	6	-
11	267	49	48	364	324	40	-
12	267	45	47	359	324	35	-
13	238	42	43	323	324	-	1
14	222	42	40	304	324	-	20
15	222	43	40	305	327	-	22
16	216	41	39	296	343	-	47
17	198	35	35	268	360	-	92
18	177	31	32	240	365	-	125
19	192	38	35	265	373	-	108
20	219	38	39	296	360	-	64
21	198	36	36	270	360	-	90
22	180	33	32	245	365	-	120
23	175	31	31	237	378	-	141
24	172	31	31	234	406	-	172
25	163	29	29	221	408	-	187
26	147	27	26	200	414	-	214
27	122	23	22	167	417	-	250
28	110	21	20	151	434	-	283
29	107	20	19	146	451	-	305
30	112	21	20	153	477	-	324
31	120	21	21	162	501	-	339
Total Sec.ft.	6354	1185	1141	8680	11580	151	3051
Mean	205	38.2	36.8	280	374	4.9	98
Ac.ft.	12600	2350	2260	17200	23000	300	6030

DETERMINATION OF NATURAL FLOW ST.MARY RIVER
JULY - 1930

Day	St.Mary River at Kimball	Diverted by U.S.B.R.	Stored by U.S.B.R.	Total in Sec.ft.	Stored Water Released	Natural Flow St.Mary River
1	1320	531	-	1851	130	1721
2	1260	531	-	1791	290	1501
3	1210	533	-	1743	89	1654
4	1140	531	11	1682	-	1682
5	1090	529	57	1676	-	1676
6	1060	531	-	1591	12	1579
7	1010	533	-	1543	28	1515
8	994	531	-	1525	18	1507
9	949	533	-	1482	-	1482
10	931	531	1	1463	-	1463
11	922	529	1	1452	-	1452
12	904	531	6	1441	-	1441
13	859	529	40	1428	-	1428
14	842	529	35	1406	-	1406
15	794	526	-	1320	1	1319
16	770	524	-	1294	20	1274
17	741	522	-	1263	22	1241
18	727	520	-	1247	47	1200
19	802	524	-	1326	92	1234
20	756	520	-	1276	125	1151
21	712	520	-	1232	108	1124
22	678	520	-	1198	64	1134
23	650	518	-	1168	90	1078
24	630	518	-	1148	120	1028
25	610	520	-	1130	141	989
26	598	524	-	1122	172	950
27	559	520	-	1079	187	892
28	535	518	-	1053	214	839
29	517	518	-	1035	250	785
30	494	518	-	1012	283	729
31	488	518	-	1006	305	701
Total Sec.ft.	25552	16280	151	41983	2808	39175
Mean	824	525	4.9	1354	91	1264
Ac.ft.	50700	32300	300	83300	5600	77700

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY UNITED STATES
JULY - 1930.

Day	Natural Flow St.Mary River	AVAILABLE FOR USE BY U.S.A. U.S. Share	Released Storage	Total Available	USED BY U.S.A. Diverted	Stored	Total Used	Excess or Deficit of Share used.	
1	1721	694	130	824	531	-	531	-	293
2	1501	584	290	874	531	-	531	-	343
3	1654	660	89	749	533	-	533	-	216
4	1682	674	-	674	531	11	542	-	132
5	1676	671	-	671	529	57	586	-	85
6	1579	623	12	635	531	-	531	-	104
7	1515	591	28	619	533	-	533	-	86
8	1507	587	18	605	531	-	531	-	74
9	1482	574	-	574	533	-	533	-	41
10	1463	565	-	565	531	1	532	-	33
11	1452	559	-	559	529	1	530	-	29
12	1441	554	-	554	531	6	537	-	17
13	1428	547	-	547	529	40	569	22	-
14	1406	536	-	536	529	35	564	28	-
15	1319	493	1	494	526	-	526	32	-
16	1274	470	20	490	524	-	524	34	-
17	1241	454	22	476	522	-	522	46	-
18	1200	433	47	480	520	-	520	40	-
19	1234	450	92	542	524	-	524	82	-
20	1151	409	125	534	520	-	520	-	14
21	1124	395	108	503	520	-	520	17	-
22	1134	400	64	464	520	-	520	56	-
23	1078	372	90	462	518	-	518	56	-
24	1028	347	120	467	518	-	518	51	-
25	989	328	141	469	520	-	520	51	-
26	950	308	172	480	524	-	524	44	-
27	892	279	187	466	520	-	520	54	-
28	839	253	214	467	518	-	518	51	-
29	785	226	250	476	518	-	518	42	-
30	729	198	283	481	518	-	518	37	-
31	701	184	305	489	518	-	518	29	-
Total Sec.ft.	39175	14418	2808	17226	16280	151	16431	772	1467
Mean	1264	465	91	556	525	4.9	530	24.9	47.3
Ac.ft.	77700	28600	5600	34200	32300	300	32600	1530	2910

