APPENDIX A TO THE
REPORT TO
THE INTERNATIONAL JOINT COMMISSION

ON

THE DIVISION OF THE WATERS OF
ST. MARY AND MILK RIVERS

BY

J.D. McLEOD
representing Canada
AND
E.L. HENDRICKS
representing United States

- 1972 -

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TABLE 6-1

NATURAL FLOW OF ST. MARYS RIVER AT INTERNATIONAL BOUNDARY

QUANTITIES IN cfs Days FOR APR. 1972

DAY	1 DAY LAG APPLIED: Lake Sherburne Stored (1)	Lake Sherburne Released (1)	Evaporation (2)	Lake Sherburne corrected for evaporation Stored (3)	Lake Sherburne corrected for evaporation Released (3)	Diverted by St. Mary Canal (4)	Total used by United States (5)	St. Mary River at International Boundary (6)	Natural Flow St. Mary River at International Boundary (7)	United States share (8)	Canadian share (9)	Excess + or deficit - of Canadian share (10)
1	117		0	117		0	117	536	653	163	490	+46
2	111		0	111		0	111	587	698	182	516	+71
3	127		0	127		0	127	554	681	174	507	+47
4	111		0	111		0	111	531	642	160	482	+49
5	167		0	167		0	167	603	770	218	552	+51
6	184		0	184		0	184	746	930	298	632	+114
7	187		0	187		0	187	669	856	261	595	+74
8	230		0	230		0	230	618	848	257	591	+27
9	226		0	226		0	226	615	841	254	587	+28
10	166		0	166		0	166	587	753	210	543	+44
11	161		0	161		0	161	589	750	208	542	+47
12	141		0	141		0	141	581	722	194	528	+53
13	139		0	139		0	139	591	730	198	532	+59
14	127		0	127		0	127	606	733	200	533	+73
15	115		0	115		0	115	591	706	186	520	+71
16	121		0 E	121		0	121	581	702	184	518	+63
17	112		0	112		0	112	558	670	168	502	+66
18	127		0	127		0	127	527	654	164	490	+37
19	83		0	83		0	83	516	599	150	449	+67
20	89		0	89		0	89	539	628	157	471	+68
21	78		0	78		0	78	562	640	160	480	+82
22	83		0	83		0	83	545	628	157	471	+74
23	73		0	73		0	73	508	581	145	436	+72
24	85		0	85		0	85	531	616	154	462	+69
25	103		0	103		0	103	610	713	190	523	+87
26	121		0	121		0	121	644	765	216	549	+95
27	133		1	134		30	164	659	823	245	578	+81
28	152		1	153		84	237	728	965	316	649	+79
29	282		1	283		86	369	784	1153	410	743	+41
30	301		0	301		82	383	689	1072	369	703	-14
31												
Total	4252		3	4255		282	4537	17985	22522	6348	16174	+1811
Mean	142		0.10	142		9.4	151	600	751	212	539	+60.4
Acre feet	8434		6	8440		559	8999	35673	44672	12591	32081	+3592

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District Chief U.S.G.S.

CHECKED BY U.S. [illegible] DATE Jan 16, 73

R. D. May

Dist. Engr. WS of Canada

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TABLE [redacted]

NATURAL FLOW OF ST. MARYS RIVER AT INTERNATIONAL BOUNDARY

QUANTITIES IN cfs Days FOR MAY 1972

DAY	1 DAY LAG APPLIED: Lake Sherburne Stored (1)	Lake Sherburne Released (1)	Evaporation (2)	Lake Sherburne corrected for evaporation Stored (3)	Lake Sherburne corrected for evaporation Released (3)	Diverted by St. Mary Canal (4)	Total used by United States (5)	St. Mary River at International Boundary (6)	Natural Flow St. Mary River at International Boundary (7)	United States share (8)	Canadian share (9)	Excess + or deficit - of Canadian share (10)
1	290		1 E	291		79	370	694	1064	365	699	-5
2	266		3	269		77	346	745	1091	379	712	+33
3	207		4	211		87	298	815	1113	390	723	+92
4	216		3	219		149	368	834	1202	434	768	+66
5	242		1	243		187	430	841	1271	469	802	+39
6	190		2	192		293	485	778	1263	465	798	-20
7	59		0	59		397	456	717	1173	420	753	-36
8		52	0		52	491	439	679	1118	392	726	-47
9		138	1		137	561	424	744	1168	417	751	7
10		242	0		242	594	352	809	1161	414	747	+62
11		295	1		294	607	313	808	1121	394	727	+81
12		266	4		262	631	369	811	1180	423	757	+54
13		193	7		186	663	477	880	1357	512	845	+35
14	0		7	7		691	698	1100	1798	732	1066	+34
15	296		10	306		702	1008	1630	2638	1152	1486	+144
16	386		8	394		699	1093	2560	3653	1660	1993	+567
17		184	11		173	712	539	3380	3919	1793	2126	+1254
18		196	1		195	697	502	3940	4442	2054	2388	+1552
19		605	6		599	687	88	4400	4488	2077	2411	+1989
20		886	8		878	672	-206	4570	4364	2015	2349	+2221
21		772	0		772	684	-88	4670	4582	2124	2458	+2212
22		788	8		780	687	-93	4630	4537	2102	2435	+2195
23		740	6		734	708	-26	4480	4454	2060	2394	+2086
24		747	4		743	708	-35	4360	4325	1996	2329	+2031
25		755	1		754	705	-49	4420	4371	2019	2352	+2068
26		839	0		839	643	-196	4550	4354	2010	2344	+2206
27		995	1		994	626	-368	4130	3762	1714	2048	+2082
28		1016	3		1013	626	-387	3710	3323	1495	1828	+1882
29		932	5		927	621	-306	3550	3244	1455	1789	+1761
30		651	6		645	615	-30	3710	3680	1673	2007	+1703
31		375	4		371	642	271	4040	4311	1989	2322	+1718
Total	2152	11667	116	2191	11590	16941	7542	77985	85527	37594	47933	+30052
Mean	69.4	376	3.7	70.7	374	546	243	2516	2759	1213	1546	+969
Acre feet	4268	23141	230	4346	22989	33602	14960	154683	169643	74568	95075	+59608

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TABLE 3-3

NATURAL FLOW OF ST. MARYS RIVER AT INTERNATIONAL BOUNDARY

QUANTITIES IN cfs Days FOR JUNE 1972

DAY	1 DAY LAG APPLIED: Lake Sherburne Stored (1)	Lake Sherburne Released (1)	Evaporation (2)	Lake Sherburne corrected for evaporation Stored (3)	Lake Sherburne corrected for evaporation Released (3)	Diverted by St. Mary Canal (4)	Total used by United States (5)	St. Mary River at International Boundary (6)	Natural Flow St. Mary River at International Boundary (7)	United States share (8)	Canadian share (9)	Excess + or deficit - of Canadian share (10)
1	451		5	456		696	1152	4130	5282	2474	2808	+1322
2	1260		8	1268		716	1984	4210	6194	2930	3264	+946
3	1468		4	1472		721	2193	4150	6343	3005	3338	+812
4	1138		5	1143		720	1863	4060	5923	2794	3129	+931
5	1029		6	1035		715	1750	4020	5770	2718	3052	+968
6	1103		4	1107		707	1814	3980	5794	2730	3064	+916
7	1063		11	1074		702	1776	3940	5716	2691	3025	+915
8	1008		3	1011		697	1708	3850	5558	2612	2946	+904
9	1079		1	1080		705	1785	4110	5895	2781	3114	+996
10	1072		7	1079		700	1779	4170	5949	2807	3142	+1028
11	1179		8	1187		534	1721	4670	6391	3029	3362	+1308
12	1310		11	1321		243	1564	4890	6454	3060	3394	+1496
13	1049		7	1056		41	1097	4610	5707	2686	3021	+1589
14	625		4	629		29	658	4020	4678	2172	2506	+1514
15	496		5	501		23	524	3510	4034	1850	2184	+1326
16	507		10	517		21	538	3150	3688	1677	2011	+1139
17	651		10	661		20	681	3080	3761	1714	2047	+1033
18	718		6	724		19	743	3070	3813	1740	2073	+997
19	691		6	697		18	715	2970	3685	1676	2009	+961
20	471		6	477		99	576	2670	3246	1456	1790	+880
21	378		5	383		495	878	2180	3058	1362	1696	+484
22	432		13	445		619	1064	1940	3004	1335	1669	+271
23	387		9	396		650	1046	1840	2886	1276	1610	+230
24	436		3	439		648	1087	1770	2857	1262	1595	+175
25	346		6	352		646	998	1680	2678	1172	1506	+174
26	304		8	312		653	965	1520	2485	1076	1409	+111
27	369		8	377		682	1059	1390	2449	1058	1391	-1
28	343		7	350		692	1042	1310	2352	1009	1343	-33
29	343		6	349		689	1038	1330	2368	1017	1351	-21
30	476		12	488		692	1180	1420	2600	1133	1467	47
31												
Total	22182		204	22386		14592	36978	93640	130618	60302	70316	+23324
Mean	739		6.6	746		486	1233	3121	4354	2010	2344	+777
Acre feet	43998		405	44403		28943	73346	185735	259081	119609	139472	+46263

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TABLE 8-4

NATURAL FLOW OF ST. MARYS RIVER AT INTERNATIONAL BOUNDARY

QUANTITIES IN cfs Days FOR JULY 1972

DAY	1 DAY LAG APPLIED: Lake Sherburne Stored (1)	Lake Sherburne Released (1)	Evaporation (2)	Lake Sherburne corrected for evaporation Stored (3)	Lake Sherburne corrected for evaporation Released (3)	Diverted by St. Mary Canal (4)	Total used by United States (5)	St. Mary River at International Boundary (6)	Natural Flow St. Mary River at International Boundary (7)	United States share (8)	Canadian share (9)	Excess + or deficit - of Canadian share (10)
1	477		11	488		700	1188	1550	2738	1202	1536	+14
2	391		5	396		702	1098	1590	2688	1177	1511	+79
3	263		5	268		701	969	1520	2489	1078	1411	+109
4	199		3	202		697	899	1350	2249	958	1291	+59
5	155		7	162		693	855	1190	2045	856	1189	+1
6	163		10	173		690	863	1120	1983	825	1158	-38
7	198		6	204		692	896	1180	2076	871	1205	-25
8	266		5	271		693	964	1270	2234	950	1284	-14
9	325		8	333		695	1028	1370	2398	1032	1366	+4
10	120		13	133		699	832	1530	2362	1014	1348	+182
11		145	12		133	698	565	1540	2105	886	1219	+321
12		120	6		114	696	582	1440	2022	844	1178	+262
13		60	10		50	692	642	1370	2012	839	1173	+197
14	300		6	306		697	1003	1630	2633	1150	1483	+147
15	154		7	161		711	872	2170	3042	1354	1688	+482
16		609	11		598	719	121	2420	2541	1104	1437	+983
17		171	4		167	713	546	2110	2656	1161	1495	+615
18	17		7	24		710	734	1840	2574	1120	1454	+386
19	60		0	60		700	760	1910	2670	1168	1502	+408
20	34		6	40		675	715	1750	2465	1066	1399	+351
21		34	1		33	671	638	1610	2248	957	1291	+319
22		26	1		25	665	640	1480	2120	893	1227	+253
23	26		8	34		663	697	1460	2157	912	1245	+215
24	69		6	75		666	741	1440	2181	924	1257	+183
25	128		7	135		693	828	1420	2248	957	1291	+129
26	69		9	78		696	774	1400	2174	920	1254	+146
27	17		11	28		696	724	1380	2104	885	1219	+161
28		43	6		37	695	658	1370	2028	847	1181	+189
29		146	15		131	695	564	1350	1914	790	1124	+226
30		102	12		90	693	603	1290	1893	780	1113	+177
31		78	9		69	697	628	1220	1848	757	1091	+129
Total	3431	1534	227	3571	1447	21503	23627	47270	70897	30277	40620	+6650
Mean	111	49.5	7.3	115	46.7	694	762	1525	2287	977	1310	+215
Acre feet	6805	3043	450	7083	2870	42651	46864	93760	140624	60054	80570	+13190