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA
JULY - 1930

Day	Natural flow St. Mary R. at Boundary	Canada's Share Available	St. Mary R. at Kimball delivered	Diverted by Canada Used	Excess or Deficit of share delivered	
1	1721	1027	1320	915	293	-
2	1501	917	1260	886	343	-
3	1654	994	1210	848	216	-
4	1682	1008	1140	836	132	-
5	1676	1005	1090	826	85	-
6	1579	956	1060	810	104	-
7	1515	924	1010	793	86	-
8	1507	920	994	788	74	-
9	1482	908	949	778	41	-
10	1463	898	931	783	33	-
11	1452	893	922	780	29	-
12	1441	887	904	773	17	-
13	1428	881	859	756	-	22
14	1406	870	842	738	-	28
15	1319	826	794	706	-	32
16	1274	804	770	696	-	34
17	1241	787	741	676	-	46
18	1200	767	727	653	-	40
19	1234	784	802	706	-	82
20	1151	742	756	663	14	-
21	1124	729	712	644	-	17
22	1134	734	678	617	-	56
23	1078	706	650	594	-	56
24	1028	681	630	568	-	51
25	989	661	610	550	-	51
26	950	642	598	532	-	44
27	892	613	559	500	-	54
28	839	586	535	482	-	51
29	785	559	517	467	-	42
30	729	531	494	452	-	37
31	701	517	488	448	-	29
Total Sec.ft	39175	24757	25552	21264	1467	772
Mean	1264	799	824	686	47.3	24.9
Ac.ft.	77700	49100	50700	42200	2910	1530

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR
AUGUST - 1930

Day	INFLOW TO SHERBURNE RESERVOIR: Recorded Inflow: Swift-current Creek	Canyon Creek	Un-recorded Inflow Estimated	Total Inflow	Outflow Swiftcurrent Creek at Sherburne	Stored In Reservoir Sec.ft.	Released from Reservoir Sec.ft.
1	127	22	15	164	523	-	359
2	124	21	15	160	523		363
3	120	20	14	154	520		366
4	112	18	13	143	516		373
5	107	17	12	136	513		377
6	110	18	13	141	516		375
7	114	19	13	146	523		377
8	117	18	14	149	520		371
9	120	18	14	152	510		358
10	120	19	14	153	513		360
11	122	19	14	155	516		361
12	120	19	14	153	507		354
13	117	18	14	149	507		358
14	112	17	13	142	486		344
15	100	17	12	129	465		336
16	91	16	11	118	468		350
17	87	15	10	112	471		359
18	89	14	10	113	474		361
19	82	14	10	106	468		362
20	82	14	10	106	471		365
21	76	13	9	98	468		370
22	69	12	8	89	468		379
23	67	12	8	87	462		375
24	71	11	8	90	459		369
25	73	11	8	92	456		364
26	71	11	8	90	456		366
27	69	11	8	88	451		363
28	66	11	8	85	445		360
29	62	10	7	79	448		369
30	60	10	7	77	459		382
31	62	11	7	80	454		374
Total Sec.ft.	2919	476	341	3736	15036	-	11300
Mean	94	15.4	11	120	485	-	365
Acft.	5780	947	674	7380	29800	-	22400

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER
AUGUST - 1930

Day	St. Mary River at Kimball	Diverted by U.S.B.R.	Stored by U.S.B.R.	Total in Sec. ft.	Stored Water Released	Natural Flow St. Mary River
1	494	520		1014	324	690
2	494	524		1018	339	679
3	494	524		1018	359	659
4	483	524		1007	363	644
5	472	524		996	366	630
6	456	520		976	373	603
7	445	516		961	377	584
8	440	514		954	375	579
9	434	516		950	377	573
10	424	512		936	371	565
11	429	512		941	358	583
12	429	514		945	360	583
13	434	508		942	361	581
14	478	462		940	354	586
15	461	456		917	358	559
16	440	454		894	344	550
17	419	454		873	336	537
18	398	454		852	350	502
19	388	454		842	359	483
20	384	448		832	361	471
21	374	446		820	362	458
22	355	446		801	365	436
23	333	444		780	370	410
24	323	446		769	379	390
25	310	446		756	375	381
26	298	442		740	369	371
27	283	442		725	364	361
28	280	442		722	366	356
29	269	444		713	363	350
30	254	440		694	360	334
31	263	444		707	369	338
Total Sec.ft.	12241	14792		27033	11207	15826
Mean	395	477		872	362	511
Ac.ft.	24300	29300		53600	22300	31400

no water stored during August

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY UNITED STATES
AUGUST - 1930.

Day	Natural Flow St.Mary River	AVAILABLE FOR USE BY U.S.A. U.S. Share	Released Storage	Total Available	USED BY U.S.A. Diverted	Stored	Total Used	Excess or Deficit of Share Used	
1	690	178	324	502	520	No water stored during August	520	18	-
2	679	173	339	512	524		524	12	-
3	659	165	359	524	524		524	-	-
4	644	161	363	524	524		524	-	-
5	630	158	366	524	524		524	-	-
6	603	151	373	524	520		520	-	4
7	584	146	377	523	516		516	-	7
8	579	145	375	520	514		514	-	6
9	573	143	377	520	516		516	-	4
10	565	141	371	512	512		512	-	-
11	583	146	358	504	512		512	8	-
12	583	146	360	506	514		514	8	-
13	581	145	361	506	508		508	2	-
14	586	146	354	500	462		462	-	38
15	559	140	358	498	456		456	-	42
16	550	138	344	482	454		454	-	28
17	537	134	336	470	454		454	-	16
18	502	126	350	476	454		454	-	22
19	483	121	359	480	454		454	-	26
20	471	118	361	479	448		448	-	31
21	458	114	362	476	446		446	-	30
22	436	109	365	474	446		446	-	28
23	410	102	370	472	444		444	-	28
24	390	98	379	477	446		446	-	31
25	381	95	375	470	446		446	-	24
26	371	93	369	462	442		442	-	20
27	361	90	364	454	442		442	-	12
28	356	89	366	455	442		442	-	13
29	350	88	363	451	444		444	-	7
30	334	84	360	444	440		440	-	4
31	338	84	369	453	444		444	-	9
Total Sec.ft.	15826	3967	11207	15174	14792	-	14792	48	430
Mean	511	128	362	489	477	-	477	1.5	13.9
Ac.ft.	31400	7870	22300	30100	29300	-	29300	92	855