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[signature] Dist. Engr. WS of Canada

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TABLE 8-5

NATURAL FLOW OF ST. MARYS RIVER AT INTERNATIONAL BOUNDARY

QUANTITIES IN cfs Days FOR AUG 1972

DAY	1 DAY LAG APPLIED: Lake Sherburne Stored	Lake Sherburne Released	Evaporation	Lake Sherburne corrected for evaporation Stored	Lake Sherburne corrected for evaporation Released	Diverted by St. Mary Canal	Total used by United States	St. Mary River at International Boundary	Natural Flow St. Mary River at International Boundary	United States share	Canadian share	Excess + or deficit - of Canadian share
	1		2	3		4	5	6	7	8	9	10
1		94	7		87	705	618	1150	1768	717	1051	+99
2		26	4		22	710	688	1200	1888	777	1111	+89
3	69		4	73		707	780	1160	1940	803	1137	+23
4		9	6		3	706	703	1070	1773	720	1053	+17
5		68	11		57	703	646	990	1636	651	985	+5
6		86	8		78	700	622	929	1551	609	942	-13
7		108	7		101	697	596	880	1476	571	905	-25
8		99	8		91	696	605	881	1486	576	910	-29
9		164	8		156	695	539	886	1425	546	879	+7
10		199	12		187	696	509	900	1409	538	871	+29
11		191	4		187	697	510	899	1409	538	871	+28
12		236	14		222	696	474	882	1356	511	845	+37
13		218	8		210	694	484	855	1339	503	836	+19
14		258	3		255	692	437	829	1266	466	800	+29
15		242	1		241	691	450	784	1234	450	784	0
16		290	3		287	687	400	745	1145	406	739	+6
17		309	8		301	684	383	701	1084	375	709	-8
18		291	8		283	685	402	659	1061	364	697	-38
19		343	13		330	691	361	647	1008	337	671	-24
20		343	8		335	693	358	629	987	327	660	-31
21		372	6		366	703	337	641	978	322	656	-15
22		355	6		349	703	354	647	1001	334	667	-20
23		411	6		405	704	299	653	952	309	643	+10
24		411	2		409	703	294	653	947	307	640	+3
25		415	4		411	702	291	629	920	293	627	+2
26		424	5		419	699	280	600	880	273	607	-7
27		466	6		460	701	241	567	808	237	571	-4
28		460	8		452	699	247	545	792	229	563	-18
29		432	7		425	697	272	528	800	233	567	-39
30		469	8		461	696	235	517	752	209	543	-26
31		492	4		488	700	212	523	735	201	534	11
Total	69	8281	207	73	8078	21632	13627	24179	37806	13732	24074	+105
Mean	2.2	267	6.7	2.4	261	698	440	780	1220	443	777	+3.4
Acre feet	137	16425	411	145	16023	42907	27029	47959	74988	27237	47751	+208

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TABLE 3-6

NATURAL FLOW OF ST. MARYS RIVER AT INTERNATIONAL BOUNDARY

QUANTITIES IN cfs Days FOR SEPT. 1972

DAY	1 DAY LAG APPLIED: Lake Sherburne Stored	Lake Sherburne Released	Evaporation	Lake Sherburne corrected for evaporation Stored	Lake Sherburne corrected for evaporation Released	Diverted by St. Mary Canal	Total used by United States	St. Mary River at International Boundary	Natural Flow St. Mary River at International Boundary	United States share	Canadian share	Excess + or deficit - of Canadian share
	1		2	3		4	5	6	7	8	9	10
1		484	4		480	699	219	512	731	199	532	-20
2		493	4		489	698	209	485	694	180	514	-29
3		508	6		502	698	196	470	666	166	500	-30
4		604	3		601	699	98	465	563	141	422	+43
5		583	3		580	698	118	445	563	141	422	+23
6		565	4		561	700	139	475	614	154	460	+15
7		432	0		432	700	268	480	748	207	541	-61
8		511	3		508	697	189	460	649	162	487	-27
9		557	6		551	699	148	460	608	152	456	+4
10		590	5		585	698	113	450	563	141	422	+28
11		566	2		564	698	134	445	579	145	434	+11
12		583	3		580	699	119	445	564	141	423	+22
13		557	1		556	698	142	445	587	147	440	+5
14		525	5		520	698	178	425	603	151	452	-27
15		561	2		559	695	136	395	531	133	398	-3
16		557	5		552	694	142	386	528	132	396	-10
17		621	2		619	694	75	391	466	116	350	+41
18		569	2		567	694	127	391	518	130	388	+3
19		538	4		534	696	162	410	572	143	429	-19
20		577	2		575	698	123	445	568	142	426	+19
21		599	2		597	700	103	455	558	140	418	+37
22		498	4		494	701	207	465	672	169	503	-38
23		571	4		567	699	132	455	587	147	440	+15
24		524	0		524	699	175	460	635	159	476	-16
25		484	0		484	701	217	470	687	177	510	-40
26		554	1		553	700	147	465	612	153	459	+6
27		580	1		579	700	121	490	611	153	458	+32
28		550	0		550	700	150	495	645	161	484	+11
29		640	0		640	675	35	539	574	144	430	+109
30		663	1		662	642	-20	561	541	135	406	+155
31												
Mean Total		16644	79		16565	20867	4302	13735	18037	4561	13476	+259
		555	2.6		552	696	143	458	601	152	449	+8.6
Acre feet		33013	157		32857	41390	8533	27243	35776	9047	26730	+514

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[signature] Dist. Engr. WS of Canada

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TABLE 4-7

NATURAL FLOW OF ST. MARYS RIVER AT INTERNATIONAL BOUNDARY

QUANTITIES IN cfs Days FOR OCT. 1972

DAY	1 DAY LAG APPLIED: Lake Sherburne Stored (1)	Lake Sherburne Released (1)	Evaporation (2)	Lake Sherburne corrected for evaporation Stored (3)	Lake Sherburne corrected for evaporation Released (3)	Diverted by St. Mary Canal (4)	Total used by United States (5)	St. Mary River at International Boundary (6)	Natural Flow St. Mary River at International Boundary (7)	United States share (8)	Canadian share (9)	Excess + or deficit - of Canadian share (10)
1		622	4		618	640	22	523	545	136	409	+114
2		580	2		578	639	61	490	551	138	413	+77
3		546	2		544	638	94	470	564	141	423	+47
4		617	1		616	637	21	450	471	118	353	+97
5		575	1		574	637	63	450	513	128	385	+65
6		553	1		552	638	86	455	541	135	406	+49
7		628	1		627	639	12	465	477	119	358	+107
8		632	2		630	603	-27	506	479	120	359	+147
9		599	2		597	490	-107	600	493	123	370	+230
10		751	2		749	315	-434	695	261	65	196	+499
11		268	0		268	101	-167	777	610	152	458	+319
12		142	0		142	19	-123	732	609	152	457	+275
13		80	1		79	3	-76	641	565	141	424	+217
14		78	1		77	0	-77	583	506	126	380	+203
15		21	1		20	0	-20	528	508	127	381	+147
16		17	2		15	0	-15	490	475	119	356	+134
17		24	2		22	0	-22	455	433	108	325	+130
18	113		2	115		0	115	430	545	136	409	+21
19	258		2	260		0	260	391	651	163	488	-97
20	78		2	80		0	80	359	439	110	329	+30
21	66		2 E	68		0	68	341	409	102	307	+34
22	66		2	68		0	68	319	387	97	290	+29
23	72		2	74		0	74	314	388	97	291	+23
24	78		2	80		0	80	310	390	98	292	+18
25	63		1	64		0	64	310	374	94	280	+30
26	69		0	69		0	69	305	374	94	280	+25
27	73		0	73		0	73	293	366	92	274	+19
28	64		0	64		0	64	272	336	84	252	+20
29	64		0	64		0	64	249	313	78	235	+14
30	64		0	64		0	64	238	302	76	226	+12
31	44		0	44		0	44	249	293	73	220	+29
Total	1172	6733	40	1187	6708	5999	478	13690	14168	3542	10626	+3064
Mean	37.8	217	1.3	38.3	216	194	15.4	442	457	114	343	+988
Acre feet	2325	13355	79.3	2354	13305	11899	948	27154	28102	7026	21077	+6077

COMPUTED BY [signature] DATE Jan 10, 73

APPROVED [signature] District Chief U.S.G.S.

CHECKED BY U. S. G. S. Engineers DATE Jan 12, 73

R. D. May Dist. Engr. WS of Canada

R-174A

TABLE 9-1

HISTORICAL SUMMARY OF NATURAL FLOW

ST. MARY RIVER AT INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in cfs During Irrigation Season April - October							Runoff in Acre-Feet		
	April	May	June	July	August	September	October	Non-Irrigation Season Nov. - Mar.	Irrigation Season Apr. - Oct.	For Year Nov.- Oct.
1901-02						618	477			
1902-03	568	1,726	5,200	2,924	1,404	1,109	917	57,965	837,816	895,781
1903-04	724	2,022	2,936	1,903	933	420	221	96,361	555,162	651,523
1904-05	304	1,215	2,461	1,642	847	371	772	39,128	461,855	500,983
1905-06	481	1,504	2,285	1,826	946	628	756	51,592	511,307	562,899
1906-07	489	1,931	4,259	3,117	1,335	1,214	632	124,082	785,988	910,070
1907-08	844	2,485	7,500	2,488	834	462	481	62,436	910,631	973,067
1908-09	350	1,904	5,159	3,000	1,460	640	450	65,276	785,464	850,740
1909-10	1,188	2,315	2,243	1,175	580	553	1,036	87,729	551,042	638,771
1910-11	520	2,035	3,470	1,679	1,053	1,380	621	97,349	650,860	748,209
1911-12	542	2,031	2,347	1,582	887	524	423	59,092	505,795	564,887
1912-13	749	1,913	4,519	2,024	1,162	574	448	69,604	688,735	758,339
1913-14	637	2,230	2,298	1,430	719	584	841	58,564	530,307	588,871
1914-15	575	1,644	2,251	1,722	969	842	739	83,970	530,287	614,257
1915-16	664	1,707	4,634	3,463	1,228	947	391	109,773	789,058	898,831
1916-17	453	2,215	4,104	2,427	759	470	378	58,828	654,520	713,348
1917-18	661	1,875	3,093	1,185	763	489	394	91,256	511,779	603,035
1918-19	340	1,978	2,116	919	498	336	186	49,684	386,325	436,009
1919-20	429	1,720	3,133	2,355	800	572	557	61,025	579,977	641,002
1920-21	646	2,664	3,713	1,809	755	416	499	72,117	636,167	708,284
1921-22	282	2,293	3,835	1,578	642	420	301	64,657	565,880	630,537
1922-23	422	2,286	3,359	1,726	788	482	560	47,191	583,204	630,395
1923-24	393	2,080	3,152	1,534	728	397	302	51,406	520,145	571,551
1924-25	1,272	3,461	3,512	1,893	807	542	406	78,619	720,710	799,329
1925-26	670	1,264	1,078	818	405	751	1,141	49,198	371,837	421,035