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA
AUGUST - 1930

Day	Natural flow St. Mary R. at Boundary	Canada's Share Available	St. Mary R. at Kimball delivered	Diverted by Canada Used	Excess or Deficit of share delivered	
1	690	512	494	453	-	18
2	679	506	494	455	-	12
3	659	494	494	453	-	-
4	644	483	483	446	-	-
5	630	472	472	437	-	-
6	603	452	456	428	4	-
7	584	438	445	422	7	-
8	579	434	440	413	6	-
9	573	430	434	410	4	-
10	565	424	424	408	-	-
11	583	437	429	408	-	8
12	583	437	429	411	-	8
13	581	436	434	420	-	2
14	586	440	478	453	38	-
15	559	419	461	444	42	-
16	550	412	440	470	28	-
17	537	403	419	442	16	-
18	502	376	398	383	22	-
19	483	362	388	375	26	-
20	471	353	384	363	31	-
21	458	344	374	354	30	-
22	436	327	355	336	28	-
23	410	308	336	320	28	-
24	390	292	323	308	31	-
25	381	286	310	298	24	-
26	371	278	298	286	20	-
27	361	271	283	276	12	-
28	356	267	280	276	13	-
29	350	262	269	266	7	-
30	334	250	254	250	4	-
31	338	254	263	228	9	-
Total Sec.ft.	15826	11859	12241	11692	430	48
Mean	511	383	395	377	13.9	1.5
Ac.ft.	31400	23530	24300	23200	855	92

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR
September - 1930

Day	INFLOW TO SHERBURNE RESERVOIR: Recorded Inflow: Swift-current	Canyon Creek	Un-recorded Inflow Estimated	Total Inflow	Outflow Swiftcurrent Creek at Sherburne	Stored in Reservoir Sec.ft.	Released from Reservoir Sec.ft.
1	53	9	6	68	448	-	380
2	46	8	5	59	445	-	386
3	45	8	5	58	439	-	381
4	46	8	5	59	439	-	380
5	48	8	7	63	434	-	371
6	52	11	6	69	431	-	362
7	58	13	7	78	425	-	347
8	58	14	7	79	420	-	341
9	54	13	7	74	406	-	332
10	54	13	7	74	394	-	320
11	62	15	8	85	389	-	304
12	67	20	9	96	180		84
13	67	20	9	96	10	86	-
14	76	35	11	122	9	113	-
15	91	43	13	147	9	138	-
16	95	37	13	145	9	136	-
17	91	27	12	130	9	121	-
18	84	22	11	117	9	108	-
19	75	18	9	102	9	93	-
20	66	15	8	89	41	48	-
21	58	13	7	78	65	13	-
22	59	16	8	83	65	18	-
23	67	26	9	102	66	36	-
24	60	26	9	95	66	29	-
25	58	24	8	90	64	26	-
26	52	21	7	80	56	24	-
27	50	21	7	78	54	24	-
28	52	21	7	80	54	26	-
29	52	20	8	80	54	26	-
30	52	19	7	78	55	23	-
Total Sec	1848	564	242	2654	5554	1088	3988
Mean	62	18.8	8.1	88	185	36.3	133
Ac.ft.	3690	1120	482	5240	11000	2160	7910

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER
SEPTEMBER - 1930

Day	St. Mary River at Kimball	Diverted by U.S.B.R.	Stored by U.S.B.R.	Total in Sec. ft.	Stored Water Released	Natural Flow St. Mary River
1	257	442	-	699	382	317
2	247	442	-	689	374	315
3	235	438	-	673	380	293
4	224	436	-	660	386	274
5	216	434	-	650	381	269
6	213	434	-	647	380	267
7	205	428	-	633	371	262
8	230	408	-	638	362	276
9	230	408	-	638	347	291
10	238	400	-	638	341	297
11	298	364	-	662	332	330
12	403	247	-	650	320	330
13	610	8	-	618	304	314
14	517	-	-	517	84	433
15	434	-	86	520	-	520
16	393	-	113	506	-	506
17	364	-	138	502	-	502
18	341	-	136	477	-	477
19	336	-	121	457	-	457
20	323	-	108	431	-	431
21	318	-	93	411	-	411
22	336	-	48	384	-	384
23	398	-	13	411	-	411
24	384	-	18	402	-	402
25	379	-	36	415	-	415
26	379	-	29	408	-	408
27	369	-	26	395	-	395
28	355	-	24	379	-	379
29	346	-	24	370	-	370
30	341	-	26	367	-	367
Total Sec. ft.	9919	4889	1039	15847	4744	11103
Mean	331	(1-13)376	34.6	528	158	370
Ac. ft.	19700	9700	2060	31400	9400	22000

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY UNITED STATES
SEPTEMBER - 1930

Day	Natural Flow St.Mary River	AVAILABLE FOR USE BY U.S.A. U.S. Share	Released Storage	Total Available	USED BY U.S.A. Diverted	Stored	Total Used	Excess or Deficit of Share Used.	
1	317	79	382	461	442	-	442	-	19
2	315	79	374	453	442	-	442	-	11
3	293	76	380	456	438	-	438	-	18
4	274	68	386	454	436	-	436	-	18
5	269	67	381	448	434	-	434	-	14
6	267	67	380	447	434	-	434	-	13
7	262	66	371	437	428	-	428	-	9
8	276	69	362	431	408	-	408	-	23
9	291	73	347	420	408	-	408	-	12
10	297	74	341	415	400	-	400	-	15
11	330	82	332	414	364	-	364	-	50
12	330	82	320	402	247	-	247	-	155
13	314	78	304	382	8	-	8	-	374
14	433	108	84	192	-	-	-	-	192
15	520	130	-	130	-	86	86	-	44
16	506	126	-	126	-	113	113	-	13
17	502	123	-	123	-	138	138	15	-
18	477	119	-	119	-	136	136	17	-
19	457	114	-	114	-	121	121	7	-
20	431	108	-	108	-	108	108	-	-
21	411	103	-	103	-	93	93	-	10
22	384	96	-	96	-	48	48	-	48
23	411	103	-	103	-	13	13	-	90
24	402	100	-	100	-	18	18	-	82
25	415	104	-	104	-	36	36	-	68
26	408	102	-	102	-	29	29	-	73
27	395	99	-	99	-	26	26	-	73
28	379	95	-	95	-	24	24	-	71
29	370	92	-	92	-	24	24	-	68
30	367	92	-	92	-	26	26	-	66
Total Sec.ft.	11103	2774	4744	7518	4889	1039	5928	39	1629
Mean	370	92.5	158	251	(1-13)376	34.6	198	1.3	54
Ac.ft.	22000	5470	9400	14900	9700	2060	11800	77	3210

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA
SEPTEMBER - 1930

Day	Natural flow St. Mary R. at Boundary	Canada's Share Available	St.Mary R. at Kimball delivered	Diverted by Canada Used	Excess or Deficit of share delivered	
1	317	238	257	231	19	-
2	315	236	247	234	11	-
3	293	217	235	236	18	-
4	274	206	224	223	18	-
5	269	202	216	214	14	-
6	267	200	213	212	13	-
.7	262	196	205	198	9	-
8	276	207	230	223	23	-
9	291	218	230	221	12	-
10	297	223	238	226	15	-
11	330	248	298	290	50	-
12	330	248	403	369	155	-
13	314	236	610	541	374	-
14	433	325	517	459	192	-
15	520	390	434	395	44	-
16	506	380	393	361	13	-
17	502	379	364	338	-	15
18	477	358	341	324	-	17
19	457	343	336	324	-	7
20	431	323	323	310	-	-
21	411	308	318	305	10	
22	384	288	336	319	48	-
23	411	308	398	370	90	-
24	402	302	384	359	82	-
25	415	311	379	354	68	-
26	408	306	379	357	73	-
27	395	296	369	345	73	-
28	379	284	355	334	71	-
29	370	278	346	326	68	-
30	367	275	341	322	66	-
Total Sec.ft.	11103	8329	9919	9320	1629	39
Mean	370	274	331	311	54	1.3
Ac.ft.	22000	16500	19700	18500	3210	77