TABLE 9-2

HISTORICAL SUMMARY OF NATURAL FLOW

ST. MARY RIVER AT INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in cfs During Irrigation Season April - October							Runoff in Acre-Feet		
	April	May	June	July	August	September	October	Non-Irrigation Season Nov. - Mar.	Irrigation Season Apr. - Oct.	For Year Nov.- Oct.
1926-27	600	2,685	5,434	2,812	1,274	1,509	1,143	74,838	935,423	1,010,261
1927-28	546	3,695	2,940	2,594	921	513	863	112,116	734,376	846,492
1928-29	314	1,837	2,558	1,272	493	291	289	66,040	427,448	493,488
1929-30	1,477	2,425	2,489	1,264	511	370	314	52,374	535,575	587,949
1930-31	224	1,957	1,838	796	592	464	294	38,856	374,083	412,939
1931-32	567	2,497	2,896	1,409	595	307	240	83,750	515,819	599,569
1932-33	416	1,764	4,339	2,169	766	492	685	67,488	643,242	710,730
1933-34	1,734	3,441	2,929	1,155	540	323	269	168,272	629,044	797,316
1934-35	392	1,841	2,716	1,516	630	387	235	136,576	467,568	604,144
1935-36	617	2,417	2,152	823	420	252	162	30,004	414,845	444,849
1936-37	267	1,797	3,752	1,409	475	298	285	34,013	500,701	534,714
1937-38	696	2,611	3,323	1,622	510	360	322	65,262	571,983	637,245
1938-39	640	2,271	1,721	1,069	459	292	188	59,359	402,996	462,355
1939-40	381	1,860	1,802	737	382	427	415	37,815	364,056	401,871
1940-41	364	1,333	1,429	879	359	520	635	32,842	334,846	367,688
1941-42	676	1,890	2,773	1,824	754	526	397	94,304	535,668	629,972
1942-43	1,240	1,996	3,722	2,691	810	376	328	63,366	675,767	739,133
1943-44	197	1,273	1,634	809	536	424	374	36,343	318,121	354,464
1944-45	153	2,000	3,382	1,455	457	486	421	46,471	505,676	552,147
1945-46	658	2,361	2,731	1,500	571	495	521	76,816	535,571	612,387
1946-47	913	2,729	2,585	1,634	657	526	1,250	86,866	624,962	711,828
1947-48	621	2,963	5,486	1,576	758	329	266	71,379	725,024	796,403
1948-49	526	2,337	2,272	991	471	532	404	35,419	456,637	492,056
1949-50	462	1,969	4,537	3,159	1,100	492	929	96,111	766,778	862,889
1950-51	819	3,366	3,431	3,230	1,128	1,209	1,390	141,366	885,233	1,026,599

TABLE 9-3

HISTORICAL SUMMARY OF NATURAL FLOW

ST. MARY RIVER AT INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in cfs During Irrigation Season April - October							Runoff in Acre-Feet		
	April	May	June	July	August	September	October	Non-Irrigation Season Nov. - Mar.	Irrigation Season Apr. - Oct.	For Year Nov.- Oct.
1951-52	969	2,408	2,204	1,433	839	409	264	82,832	517,093	599,925
1952-53	635	2,716	5,534	2,519	887	438	283	62,545	786,960	849,505
1953-54	435	3,237	3,637	3,184	1,100	771	736	62,618	795,874	858,492
1954-55	267	1,491	3,755	2,248	799	363	810	79,260	589,738	668,998
1955-56	525	2,793	3,631	2,027	828	441	513	89,020	652,395	741,415
1956-57	275	3,569	2,947	1,077	478	303	332	59,363	545,264	604,627
1957-58	401	2,754	2,847	1,182	556	482	529	58,512	530,645	589,157
1958-59	702	2,110	4,056	2,128	799	1,035	979	93,513	714,693	808,206
1959-60	688	1,387	3,049	1,604	646	374	237	95,385	482,907	578,292
1960-61	415	2,223	3,774	1,324	566	406	658	58,502	566,754	625,256
1961-62	806	1,840	2,590	1,265	728	435	515	60,686	495,327	556,013
1962-63	348	1,760	3,391	1,708	555	405	272	99,509	510,656	610,165
1963-64	199	1,979	6,412	2,100	669	594	704	44,360	763,940	808,300
1964-65	665	2,132	4,149	2,030	875	633	609	67,981	671,228	739,209
1965-66	785	2,129	3,382	1,766	663	452	361	71,082	577,267	648,349
1966-67	279	2,468	4,544	2,466	799	387	308	66,046	681,394	747,440
1967-68	291	1,903	3,227	1,593	782	1,056	802	94,522	584,465	678,987
1968-69	922	2,027	3,062	1,672	504	322	459	78,927	542,900	621,827
1969-70	194	2,441	4,558	1,422	591	406	293	53,812	598,861	652,673
1970-71	577	2,907	3,680	2,275	1,053	447	432	67,383	689,825	757,208
1971-72	751	2,759	4,354	2,287	1,220	601	457	86,419	752,886	839,305
Average	583	2,212	3,376	1,799	763	544	523	71,818	593,677	665,494

TABLE 10-1

HISTORICAL SUMMARY OF UNITED STATES SHARE OF NATURAL FLOW

ST. MARY RIVER AT INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in cfs During Irrigation Season April - October							Runoff in Acre-Feet		
	April	May	June	July	August	September	October	Non-Irrigation Season Nov. - Mar.	Irrigation Season Apr. - Oct.	For Year Nov. - Oct.
1901-02						156	119			
1902-03	170	696	2433	1306	535	388	295	28,983	352,098	381,081
1903-04	221	844	1301	784	302	105	55.2	48,180	218,938	267,118
1904-05	79.4	442	1064	654	268	92.4	241	19,564	172,185	191,749
1905-06	144	586	976	746	306	174	221	25,796	191,286	217,082
1906-07	122	801	1962	1392	500	440	174	62,041	326,525	388,566
1907-08	302	1076	3583	1077	256	115	120	31,218	393,572	424,790
1908-09	88	785	2418	1333	563	174	112	32,638	331,192	363,830
1909-10	430	991	954	421	150	150	351	43,865	208,947	252,812
1910-11	130	851	1568	672	360	523	170	48,674	258,357	307,031
1911-12	139	849	1006	624	280	131	106	29,546	190,175	219,721
1912-13	244	789	2092	845	414	150	112	34,802	280,792	315,594
1913-14	192	949	982	548	197	154	253	29,282	198,764	228,046
1914-15	167	655	958	694	318	256	205	41,985	197,290	239,275
1915-16	172	686	2150	1565	447	314	97.8	54,886	328,788	383,674
1916-17	116	949	1885	1047	215	117	94.6	29,414	267,802	297,216
1917-18	191	782	1380	426	218	122	98.4	45,628	194,448	240,076
1918-19	90.7	822	891	295	125	84.0	46.5	24,842	142,621	167,463
1919-20	116	699	1400	1011	241	146	142	30,512	227,566	258,078
1920-21	180	1165	1690	738	219	104	126	36,059	255,689	291,748
1921-22	75.8	980	1750	622	170	105	75.0	32,328	228,434	260,762
1922-23	109	976	1513	696	232	122	146	23,596	229,833	253,429
1923-24	98.7	878	1409	600	200	99.0	75.5	25,703	203,399	229,102
1924-25	470	1564	1589	779	238	136	102	39,310	295,509	334,819
1925-26	226	465	372	251	101	214	410	24,599	123,780	148,379

TABLE 10-2

HISTORICAL SUMMARY OF UNITED STATES SHARE OF NATURAL FLOW

ST. MARY RIVER AT INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in cfs During Irrigation Season April - October							Runoff in Acre-Feet		
	April	May	June	July	August	September	October	Non-Irrigation Season Nov. - Mar.	Irrigation Season Apr. - Oct.	For Year Nov. - Oct.
1926-27	208	1176	2550	1239	470	588	405	37,419	401,387	438,806
1927-28	152	1681	1303	1130	296	130	282	56,058	302,731	358,789
1928-29	78.5	752	1112	469	124	72.8	72.2	33,020	162,343	195,363
1929-30	572	1046	1078	465	128	92.5	78.8	26,187	209,274	235,461
1930-31	56.1	813	752	233	168	116	73.5	19,428	134,186	153,614
1931-32	153	1082	1281	537	151	76.8	59.9	41,875	202,453	244,328
1932-33	116	715	2003	918	220	123	223	33,744	261,031	294,775
1933-34	710	1554	1298	411	139	80.5	67.3	84,136	257,770	341,906
1934-35	103	754	1191	591	171	96.7	58.9	68,288	179,546	247,834
1935-36	191	1042	910	250	105	62.9	40.5	15,002	157,613	172,615
1936-37	66.8	734	1709	538	121	74.5	71.3	17,006	200,099	217,105
1937-38	225	1139	1495	644	129	90.1	80.5	32,631	230,229	262,860
1938-39	202	969	694	368	115	72.9	47.0	29,680	149,764	179,444
1939-40	95.9	764	734	208	95.5	109	104	18,907	127,835	146,742
1940-41	93.4	500	548	281	89.7	133	167	16,421	109,876	126,297
1941-42	215	778	1219	746	221	134	99.6	47,152	206,753	253,905
1942-43	465	831	1694	1179	251	94.0	82.1	31,683	278,134	309,817
1943-44	49.2	475	650	254	136	106	93.4	18,172	106,824	124,996
1944-45	38.3	841	1524	561	115	123	105	23,235	200,071	223,306
1945-46	211	1014	1199	583	149	124	135	38,408	206,912	245,320
1946-47	305	1198	1126	650	176	136	458	43,433	245,873	289,306
1947-48	201	1315	2576	621	223	82.1	66.6	35,690	306,970	342,660
1948-49	148	1002	969	329	118	143	101	17,709	170,269	187,978
1949-50	116	827	2102	1413	383	127	325	48,056	320,765	368,821
1950-51	251	1516	1549	1448	397	438	528	70,683	372,351	443,034