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR.
OCTOBER - 1930

Day	INFLOW TO SHERBURNE RESERVOIR: Recorded Inflow: Swift-current	Canyon Creek	Un-recorded Inflow Estimated	Total Inflow	Outflow Swiftcurrent Creek at Sherburne	Stored in Reservoir Sec.ft.	Released from Reservoir Sec.ft.
1	52	17	10	79	55	24	
2	50	14	16	80	56	24	
3	49	14	19	82	56	26	
4	46	12	25	83	56	27	
5	46	11	27	84	56	28	
6	46	11	28	85	57	28	
7	50	11	30	91	57	34	
8	66	13	40	119	57	62	
9	75	13	44	132	57	75	
10	66	12	40	118	57	61	
11	58	12	35	105	57	48	
12	53	11	32	96	57	39	
13	49	10	30	89	57	32	
14	47	9	31	87	55	32	
15	47	9	28	84	55	29	
16	45	9	28	82	55	27	
17	41	9	25	75	55	20	
18	39	9	22	70	55	15	
19	36	8	25	69	56	13	
20	37	8	23	68	34	34	
21	36	8	22	66	19	47	
22	35	8	22	65	17	48	
23	36	8	22	66	17	49	
24	36	7	23	66	16	50	
25	37	8	22	67	15	52	
26	37	7	22	66	14	52	
27	39	8	22	69	14	55	
28	39	7	23	69	13	56	
29	36	8	22	66	13	53	
30	33	7	21	61	13	48	
31	39	6	22	67	13	54	
Total Sec.ft.	1401	304	801	2506	1264	1242	
Mean	45.2	9.8	25.8	80.8	40.8	40.0	
Ac.ft.	2780	600	1590	4970	2510	2460	

no stored water released during October.

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER
OCTOBER - 1930

Day	St. Mary River at Kimball	Diverted by U.S.B.R.	Stored by U.S.B.R.	Total in Sec. ft.	Stored Water Released	Natural Flow St. Mary River
1	346	-	26	372	no stored water released during October	372
2	332	no water diverted during October	23	355		355
3	328		24	352		352
4	323		24	347		347
5	314		26	340		340
6	314		27	341		341
7	305		28	333		333
8	314		28	342		342
9	314		34	348		348
10	310		62	372		372
11	305		75	380		380
12	305		61	366		366
13	305		48	353		353
14	310		39	349		349
15	276		32	308		308
16	280		32	312		312
17	266		29	295		295
18	266		27	293		293
19	266		20	286		286
20	266		15	281		281
21	257		13	270		270
22	250		34	284		284
23	250		47	297		297
24	238		48	286		286
25	230		49	279		279
26	224		50	274		274
27	221		52	273		273
28	218		52	270		270
29	210		55	265		265
30	206		56	262		262
31	205		53	258		258
Total Sec.ft.	8554	-	1189	9743	-	9743
Mean	276	-	38.4	314	-	314
Ac.ft.	17000	-	2360	19300	-	19300

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY UNITED STATES
OCTOBER - 1930

Day	Natural Flow St.Mary River	AVAILABLE FOR USE BY U.S.A. U.S. Share	Released Storage	Total Available	USED BY U.S.A. Diverted	Stored	Total Used	Excess or Deficit Of Share Used.
1	372	93	no stored water released during October	93	no water diverted during October	26	26	67
2	355	89		89		23	23	66
3	352	88		88		24	24	64
4	347	89		89		24	24	65
5	340	85		85		26	26	59
6	341	85		85		27	27	58
7	333	83		83		28	28	55
8	342	86		86		28	28	58
9	348	87		87		34	34	53
10	372	93		93		62	62	31
11	380	95		95		75	75	20
12	366	92		92		61	61	31
13	353	88		88		48	48	40
14	349	87		87		39	39	48
15	308	77		77		32	32	45
16	312	78		78		32	32	46
17	295	74		74		29	29	45
18	293	73		73		27	27	46
19	286	72		72		20	20	52
20	281	70		70		15	15	55
21	270	68		68		13	13	55
22	284	71		71		34	34	37
23	297	77		77		47	47	30
24	286	72		72		48	48	24
25	279	70		70		49	49	21
26	274	68		68		50	50	18
27	273	68		68		52	52	16
28	270	68		68		52	52	16
29	265	66		66		55	55	11
30	262	66		66		56	56	10
31	258	65		65		53	53	12
Total Sec.ft.	9743	2443	-	2443	-	1189	1189	- 1254
Mean	314	79 78.8	-	79	-	38.4	38.4	- 40.5
Ac.ft.	19300	4860	-	4860	-	2360	2360	- 2490

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA
OCTOBER - 1930

Day	Natural flow St. Mary R. at Boundary	Canada's Share Available	St. Mary R. at Kimball delivered	Diverted by Canada Used	Excess or Deficit of share delivered	
1	372	279	346	324	67	
2	355	266	332	317	66	
3	352	264	328	315	64	
4	347	258	323	310	65	
5	340	255	314	303	59	
6	341	256	314	305	58	
7	333	250	305	298	55	
8	342	256	314	302	58	
9	348	261	314	303	53	
10	372	279	310	302	31	
11	380	285	305	300	20	
12	366	274	305	300	31	
13	353	265	305	302	40	
14	349	262	310	273	48	
15	308	231	276	222	45	
16	312	234	280	-	46	
17	295	221	266	-	45	
18	293	220	266	-	46	
19	286	214	266	-	52	
20	281	211	266	-	55	
21	270	202	257	-	55	
22	284	213	250	-	37	
23	297	220	250	-	30	
24	286	214	238	-	24	
25	279	209	230	-	21	
26	274	206	224	-	18	
27	273	205	221	-	16	
28	270	202	218	-	16	No deficit of share during October
29	265	199	210	-	11	
30	262	196	206	-	10	
31	258	193	205	-	12	
Total Sec.ft.	9743	7300	8554	4776	1254	-
Mean	314	235	276	(1-16)298	40.5	-
Ac.ft.	19300	14400	17000	9460	2490	-

Table 2

DIVISION OF ST. MARY RIVER

CANADA

Water Available in Acre-Feet

1930.

Month	St. Mary R. at Kimball	Rolph Creek	Lee Creek	Pothole Creek	Combined Flow
April	77,400	294	9,520	2,010	89,200
May	127,000	689	13,400	1,190	142,300
June	127,000	369	7,020	155	134,500
July	50,700	381	1,840	92	53,000
August	24,300	338	412	-	25,000
September	19,700	286	643	-	20,600
October	17,000	135	500 e ?	-	17,600
Total	443,000	2,490 a	33,300 b	3,450	482,200 c

Disposition

Month	Diverted by A.R.& I. Co.	Gain or Loss	Wasted by A.R.& I.Co.	Applied to Land	St. Mary R. Lethbridge
April	3,030	- 1,210	4,510	613	75,600
May	18,900	- 1,600	5,400	14,158	122,000
June	43,000	- 1,100	4,280	39,350	96,400
July	42,200	+ 700	2,520	40,913	11,900
August	23,200	- 900	240	22,660	2,070
September	18,500	- 300	2,320	15,593	5,590
October	9,460	+ 3,990	6,860	8,952	
Total	158,000 d	- 420 e	26,100 f	142,000 g	x

a - Includes seepage losses from U.S. St. Mary Canal.
b - Natural flow only.
c - Computed.
d - Diverted by A.R. & I. Co. at Kimball.
e - Loss between Kimball & Spring Coulee.
f - Wasted in Pinepound and Pothole Creeks.
g - Flow in canal at Magrath plus lateral diversion and natural increase between Spring Coulee, and Magrath.
x - Below all points of diversion.

Table 2 (Con't).