TABLE 10-3

HISTORICAL SUMMARY OF UNITED STATES SHARE OF NATURAL FLOW

ST. MARY RIVER AT INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in cfs During Irrigation Season April - October							Runoff in Acre-Feet		
	April	May	June	July	August	September	October	Non-Irrigation Season Nov. - Mar.	Irrigation Season Apr. - Oct.	For Year Nov. - Oct.
1951-52	348	1037	935	550	260	102	66.1	41,416	200,079	241,495
1952-53	218	1191	2600	1093	281	109	70.7	31,272	336,248	367,520
1953-54	111	1462	1652	1425	383	227	214	31,309	332,634	363,943
1954-55	66.9	590	1711	957	245	90.6	265	39,630	237,646	277,276
1955-56	153	1230	1649	847	250	111	130	44,510	264,855	309,365
1956-57	70.2	1618	1306	372	120	75.8	82.9	29,682	221,248	250,930
1957-58	100	1215	1257	424	143	128	132	29,256	206,065	235,321
1958-59	201	888	1861	897	237	351	325	46,756	287,954	334,710
1959-60	191	529	1358	635	183	93.6	59.3	47,693	184,278	231,971
1960-61	104	949	1720	495	144	101	188	29,251	223,748	252,999
1961-62	285	753	1128	466	211	109	130	30,343	186,427	216,770
1962-63	87.7	713	1529	687	140	101	67.9	49,755	201,094	250,849
1963-64	49.7	823	3039	883	187	149	201	22,180	321,442	343,622
1964-65	215	899	1908	848	272	169	164	33,991	270,687	304,678
1965-66	226	899	1524	716	177	113	90.2	35,541	226,647	262,188
1966-67	69.6	1084	2105	1066	241	96.9	77.1	33,023	286,978	320,001
1967-68	72.7	785	1477	630	226	364	245	47,261	227,993	275,254
1968-69	305	847	1364	669	129	80.4	116	39,464	212,412	251,876
1969-70	48.7	1062	2112	544	161	101	73.3	26,906	247,776	274,682
1970-71	181	1287	1673	971	363	113	109	33,691	284,853	318,544
1971-72	212	1213	2010	977	443	152	114	43,209	310,132	353,341
Average	180	941	1521	733	233	154	151	35,909	237,004	272,912

TABLE 11-1

HISTORICAL SUMMARY OF CANADIAN SHARE OF NATURAL FLOW

ST. MARY RIVER AT INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in cfs During Irrigation Season April - October							Runoff in Acre-Feet		
	April	May	June	July	August	September	October	Non-Irrigation Season Nov. - Mar.	Irrigation Season Apr. - Oct.	For Year Nov.- Oct.
1901-02						462	358			
1902-03	398	1,030	2,767	1,618	869	721	622	28,982	485,718	514,700
1903-04	504	1,178	1,635	1,118	631	315	166	48,181	336,224	384,405
1904-05	225	773	1,397	988	580	278	531	19,564	289,670	309,234
1905-06	336	919	1,309	1,079	640	454	535	25,796	320,021	345,817
1906-07	366	1,130	2,296	1,726	834	774	457	62,041	459,463	521,504
1907-08	542	1,410	3,917	1,411	578	346	361	31,218	517,059	548,277
1908-09	262	1,119	2,752	1,667	897	466	338	32,638	454,272	486,910
1909-10	757	1,325	1,288	754	430	403	685	43,864	342,095	385,959
1910-11	390	1,185	1,902	1,006	694	857	452	48,675	392,503	441,178
1911-12	403	1,182	1,340	958	608	393	317	29,546	315,620	345,166
1912-13	506	1,123	2,426	1,179	748	424	336	34,802	407,942	442,744
1913-14	444	1,282	1,316	882	522	430	587	29,282	331,543	360,825
1914-15	408	989	1,292	1,028	652	586	534	41,985	332,997	374,982
1915-16	492	1,020	2,484	1,899	781	633	294	54,887	460,270	515,157
1916-17	337	1,266	2,219	1,380	545	352	284	29,414	386,717	416,131
1917-18	470	1,094	1,713	759	545	367	295	45,628	317,332	362,960
1918-19	249	1,156	1,225	625	374	252	140	24,842	243,703	268,545
1919-20	313	1,021	1,733	1,344	559	426	415	30,513	352,411	382,924
1920-21	466	1,499	2,023	1,071	535	312	373	36,058	380,477	416,535
1921-22	206	1,313	2,085	956	472	315	226	32,329	337,446	369,775
1922-23	313	1,310	1,846	1,030	556	360	414	23,595	353,371	376,966
1923-24	295	1,202	1,743	934	529	298	226	25,703	316,746	342,449
1924-25	802	1,898	1,923	1,113	569	406	305	39,309	425,201	464,510
1925-26	444	799	706	568	304	537	731	24,599	248,057	272,656

TABLE 11-2

HISTORICAL SUMMARY OF CANADIAN SHARE OF NATURAL FLOW

ST. MARY RIVER AT INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in cfs During Irrigation Season April - October							Runoff in Acre-Feet		
	April	May	June	July	August	September	October	Non-Irrigation Season Nov. - Mar.	Irrigation Season Apr. - Oct.	For Year Nov.- Oct.
1926-27	392	1,509	2,884	1,573	804	921	738	37,419	534,036	571,455
1927-28	394	2,014	1,637	1,464	625	383	581	56,058	431,645	487,703
1928-29	236	1,085	1,446	803	368	218	217	33,020	265,105	298,125
1929-30	906	1,380	1,411	799	383	278	235	26,187	326,301	352,488
1930-31	168	1,144	1,086	563	424	348	221	19,428	239,897	259,325
1931-32	415	1,415	1,615	872	444	230	180	41,875	313,367	355,242
1932-33	300	1,049	2,336	1,251	546	369	462	33,744	382,211	415,955
1933-34	1,024	1,887	1,631	744	401	242	201	84,136	371,274	455,410
1934-35	290	1,087	1,525	925	459	290	177	68,288	288,022	356,310
1935-36	426	1,376	1,243	574	315	189	122	15,002	257,232	272,234
1936-37	200	1,063	2,043	871	354	224	214	17,007	300,603	317,610
1937-38	471	1,473	1,828	978	380	270	241	32,631	341,754	374,385
1938-39	438	1,302	1,027	701	344	219	141	29,679	253,232	282,911
1939-40	285	1,096	1,068	530	287	319	311	18,908	236,221	255,129
1940-41	271	833	881	598	269	387	468	16,421	224,969	241,390
1941-42	461	1,112	1,553	1,079	533	392	297	47,152	328,915	376,067
1942-43	775	1,165	2,028	1,512	559	282	246	31,683	397,632	429,315
1943-44	148	798	984	555	400	318	280	18,171	211,297	229,468
1944-45	115	1,158	1,858	894	342	363	316	23,236	305,605	328,841
1945-46	446	1,347	1,532	917	422	371	386	38,408	328,659	367,067
1946-47	607	1,531	1,459	984	481	390	791	43,433	379,089	422,522
1947-48	420	1,649	2,910	955	535	247	200	35,689	418,054	453,743
1948-49	378	1,335	1,303	662	353	390	303	17,710	286,368	304,078
1949-50	346	1,143	2,435	1,746	717	364	604	48,055	446,013	494,068
1950-51	568	1,850	1,882	1,782	731	771	862	70,683	512,882	583,565

TABLE II-3

HISTORICAL SUMMARY OF CANADIAN SHARE OF NATURAL FLOW

ST. MARY RIVER AT INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in cfs During Irrigation Season April - October							Runoff in Acre-Feet		
	April	May	June	July	August	September	October	Non-Irrigation Season Nov. - Mar.	Irrigation Season Apr. - Oct.	For Year Nov. - Oct.
1951-52	621	1,371	1,269	883	578	307	198	41,416	317,014	358,430
1952-53	417	1,525	2,934	1,426	606	328	212	31,273	450,712	481,985
1953-54	325	1,775	1,985	1,759	717	544	522	31,309	463,240	494,549
1954-55	200	901	2,044	1,291	554	272	545	39,630	352,094	391,724
1955-56	372	1,563	1,982	1,180	578	330	383	44,510	387,538	432,048
1956-57	205	1,951	1,640	705	358	227	249	29,681	324,016	353,697
1957-58	300	1,539	1,590	758	413	354	397	29,256	324,581	353,837
1958-59	501	1,222	2,195	1,231	562	684	654	46,757	426,738	473,495
1959-60	496	858	1,691	969	463	281	178	47,692	298,629	346,321
1960-61	311	1,275	2,054	828	422	305	470	29,251	343,007	372,258
1961-62	522	1,087	1,462	799	517	327	385	30,343	308,898	339,241
1962-63	260	1,047	1,862	1,021	415	304	204	49,754	309,560	359,314
1963-64	149	1,156	3,373	1,217	482	444	503	22,180	442,497	464,677
1964-65	449	1,233	2,241	1,182	603	463	445	33,990	400,540	434,530
1965-66	559	1,230	1,858	1,050	485	339	270	35,541	350,620	386,161
1966-67	209	1,383	2,439	1,400	558	290	231	33,023	394,415	427,438
1967-68	218	1,118	1,780	963	556	692	558	47,261	356,471	403,732
1968-69	618	1,180	1,698	1,003	375	241	343	39,463	330,489	369,952
1969-70	146	1,379	2,446	878	430	304	220	26,906	351,085	377,991
1970-71	395	1,620	2,007	1,304	691	334	323	33,692	404,972	438,664
1971-72	539	1,546	2,344	1,310	777	449	343	43,210	442,756	485,966
Average	403	1,271	1,855	1,065	530	390	372	35,909	356,673	392,582

NATURAL FLOW OF MILK R(.R AT EASTERN CROSSING

FOR April 1972

DATE	ACTUAL FLOWS (cfs days)							EVAPORATION					NATURAL FLOW (cfs days)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
West xing	East xing	N. FK. Milk River above Canal	North Milk River nr. Int'l Boundary	Milk River at West xing	Milk River at East xing	Total Flow West xing 4 + 5	Natural Flow West xing 3 + 5	East West Mean 6 + 7 / 2	Mean evaporation inches	Table 3 actual flow cfs 1 in. 9	Table 3 natural flow cfs 1 in. 8	Table 3 increment in evaporation cfs 1 in. 11-12	Increment in evaporation cfs days 10 x 13	Inflow or loss 6-7	Eastern Crossing 8 + 14 + 15
5 DAY LAG															
	1														380
	2														492
	3														529
	4														567
	5														618
	6														605
	7														552
	8														581
	9														1020
	10														939
	11														733
	12														623
	13														567
	14														491
	15														471
	16														496
	17														511
	18														497
	19														506
	20														463
	21														392
	22														328
	23														290
	24														290
	25														323
	26														374
	27														356
	28														312
	29														350
	30														466
	31														
Total cfs															15122
Acre feet															29994

Diversion began on April 26, 1972
Use Milk River at Eastern Crossing
as Natural Flow until May 1

COMPUTED BY [signature] DATE Jan 16, 73 APPROVED [signature]
District Chief U.S.G.S.

CHECKED BY U. S. G. S. Engineers DATE Jan 23, 73 R. D. May
~~Dist. Engr. WS of Canada~~

TABLE 12-1

NATURAL FLOW OF MILK R(R AT EASTERN CROSSING

FOR May 1972

DATE		ACTUAL FLOWS (cfs days)							EVAPORATION					NATURAL FLOW (cfs days)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
West xing	East xing	N. FK. Milk River above Canal	North Milk River nr. Int'l Boundary	Milk River at West xing	Milk River at East xing	Total Flow West xing 4 + 5	Natural Flow West xing 3 + 5	East West Mean 6 + 7 / 2	Mean evaporation inches	Table 3 actual flow cfs 1 in. 9	Table 3 natural flow cfs 1 in. 8	Table 3 increment in evaporation cfs 1 in. 11-12	Increment in evaporation cfs days 10 x 13	Inflow or loss 6-7	Eastern Crossing 8 + 14 + 15
5 DAY LAG															
Apr. 26	1	49	57	262	528	319	311	424	0.23	154	141	13	3	209	523
	2	57	67	296	628	363	353	495	0.23	161	146	15	3	265	621
	3	68	81	339	699	420	407	560	0.32	167	153	14	4	279	690
	4	73	93	395	681	488	468	584	0.26	169	159	10	3	193	664
30	5	49	205	446	536	651	495	594	0.14	170	162	8	1	-115	381
May 1	6	38	151	321	459	472	359	465	0.15	159	147	12	2	- 13	348
	7	39	132	240	480	372	279	426	0.14	155	137	18	3	108	390
	8	47	139	258	544	397	305	471	0.24	159	141	18	4	147	456
	9	51	165	304	558	469	355	513	0.10	162	147	15	2	89	446
5	10	46	214	351	654	565	397	610	0.15	172	152	20	3	89	489
	11	43	261	305	754	566	348	660	0.17	179	146	33	6	188	542
	12	40	357	275	792	632	315	712	0.19	187	142	45	9	160	484
	13	35	459	266	860	725	301	792	0.24	197	140	57	14	135	450
	14	43	559	260	811	819	303	815	0.31	203	140	63	20	- 8	315
10	15	42	618	301	840	919	343	880	0.29	217	145	72	21	- 79	285
	16	41	635	305	941	940	346	940	0.33	232	146	86	28	1	375
	17	54	660	279	1080	939	333	1010	0.33	248	144	104	34	141	508
	18	66	695	324	1230	1019	390	1124	0.32	278	151	127	41	211	642
	19	77	729	424	1270	1153	501	1212	0.27	300	162	138	37	117	655
15	20	75	752	529	1260	1281	604	1270	0.33	315	171	144	48	- 21	631
	21	71	755	554	1180	1309	625	1245	0.28	309	175	134	38	-129	534
	22	64	756	580	1120	1336	644	1228	0.27	304	177	127	34	-216	462
	23	54	748	563	1060	1311	617	1185	0.24	294	173	121	29	-251	395
	24	50	734	479	1050	1213	529	1132	0.18	280	164	116	21	-163	387
20	25	50	725	425	1100	1150	475	1125	0.13	278	160	118	15	- 50	440
	26	48	723	397	1240	1120	445	1180	0.16	292	157	135	22	120	587
	27	49	733	382	1180	1115	431	1147	0.26	283	155	128	33	65	529
	28	49	732	396	1310	1128	445	1219	0.28	302	157	145	41	182	668
	29	43	743	374	1460	1117	417	1289	0.22	321	154	167	37	343	797
	30	85	804	349	1200	1153	434	1176	0.21	291	155	136	29	47	510
26	31	95	804	520	1060	1324	615	1192	0.34	295	173	122	41	-264	392
Total cfs		1691	15286	11499	28565	26785	13190	27675	7.31	7233	4772	2461	626	1780	15596
Acre feet															30935

COMPUTED BY [signature] DATE Jan 16, 73 APPROVED [signature]

District Chief U.S.G.S.

CHECKED BY U.S.G.S. Engineers DATE Jan 23, 73

R.D. May

Dist. Engr. WS of Canada

TABLE 12-2

NATURAL FLOW OF MILK R(R AT EASTERN CROSSING

FOR June 1972

DATE		ACTUAL FLOWS (cfs days)							EVAPORATION					NATURAL FLOW (cfs days)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
West xing	East xing	N. FK. Milk River above Canal	North Milk River nr. Int'l Boundary	Milk River at West xing	Milk River at East xing	Total Flow West xing 4 + 5	Natural Flow West xing 3 + 5	East West Mean 6 + 7 / 2	Mean evaporation inches	Table 3 actual flow cfs 1 in. 9	Table 3 natural flow cfs 1 in. 8	Table 3 increment in evaporation cfs 1 in. 11-12	Increment in evaporation cfs days 10 x 13	Inflow or loss 6-7	Eastern Crossing 8 + 14 + 15
5 DAY LAG															
May 27	1	62	705	648	1000	1353	710	1177	0.39	291	187	104	41	-353	398
	2	53	678	427	983	1105	480	1044	0.31	257	160	97	30	-122	388
	3	51	673	343	951	1016	394	983	0.43	242	151	91	39	- 65	368
	4	50	668	324	994	992	374	993	0.34	244	149	95	32	2	408
31	5	46	667	329	1050	996	375	1023	0.32	252	149	103	33	54	462
Jun 1	6	44	702	333	1040	1035	377	1038	0.41	255	149	106	43	5	425
	7	41	735	341	1050	1076	382	1063	0.38	263	150	113	43	- 26	399
	8	36	750	342	1120	1092	378	1106	0.24	273	150	123	30	28	436
	9	33	748	305	1160	1053	338	1106	0.28	273	145	128	36	107	481
5	10	31	746	259	1140	1005	290	1073	0.29	265	138	127	37	135	462
	11	30	738	249	1180	987	279	1083	0.43	268	137	131	56	193	528
	12	28	731	239	1410	970	267	1190	0.30	295	136	159	48	440	755
	13	28	722	235	1440	957	263	1199	0.28	297	135	162	45	483	791
	14	41	740	285	1240	1025	326	1132	0.29	280	143	137	40	215	581
10	15	35	731	664	1060	1395	699	1227	0.33	304	185	119	39	-335	403
	16	44	722	653	855	1375	697	1115	0.43	276	184	92	40	-520	217
	17	31	507	541	730	1048	572	889	0.33	220	168	52	17	-318	271
	18	27	257	410	569	667	437	618	0.23	174	156	18	4	- 98	343
	19	26	92	311	480	403	337	442	0.25	156	144	12	3	77	417
15	20	25	56	250	459	306	275	382	0.36	150	137	13	5	153	433
	21	25	42	217	459	259	242	359	0.23	147	132	15	3	200	445
	22	26	35	211	452	246	237	349	0.26	146	132	14	4	206	447
	23	24	33	217	480	250	241	365	0.16	148	132	16	3	230	474
	24	23	32	188	586	220	211	403	0.31	152	128	24	7	366	584
20	25	22	30	176	445	206	198	326	0.32	143	126	17	5	239	442
	26	22	112	170	631	282	192	456	0.27	158	124	34	9	349	550
	27	22	516	157	740	673	179	707	0.29	186	120	66	19	67	265
	28	24	632	151	680	783	175	731	0.34	189	119	70	24	-103	96
	29	24	655	152	647	807	176	727	0.40	188	119	69	28	-160	44
25	30	21	650	156	726	806	177	766	0.35	194	119	75	26	- 80	123
	~~31~~														
Total cfs		995	15105	9283	25757	24388	10278	25072	9.55	6686	4304	2382	789	1369	12436
Acre feet															24667

COMPUTED BY [signature] DATE Jan 17, 73 APPROVED [signature]

District Chief, U.S.G.S.

CHECKED BY U. S. G. S. Engineers DATE Jan 23, 73

[signature]

Dist. Engr. WS of Canada

TABLE 12-3

NATURAL FLOW OF MILK R(R AT EASTERN CROSSING

FOR July 1972

DATE		ACTUAL FLOWS (cfs days)							EVAPORATION					NATURAL FLOW (cfs days)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
West xing	East xing	N. FK. Milk River above Canal	North Milk River nr. Int'l Boundary	Milk River at West xing	Milk River at East xing	Total Flow West xing 4 + 5	Natural Flow West xing 3 + 5	East West Mean 6 + 7 / 2	Mean evaporation inches	Table 3 actual flow cfs 1 in. 9	Table 3 natural flow cfs 1 in. 8	Table 3 increment in evaporation cfs 1 in. 11-12	Increment in evaporation cfs days 10 x 13	Inflow or loss 6-7	Eastern Crossing 8 + 14 + 15
5 DAY LAG															
Jun 26	1	21	647	132	835	779	153	807	0.33	201	111	90	30	56	239
	2	20	663	119	803	782	139	793	0.21	198	107	91	19	21	179
	3	20	685	111	803	796	131	799	0.27	199	103	96	26	7	164
	4	20	688	103	748	791	123	770	0.39	195	101	94	37	-43	177
30	5	19	690	96	763	786	115	774	0.39	195	99	96	37	-23	129
Jul 1	6	19	698	91	771	789	110	780	0.22	196	97	99	22	-18	114
	7	19	700	90	771	790	109	781	0.22	196	97	99	22	-19	112
	8	21	706	100	775	806	121	790	0.33	197	100	97	32	-31	122
	9	20	700	107	767	807	127	787	0.38	197	102	95	36	-40	123
5	10	19	693	108	753	801	127	777	0.29	196	102	94	27	-48	106
	11	18	688	94	725	782	112	754	0.18	192	98	94	17	-57	72
	12	24	700	91	703	791	115	747	0.27	192	99	93	25	-88	52
	13	21	690	99	710	789	120	749	0.36	192	100	92	33	-79	74
	14	18	690	127	733	817	145	775	0.36	196	109	87	31	-84	92
10	15	17	687	101	755	788	118	772	0.32	195	99	96	31	-33	166
	16	17	692	84	835	776	101	806	0.19	201	93	108	21	59	181
	17	17	695	76	920	771	93	846	0.27	210	91	119	32	149	274
	18	17	691	74	1020	765	91	892	0.20	220	90	130	26	255	372
	19	17	691	75	929	766	92	848	0.11	210	91	119	13	163	268
15	20	18	698	78	859	776	96	817	0.26	203	92	111	29	83	208
	21	17	706	73	803	779	90	791	0.10	197	90	107	11	24	125
	22	19	712	70	827	782	89	805	0.18	201	90	111	20	45	154
	23	22	716	91	880	807	113	843	0.23	209	98	111	26	73	212
	24	41	738	116	779	854	157	817	0.26	203	112	91	24	-75	106
20	25	26	699	265	764	964	291	864	0.22	214	138	76	17	-200	108
	26	24	679	253	781	932	277	856	0.27	212	137	75	20	-151	146
	27	22	666	191	752	857	213	805	0.26	201	128	73	19	-105	127
	28	19	652	153	749	805	172	777	0.37	196	118	78	29	-56	145
	29	18	652	115	748	767	133	757	0.29	193	104	89	26	-19	140
	30	20	667	93	755	760	113	758	0.36	193	98	95	34	-5	142
26	31	17	676	81	779	757	98	768	0.28	195	92	103	29	22	149
Total cfs		627	21355	3457	24595	24812	4084	24704	8.37	6195	3186	3009	801	-217	4668
Acre feet															9259

COMPUTED BY [signature] DATE Jan 17, 73

CHECKED BY U. S. G. S. Engineers DATE Jan 23, 73

APPROVED [signature] District Chief U.S.G.S.