DIVISION OF ST. MARY RIVER

UNITED STATES

Water Available in Acre-feet

1930

Month:	St. Mary River						Total flow Milk River Eastern Crossing
	U.S. Share	Sherburne Res.		Total available for diversion	Diverted	Unused	
		Stored	Released				
April	34,000	10,400	-	23,600	-	23,600	35,800
May	64,300	22,500	-	41,800	-	41,800	24,400
June	64,300	2,680	-	61,620	18,300	43,320	20,600
July	28,600	-	5,300	33,900	32,300	1,600	32,300
Aug.	7,870	-	22,300	30,170	29,300	870	28,300
Sept.	5,470	-	7,340	12,810	9,700	3,110	16,500
Oct.	4,860	2,360	-	2,500	-	2,500	3,330
Total	209,400	37,940	34,940	206,400	89,600	116,800	161,230

Table 2 (Cont.)

DIVERSIONS FROM MILK RIVER IN THE UNITED STATES.

(Quantities in acre-feet)

Month	Ft. Belknap Canal	Paradise Canal	Harlem Canal	Agency Canal	Dodson North Canal.	Dodson South Canal.	Vandalia Canal.	Total.
March	-	-	-	-	-	511	-	511
April	748	-	1,612	992	1,051	17,999	-	22,402
May	7,704	2,700	1,603	2,916	2,426	16,779	3,877	38,005
June	7,914	3,646	2,749	2,380	1,139	382	6,193	24,403
July	6,139	3,933	2,777	2,182	4,774	12,005	7,532	39,342
August	7,492	3,255	2,118	1,844	2,474	9,397	3,893	30,473
September	2,220	1,634	1,640	664	638	12,981	3,332	23,109
October	754	174	514	-	-	1,950	826	4,218
November	198	-	260	-	-	495	-	953
Total	33,169	15,342	13,273	10,974	12,502	72,499	25,653	183,416

Table 3.

Disposition of the Waters of the Northern Tributaries

of MILK RIVER in Canada

1930

Quantities in Acre-Feet.

Irrigator	April	May	June	July	Aug.	Sept.	Oct.	Total
			Lodge Creek					
Spangler, J.M.	18	61	-	-	-	-	-	79
Mitchell, Bros.								50
Mitchell, Wm.								135
Hartt, J.E.								60
English, J.A.								85
Read, J.								30
Clark, T.S.								20
Total recorded as diverted in Canada								459
Flow at the Boundary	7740	166	2	6				7914
			Battle Creek					
Lindner Bros.	-	18	160	29	-			207
Marshall & Gaff	68	117	54	6				245
Wilkes Bros.	-	52	-	-				52
McKinnon, J.	139	258	167	14				578
Stirling & Nash	3	320	315	29				667
Spangler, J.M.	-	12	60	6				78
Total recorded as diverted in Canada	210	777	756	84				1827
Flow at the Boundary	16500	2420	869	498	49	42	738	21100
			Frenchman River					
Armstrong	32	42						74
Gilchrist Bros.								170
Bate, A.E.								12
Reid, R.C.			172	109				281
Pearse		11	71	40				122
Bolingbroke			4	11				15
Wylie, D.J.		223	252	-				475
Drury, T.A.		76	220	111				407
Total recorded as diverted in Canada	32	352	719	271				1556
Flow at the Boundary	38700	6090	2010	1580	332	637	965	50300

Table 4.

DIVERSIONS FROM THE NORTHERN TRIBUTARIES

OF MILK RIVER IN THE UNITED STATES

1930

(Quantities in acre-feet)

Irrigator	April	May	June	July	August	Sept	Oct	Total
			Lodge Creek					
N. Chinook Canal	1,730	109	0	0	0	0	0	1,839
			Battle Creek					
Matheson Canal	24	222	66	44	0	0	0	356
			Frenchman River					
Frenchman Canal	344	676	1,330	1,140	144	44	0	3,678