[signature] Dist. Engr. WS of Canada

TABLE 12-4

NATURAL FLOW OF MILK RIVER AT EASTERN CROSSING

FOR August 1972

DATE		ACTUAL FLOWS (cfs days)							EVAPORATION					NATURAL FLOW (cfs days)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
West xing	East xing	N. FK. Milk River above Canal	North Milk River nr. Int'l Boundary	Milk River at West xing	Milk River at East xing	Total Flow West xing 4 + 5	Natural Flow West xing 3 + 5	East West Mean 6 + 7 / 2	Mean evaporation inches	Table 3 actual flow cfs 1 in. 9	Table 3 natural flow cfs 1 in. 8	Table 3 increment in evaporation cfs 1 in. 11-12	Increment in evaporation cfs days 10 x 13	Inflow or loss 6-7	Eastern Crossing 8 + 14 + 15
5 DAY LAG															
Jul 27	1	16	678	77	771	755	93	763	0.33	194	91	103	34	16	143
	2	16	678	64	779	742	80	761	0.29	193	87	106	31	37	148
	3	15	678	54	763	732	69	747	0.29	192	83	109	32	31	132
	4	15	678	47	763	725	62	744	0.35	191	81	110	39	38	139
31	5	15	678	42	795	720	57	758	0.33	193	79	114	38	75	170
Aug 1	6	15	686	39	779	725	54	752	0.28	192	78	114	32	54	140
	7	20	702	40	853	742	60	797	0.24	198	80	118	28	111	199
	8	19	699	65	819	764	84	792	0.37	197	88	109	40	55	179
	9	16	694	166	880	860	182	870	0.33	215	121	94	31	20	233
5	10	15	691	102	703	793	117	748	0.35	192	99	93	33	-90	60
	11	15	688	72	710	760	87	735	0.42	190	89	101	42	-50	79
	12	14	685	59	695	744	73	719	0.34	187	84	103	35	-49	59
	13	14	684	52	701	736	66	719	0.37	187	82	105	39	-35	70
	14	14	686	42	725	728	56	726	0.21	188	78	110	23	-3	76
10	15	13	686	36	759	722	49	741	0.27	191	75	116	31	37	117
	16	13	687	33	783	720	46	751	0.37	192	74	118	44	63	153
	17	13	689	31	825	720	44	773	0.36	195	72	123	44	105	193
	18	15	690	30	825	720	45	772	0.15	195	73	122	18	105	168
	19	14	689	30	772	719	44	746	0.25	192	72	120	30	53	127
15	20	14	687	35	731	722	49	726	0.12	188	75	113	14	9	72
	21	14	686	40	774	726	54	750	0.23	192	78	114	26	48	128
	22	13	678	40	722	718	53	720	0.37	187	77	110	41	4	98
	23	16	674	40	778	714	56	746	0.31	192	78	114	35	64	155
	24	15	679	40	732	719	55	726	0.31	188	78	110	34	13	102
20	25	14	681	36	758	717	50	737	0.16	190	76	114	18	41	109
	26	15	686	35	730	721	50	726	0.28	188	76	112	31	9	90
	27	15	690	42	748	732	57	740	0.24	191	79	112	27	16	100
	28	15	689	41	731	730	56	730	0.23	189	78	111	26	1	83
	29	15	691	59	718	750	74	734	0.29	190	85	105	30	-32	72
	30	15	691	40	715	731	55	723	0.34	188	78	110	37	-16	76
26	31	15	686	52	694	738	67	716	0.31	187	82	105	33	-44	56
Total cfs		463	21264	1581	23531	22845	2044	23188	9.09	5944	2526	3418	996	686	3726
Acre feet															7391

COMPUTED BY [signature] DATE Jan 17, 73 APPROVED [signature]

District Chief U.S.G.S.

CHECKED BY U. S. G. S. Engineers DATE Jan 23, 73

R. D. May

Dist. Engr. WS of Canada

TABLE 12-5

NATURAL FLOW OF MILK RIV(AT EASTERN CROSSING

FOR *September* 19 *72*

DATE		ACTUAL FLOWS (cfs days)							EVAPORATION					NATURAL FLOW (cfs days)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
West xing	East xing	N. FK. Milk River above Canal	North Milk River nr. Int'l Boundary	Milk River at West xing	Milk River at East xing	Total Flow West xing 4 + 5	Natural Flow West xing 3 + 5	East West Mean 6 + 7 / 2	Mean evaporation inches	Table 3 actual flow cfs 1 in.	Table 3 natural flow cfs 1 in.	Table 3 increment in evaporation cfs 1 in. 11-12	Increment in evaporation cfs days 10 x 13	Inflow or loss 6-7	Eastern Crossing 8 + 14 + 15
5 DAY	LAG														
Aug 27	1	15	685	41	678	726	56	702	0.21	185	78	107	22	-48	30
	2	15	686	32	682	718	47	700	0.28	185	74	111	31	-36	42
	3	14	684	27	681	711	41	696	0.34	184	71	113	38	-30	49
	4	14	683	23	689	706	37	698	0.22	185	68	117	26	-17	46
31	5	14	686	21	688	707	35	697	0.28	184	67	117	33	-19	49
Sept 1	6	14	687	20	740	707	34	724	0.13	188	66	122	16	33	83
	7	15	689	19	787	708	34	747	0.11	192	66	126	14	79	127
	8	15	689	19	740	708	34	724	0.19	188	66	122	23	32	89
	9	15	689	21	748	710	36	729	0.27	189	67	122	33	38	107
5	10	15	691	20	748	711	35	730	0.25	189	67	122	31	37	103
	11	19	700	22	740	722	41	731	0.13	189	71	118	15	18	74
	12	20	699	25	740	724	45	732	0.13	189	73	116	15	16	76
	13	18	691	30	755	721	48	738	0.19	191	75	116	22	34	104
	14	17	689	49	728	738	66	733	0.34	190	82	108	37	-10	93
10	15	16	682	47	722	729	63	725	0.27	188	81	107	29	-7	85
	16	16	689	38	750	727	54	739	0.09	191	78	113	10	23	87
	17	16	692	33	740	725	49	732	0.09	189	75	114	10	15	74
	18	17	694	32	723	726	49	725	0.17	188	75	113	19	-3	65
	19	16	689	32	728	721	48	724	0.24	188	75	113	27	7	82
15	20	16	686	37	744	723	53	734	0.20	190	77	113	23	21	97
	21	15	684	31	742	715	46	728	0.12	189	74	115	14	27	87
	22	16	693	28	721	721	44	721	0.14	187	72	115	16	0	60
	23	17	687	25	738	712	42	725	0.15	188	71	117	18	26	86
	24	17	693	24	778	717	41	748	0.09	192	71	121	11	61	113
20	25	17	688	31	775	719	48	747	0.15	192	75	117	18	56	122
	26	17	689	31	760	720	48	740	0.13	191	75	116	15	40	103
	27	16	690	32	764	722	48	743	0.10	191	75	116	12	42	102
	28	16	689	32	778	721	48	749	0.09	192	75	117	11	57	116
	29	16	694	33	800	727	49	764	0.09	194	75	119	11	73	133
25	30	16	694	34	800	728	50	764	0.18	194	76	118	21	72	143
	~~31~~														
Total cfs		480	20681	889	22207	21570	1369	21889	5.37	5672	2191	3481	621	637	2627
Acre feet															5211

COMPUTED BY [signature] DATE Jan 18, 73 APPROVED [signature]
District Chief U.S.G.S.

CHECKED BY U. S. G. S. Engineers DATE Jan 23, 73 R. D. May
Dist. Engr. WS of Canada

TABLE 12-6

NATURAL FLOW OF MILK RIVER AT EASTERN CROSSING

FOR October 1972

DATE		ACTUAL FLOWS (cfs days)							EVAPORATION					NATURAL FLOW (cfs days)		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
West xing	East xing	N. FK. Milk River above Canal	North Milk River nr. Int'l Boundary	Milk River at West xing	Milk River at East xing	Total Flow West xing 4 + 5	Natural Flow West xing 3 + 5	East West Mean 6 + 7 / 2	Mean evaporation inches	Table 3 actual flow cfs 1 in. 9	Table 3 natural flow cfs 1 in. 8	Table 3 increment in evaporation cfs 1 in. 11-12	Increment in evaporation cfs days 10 x 13	Inflow or loss 6-7	Eastern Crossing 8 + 14 + 15	
5 DAY LAG																
Sept. 26	1	16	696	36	762	732	52	747	0.10	192	77	115	12	30	94	
	2	16	699	37	746	736	53	741	0.10	191	77	114	11	10	74	
	3	17	698	36	730	734	53	732	0.22	189	77	112	25	-4	74	
	4	17	698	38	690	736	55	713	0.13	187	78	109	14	-46	23	
30	5	17	664	37	695	701	54	698	0.13	185	78	107	14	-6	62	
Oct 1	6	18	643	35	688	678	53	683	0.13	182	77	105	14	10	77	1222
	7	15	637	33	680	670	48	675	0.22	182	75	107	24	10	82	
	8	15	635	32	666	667	47	667	0.20	180	74	106	21	-1	67	
	9	15	633	31	673	664	46	668	0.11	181	74	107	12	9	67	
5	10	15	631	29	688	660	44	674	0.12	181	72	109	13	28	85	
	11	16	635	27	679	662	43	671	0.16	181	72	109	17	17	77	
	12	15	635	27	635	662	42	648	0.12	178	71	107	13	-27	28	
	13	16	635	26	565	661	42	613	0.18	173	71	102	18	-96	0	
	14	16	573	26	484	599	42	542	0.03E	165	71	94	3	-115	0	
10	15	16	456	26	436	482	42	459	0.03E	158	71	87	3	-46	0	TABLE 12-7
	16	15	297	29	353	326	44	339	0.08E	145	72	73	6	27	77	
	17	15	143	28	274	171	43	222	0.10E	129	72	57	6	103	152	
	18	15	53	29	217	82	44	150	0.10E	110	72	38	4	135	183	
	19														179	
15	20														151	
	21														138	
	22														126	
	23														119	
	24														109	
	25														103	1423
	26														100	
	27														98	
	28														90	
	29														75	
	30														65	
	31														70	
Total cfs		285	10061	562	10661	10623	847	10642	2.26	3089	1331	1758	230	38	2645	
Acre feet															5246	

Diversion ended on October 13, 1972
Milk River at Eastern Crossing used
as Natural Flow to October 31

COMPUTED BY [signature] DATE Jan 18, 73 APPROVED [signature]
District Chief U.S.G.S.

CHECKED BY U. S. G. S. Engineers DATE Jan 23, 73 [signature]
Dist. Engr. WS of Canada

TABLE 13 - 1

HISTORICAL SUMMARY OF NATURAL FLOW OF MILK RIVER AT EASTERN CROSSING OF INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in CFS								Runoff in Acre-Feet		
	March	April	May	June	July	August	Sept.	Oct.	Nov.-Feb.	Mar.-Oct.	Nov.-Oct.
1911-12	434	684	319	136	112	59.6	60.4	78.1	18,955	113,953	132,908
1912-13	7.0	941	477	314	177	85.3	31.5	65.5	6,012	126,479	132,491
1913-14	156	501	158	103	26.0	7.32	23.1	168	9,664	68,971	78,635
1914-15	314	301	224	550	321	204	196	193	8,226	139,514	147,740
1915-16	730	384	439	766	678	262	264	212	75,534	226,885	302,419
1916-17	204	1,594	949	575	111	40.0	86.2	76.7	17,231	219,125	236,356
1917-18	216	358	257	90.2	13.0	48.8	41.0	43.0	27,784	64,620	92,404
1918-19	65.8	211	77.3	53.5	2.68	2.94	18.5	22.8	6,078	27,398	33,476
1919-20	194	943	1,287	196	13.6	25.9	38.9	21.8	5,908	172,469	178,377
1920-21	88.0	365	272	108	47.4	24.5	21.7	15.6	6,130	56,899	63,029
1921-22	79.0	521	493	182	106	6.87	12.3	40.2	1,405	87,184	88,589
1922-23	104	327	254	428	145	34.3	37.0	33.4	1,596	82,213	83,809
1923-24	80.2	355	127	379	83.5	80.5	60.5	35.7	3,971	72,294	76,265
1924-25	423	795	408	204	27.5	7.64	22.1	110	4,191	120,752	124,943
1925-26	73.7	107	15.1	83.4	9.71	5.84	69.3	43.6	15,697	24,513	40,210
1926-27	185	1,029	1,917	1,455	382	441	349	256	1,927	364,163	366,090
1927-28	1,112	611	438	437	602	147	155	138	35,832	221,341	257,173
1928-29	441	686	604	596	46.2	0.90	21.8	64.2	15,492	148,657	164,149
1929-30	442	601	397	131	38.6	22.6	66.2	54.1	29,598	106,169	135,767
1930-31	130	110	41.6	50.1	37.0	60.7	61.2	0.00	10,754	29,769	40,523
1931-32	266	276	214	358	44.4	34.3	46.2	26.3	10,460	76,491	86,951
1932-33	266	638	438	167	7.13	0.00	0.00	55.7	4,663	94,986	99,649
1933-34	366	364	243	357	77.2	19.5	78.3	58.3	24,669	94,574	119,243
1934-35	202	585	284	103	55.7	27.4	12.9	38.7	36,002	79,098	115,100
1935-36	339	502	89.1	63.5	12.0	39.2	14.1	12.9	303	64,792	65,095

TABLE 13-2

HISTORICAL SUMMARY OF NATURAL FLOW OF MILK RIVER AT EASTERN CROSSING OF INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in CFS								Runoff in Acre-Feet		
	March	April	May	June	July	August	Sept.	Oct.	Nov.-Feb.	Mar.-Oct.	Nov.-Oct.
1936-37	68.9	585	285	373	81.9	9.77	35.8	64.8	2,277	90,504	92,781
1937-38	457	410	395	234	158	32.8	64.2	27.8	3,042	107,957	110,999
1938-39	209	132	48.2	143	62.3	24.5	38.5	13.2	4,735	40,621	45,356
1939-40	310	273	135	44.3	86.0	14.4	39.9	28.3	2,344	56,513	58,857
1940-41	102	76.9	43.1	91.5	35.2	13.8	22.8	32.3	3,112	25,318	28,430
1941-42	82.6	529	220	380	102	11.2	33.3	62.3	4,748	85,522	90,270
1942-43	354	618	317	398	122	33.4	20.2	63.1	5,395	116,300	121,695
1943-44	53.8	145	36.5	39.3	31.2	36.6	18.2	14.6	7,580	22,654	30,234
1944-45	222	80.1	110	212	37.8	0.19	17.0	40.4	2,805	43,647	46,452
1945-46	187	94.2	86.5	119	47.1	15.3	45.0	92.9	4,831	41,730	46,561
1946-47	1,187	692	361	203	44.2	60.3	87.2	81.2	7,209	165,096	172,305
1947-48	166	1,118	633	942	329	118	18.3	88.3	6,721	205,713	212,434
1948-49	135	401	229	66.6	20.3	1.16	14.5	70.4	8,426	56,682	65,108
1949-50	135	639	480	453	171	69.4	12.6	41.2	4,993	120,861	125,854
1950-51	530	1,002	753	862	571	250	328	288	8,646	277,551	286,197
1951-52	960	1,434	468	200	127	51.5	40.2	55.6	35,338	201,867	237,205
1952-53	164	812	821	1,932	301	80.5	58.3	97.7	14,876	256,785	271,661
1953-54	162	741	697	379	96.2	102	144	117	20,293	147,408	167,701
1954-55	91.1	809	845	320	448	7.71	35.8	81.3	9,852	159,930	169,782
1955-56	305	489	373	205	241	129	47.0	66.6	8,575	112,583	121,158
1956-57	435	384	458	235	15.1	27.7	58.6	112	9,975	104,807	114,782
1957-58	202	1,136	167	191	84.4	13.4	26.6	58.9	13,183	112,885	126,068
1958-59	697	528	424	239	84.8	27.5	53.3	76.8	11,103	129,352	140,455
1959-60	753	307	400	69.4	8.0	18.4	15.5	40.5	13,296	98,343	111,639
1960-61	123	87.3	232	92.9	7.5	8.2	17.8	54.5	8,833	37,914	46,747

TABLE 13 - 3

HISTORICAL SUMMARY OF NATURAL FLOW OF MILK RIVER AT EASTERN CROSSING OF INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in CFS								Runoff in Acre-Feet		
	March	April	May	June	July	August	Sept.	Oct.	Nov.-Feb.	Mar.-Oct.	Nov.-Oct.
1961-62	295	378	133	83.1	18.0	0.3	37.4	23.3	9,835	58,521	68,356
1962-63	109	58.7	55.5	91.3	75.4	14.9	25.3	26.9	13,971	27,776	41,747
1963-64	44.2	268	711	705	137	43.1	58.3	98.1	2,925	124,904	127,829
1964-65	322	1,691	469	752	259	64.6	142	123	12,392	229,954	242,346
1965-66	484	400	214	460	190	67.6	32.2	113	11,024	118,782	129,806
1966-67	635	696	1,752	769	117	51.6	28.9	73.4	13,486	250,535	264,021
1967-68	404	227	335	250	127	113	187	214	15,390	112,873	128,263
1968-69	936	1,216	288	287	300	25.5	33.9	74.9	15,626	191,297	206,923
1969-70	260	296	493	329	67.4	45.0	69.0	61.9	9,850	98,299	108,149
1970-71	215	538	409	304	85.2	42.9	58.6	63.0	24,641	103,716	128,357
1971-72	1,183	504	503	414	151	120	87.6	85.3	4,223	185,447	189,670
Average	326	551	407	340	131	56.3	63.0	75.2	12,027	118,098	130,124

TABLE 14-1

HISTORICAL SUMMARY OF CANADIAN SHARE OF NATURAL FLOW OF MILK RIVER AT EASTERN CROSSING OF INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in CFS								Runoff in Acre-Feet		
	March	April	May	June	July	August	Sept.	Oct.	Nov.-Feb.	Mar.-Oct.	Nov.-Oct.
1911-12	217	218	82.5	33.9	28.0	14.9	15.1	19.5	9,476	38,150	47,626
1912-13	3.50	331	121	78.5	44.9	21.3	7.97	16.4	3,007	37,546	40,553
1913-14	77.9	145	39.5	25.7	6.48	1.80	5.75	41.9	4,831	20,796	25,627
1914-15	157	83.9	56.0	153	80.2	51.0	49.0	48.3	4,113	41,159	45,272
1915-16	365	95.9	126	225	227	65.6	69.0	53.0	37,767	74,623	112,390
1916-17	102	631	312	168	27.9	9.84	21.6	19.2	8,614	77,830	86,444
1917-18	108	89.6	64.3	22.6	3.35	12.2	10.3	10.7	13,892	19,489	33,381
1918-19	32.9	52.9	19.3	13.3	0.65	0.74	4.77	5.65	3,038	7,864	10,902
1919-20	96.8	342	491	49.0	3.41	6.41	9.73	5.36	2,955	62,845	65,800
1920-21	44.0	99.6	67.9	26.8	11.8	6.16	5.36	3.87	3,066	16,069	19,135
1921-22	39.5	153	136	45.6	27.0	1.71	3.07	10.0	703	25,167	25,870
1922-23	51.9	81.6	64.6	126	36.3	8.61	9.30	8.35	797	23,350	24,147
1923-24	40.1	100	31.5	111	20.9	20.1	15.1	9.00	1,985	20,957	22,942
1924-25	212	239	102	51.0	6.80	1.90	5.60	27.4	2,095	39,108	41,203
1925-26	36.9	27.5	3.9	20.9	2.45	1.45	17.4	10.8	7,850	7,312	15,162
1926-27	92.5	380	802	574	98.0	144	98.4	64.1	963	136,488	137,451
1927-28	556	168	111	136	187	36.6	38.8	34.5	17,915	77,263	95,178
1928-29	220	205	165	188	11.5	0.23	5.47	16.0	7,745	49,105	56,850
1929-30	221	176	100	32.7	9.60	5.60	16.4	13.5	14,799	34,913	49,712
1930-31	65.2	27.6	10.4	12.6	9.23	15.2	15.4	0.00	5,377	9,459	14,836
1931-32	133	73.2	53.6	99.2	11.0	8.50	11.5	6.6	5,229	24,035	29,264
1932-33	133	186	114	41.7	1.77	0.00	0.00	13.9	2,332	29,654	31,986
1933-34	183	91.7	60.6	102	19.2	4.90	19.6	14.6	12,334	30,059	42,393
1934-35	101	211	71.2	25.8	13.9	6.87	3.23	9.70	18,001	26,736	44,737
1935-36	170	170	22.3	15.8	2.97	9.77	3.43	3.35	150	24,075	24,225

TABLE 14 - 2

HISTORICAL SUMMARY OF CANADIAN SHARE OF NATURAL FLOW OF MILK RIVER AT EASTERN CROSSING OF INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in CFS								Runoff in Acre-Feet		
	March	April	May	June	July	August	Sept.	Oct.	Nov.-Feb.	Mar.-Oct.	Nov.-Oct.
1936-37	34.5	168	71.3	119	20.4	2.42	8.90	16.3	1,138	26,477	27,615
1937-38	228	121	102	58.6	39.5	8.16	16.0	7.00	1,521	35,285	36,806
1938-39	105	33.0	12.1	36.7	15.6	6.00	9.67	3.29	2,367	13,429	15,796
1939-40	155	68.4	33.7	11.2	21.6	3.65	10.0	7.10	1,173	18,908	20,081
1940-41	51.1	19.2	10.7	22.8	8.77	3.42	5.73	8.07	1,556	7,887	9,443
1941-42	41.3	152	55.1	98.1	25.5	2.77	8.27	15.4	2,373	24,003	26,376
1942-43	177	183	79.2	102	30.5	8.39	4.97	15.8	2,698	36,386	39,084
1943-44	26.9	36.2	9.10	9.88	7.77	9.16	4.50	3.61	3,790	6,485	10,275
1944-45	111	20.1	27.4	53.1	9.39	0.03	4.27	10.2	1,403	14,331	15,734
1945-46	93.5	23.6	21.6	29.6	11.8	3.87	11.3	23.3	2,416	13,306	15,722
1946-47	593	195	90.3	50.8	11.1	15.3	21.7	20.3	3,605	60,817	64,422
1947-48	82.8	421	176	339	82.8	29.5	4.50	22.1	3,361	69,692	73,053
1948-49	67.5	103	57.2	16.6	5.00	0.29	3.60	17.6	4,213	16,379	20,592
1949-50	67.7	187	133	116	42.7	17.4	3.03	10.3	2,497	34,830	37,327
1950-51	265	361	230	301	168	70.9	85.7	72.0	4,323	94,074	98,397
1951-52	480	552	118	50.2	31.7	12.9	10.0	13.9	17,668	76,791	94,459
1952-53	81.9	288	268	800	75.8	20.1	14.6	24.5	7,438	94,500	101,938
1953-54	81.0	235	207	94.7	24.0	25.5	35.9	29.3	10,147	44,270	54,417
1954-55	45.6	273	280	80.2	140	1.94	9.00	20.3	4,927	51,543	56,470
1955-56	153	129	93.4	51.1	68.3	32.3	11.8	16.7	4,287	33,728	38,015
1956-57	218	97.0	117	58.7	3.77	7.00	14.7	28.0	4,988	33,087	38,075
1957-58	101	433	41.7	47.8	21.1	3.39	6.60	14.8	6,591	40,172	46,763
1958-59	348	149	108	60.6	21.1	6.81	13.3	19.3	5,552	44,176	49,728
1959-60	376	76.7	106	17.2	2.0	4.6	3.9	10.1	6,647	36,490	43,137
1960-61	61.6	21.8	57.9	23.1	1.9	2.0	4.4	13.5	4,417	11,356	15,773

TABLE 14 – 3

HISTORICAL SUMMARY OF CANADIAN SHARE OF NATURAL FLOW OF MILK RIVER AT EASTERN CROSSING OF INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in CFS								Runoff in Acre-Feet		
	March	April	May	June	July	August	Sept.	Oct.	Nov.-Feb.	Mar.-Oct.	Nov.-Oct.
1961-62	147	95.1	33.2	20.8	4.5	0.1	9.4	5.9	4,917	19,202	24,119
1962-63	54.7	14.7	13.9	22.8	18.8	3.6	6.3	6.8	6,986	8,621	15,607
1963-64	22.1	66.9	248	245	34.3	10.9	14.5	24.5	1,463	40,331	41,794
1964-65	161	691	123	254	70.2	16.1	35.6	30.8	6,196	83,068	89,264
1965-66	242	113	53.5	132	47.9	16.8	8.0	28.2	5,512	38,932	44,444
1966-67	318	206	713	236	29.3	12.9	7.2	18.3	6,743	93,874	100,617
1967-68	202	56.7	84.3	64.8	31.8	28.2	47.2	53.3	7,695	34,611	42,306
1968-69	468	456	73.1	77.0	82.2	6.3	8.5	18.8	7,813	72,099	79,912
1969-70	130	75.0	127	93.5	16.9	11.2	17.3	15.4	4,925	29,558	34,483
1970-71	107	141	104	76.0	21.3	10.8	14.6	15.7	12,320	29,715	42,035
1971-72	592	132	127	105	37.5	30.1	21.9	21.3	2,112	65,070	67,182
Average	163	177	122	104	35.7	14.8	16.0	18.8	6,013	39,468	45,481

TABLE 15-1

HISTORICAL SUMMARY OF UNITED STATES SHARE OF NATURAL FLOW OF MILK RIVER AT EASTERN CROSSING OF INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in CFS								Runoff in Acre-Feet		
	March	April	May	June	July	August	Sept.	Oct.	Nov.-Feb.	Mar.-Oct.	Nov.-Oct.
1911-12	217	465	236	102	84.0	44.7	45.3	58.6	9,476	75,803	85,279
1912-13	3.50	610	356	236	132	64.0	23.5	49.2	3,007	88,933	91,940
1913-14	77.9	356	119	77.1	19.5	5.52	17.3	126	4,831	48,174	53,005
1914-15	157	217	168	397	241	153	147	145	4,113	98,354	102,467
1915-16	365	288	313	542	451	197	195	159	37,767	152,260	190,027
1916-17	102	963	637	407	83.5	30.1	64.6	57.5	8,614	141,295	149,909
1917-18	108	268	193	67.6	9.68	36.5	30.7	32.3	13,892	45,133	59,025
1918-19	32.9	158	58.0	40.2	2.03	2.19	13.7	17.2	3,038	19,535	22,573
1919-20	96.8	600	796	147	10.2	19.5	29.2	16.4	2,955	109,625	112,580
1920-21	44.0	265	204	80.8	35.5	18.3	16.4	11.7	3,066	40,829	43,895
1921-22	39.5	369	357	137	78.6	5.16	9.26	30.2	703	62,015	62,718
1922-23	51.9	245	190	302	109	25.7	27.7	25.0	797	58,861	59,658
1923-24	40.1	254	95.2	268	62.6	60.4	45.4	26.7	1,985	51,335	53,320
1924-25	212	555	306	153	20.7	5.74	16.5	82.2	2,095	81,644	83,739
1925-26	36.9	79.9	11.2	62.5	7.25	4.39	51.9	32.8	7,850	17,201	25,051
1926-27	92.5	648	1,114	880	284	297	251	192	963	227,674	228,637
1927-28	556	442	327	301	415	110	116	103	17,915	144,077	161,992
1928-29	220	481	439	408	34.7	0.68	16.4	48.2	7,745	99,552	107,297
1929-30	221	425	297	98.4	29.0	17.0	49.7	40.6	14,799	71,257	86,056
1930-31	65.2	82.6	31.2	37.5	27.8	45.5	45.8	0.00	5,377	20,309	25,686
1931-32	133	203	161	259	33.4	25.7	34.7	19.7	5,229	52,459	57,688
1932-33	133	452	324	125	5.35	0.00	0.00	41.9	2,332	65,333	67,665
1933-34	183	273	182	255	58.0	14.5	58.7	43.7	12,334	64,515	76,849
1934-35	101	374	213	77.5	41.8	20.5	9.70	29.0	18,001	52,362	70,363
1935-36	170	332	66.8	47.7	9.06	29.4	10.7	9.55	150	40,716	40,866

TABLE 15 - 2

HISTORICAL SUMMARY OF UNITED STATES SHARE OF NATURAL FLOW OF MILK RIVER AT EASTERN CROSSING OF INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in CFS								Runoff in Acre-Feet		
	March	April	May	June	July	August	Sept.	Oct.	Nov.-Feb.	Mar.-Oct.	Nov.-Oct.
1936-37	34.5	417	214	254	61.5	7.35	26.9	48.6	1,138	64,028	65,166
1937-38	228	289	293	176	118	24.6	48.2	20.8	1,521	72,672	74,193
1938-39	105	99.2	36.0	106	46.7	18.5	28.8	9.87	2,367	27,193	29,560
1939-40	155	205	101	33.1	64.4	10.8	29.9	21.2	1,173	37,606	38,779
1940-41	51.1	57.8	32.4	68.7	26.4	10.4	17.0	24.2	1,556	17,429	18,985
1941-42	41.3	377	165	282	76.9	8.42	25.0	46.9	2,373	61,520	63,893
1942-43	177	434	238	296	91.5	25.0	15.2	47.3	2,698	79,911	82,609
1943-44	26.9	109	27.4	29.4	23.4	27.5	13.7	11.0	3,790	16,168	19,958
1944-45	111	60.0	82.3	159	28.4	0.16	12.8	30.2	1,403	29,316	30,719
1945-46	93.5	70.6	64.9	89.3	35.3	11.4	33.8	69.7	2,416	28,423	30,839
1946-47	593	497	271	152	33.0	45.9	65.5	60.9	3,605	104,278	107,883
1947-48	82.8	697	457	602	247	88.7	13.8	66.3	3,361	136,024	139,385
1948-49	67.5	298	172	49.9	15.3	0.87	10.9	52.8	4,213	40,302	44,515
1949-50	67.7	452	347	337	128	52.1	9.60	30.9	2,497	86,029	88,526
1950-51	265	641	523	561	403	180	242	216	4,323	183,478	187,801
1951-52	480	882	350	150	95.4	38.6	30.2	41.7	17,668	125,076	142,744
1952-53	81.9	523	553	1,133	225	60.4	43.7	73.3	7,438	162,282	169,720
1953-54	81.0	507	491	284	72.1	76.6	108	87.7	10,147	103,138	113,285
1954-55	45.6	536	565	240	308	5.77	26.9	61.0	4,927	108,389	113,316
1955-56	153	360	279	154	173	96.6	35.2	49.9	4,287	78,854	83,141
1956-57	218	287	341	176	11.3	20.7	43.9	84.2	4,988	71,721	76,709
1957-58	101	703	125	143	63.3	10.0	20.0	44.1	6,591	72,713	79,304
1958-59	348	380	316	178	63.7	20.7	40.0	57.5	5,552	85,173	90,725
1959-60	376	231	295	52.1	6.0	13.7	11.6	30.4	6,647	61,852	68,499
1960-61	61.6	65.5	174	69.7	5.6	6.2	13.4	41.0	4,417	26,556	30,973

TABLE 15 - 3

HISTORICAL SUMMARY OF UNITED STATES SHARE OF NATURAL FLOW OF MILK RIVER AT EASTERN CROSSING OF INTERNATIONAL BOUNDARY

Year	Mean Monthly Discharge in CFS								Runoff in Acre-Feet		
	March	April	May	June	July	August	Sept.	Oct.	Nov.-Feb.	Mar.-Oct.	Nov.-Oct.
1961-62	147	283	99.6	62.3	13.5	0.2	28.0	17.5	4,917	39,320	44,237
1962-63	54.7	44.0	41.6	68.5	56.6	11.3	18.9	20.1	6,986	19,156	26,142
1963-64	22.1	201	463	459	103	32.2	43.8	73.6	1,463	84,571	86,034
1964-65	161	1,000	346	498	189	48.5	106	92.2	6,196	146,884	153,080
1965-66	242	287	161	328	142	50.8	24.2	84.5	5,512	79,851	85,363
1966-67	318	490	1,038	532	87.9	38.7	21.6	55.1	6,743	156,661	163,404
1967-68	202	170	251	185	95.5	84.5	140	160	7,695	78,262	85,957
1968-69	468	760	215	210	218	19.2	25.4	56.1	7,813	119,198	127,011
1969-70	130	221	366	236	50.5	33.8	51.7	46.5	4,925	68,741	73,666
1970-71	108	397	305	228	63.9	32.1	44.0	47.3	12,321	74,001	86,322
1971-72	591	372	376	309	113	90.1	65.7	64.0	2,111	120,377	122,488
Average	163	374	285	236	95.7	41.6	46.9	56.4	6,013	78,630	84,643

COMPUTATION OF NATURAL FLOW OF LODGE CREEK AT INTERNATIONAL BOUNDARY

Period	1 Michele Reservoir	2 Greasewood Reservoir	3 Massy Reservoir	4 Total Upper Lodge Reservoirs	5 Channel Loss to International Boundary		6 Net Depletion Upper Lodge	7 Bare Creek Reservoir	8 Channel Loss to International Boundary		9 Net Depletion Bare Creek
	Observed	Observed	Observed	1-2-3	Computed		4-5	Observed	Computed		7-8
					3 cfs per day + x% of remainder				3 cfs per day + x% of remainder		
Feb 25 - Mar 6	+ 4	0	0	+ 4	6	+ 4	0	0	6	0	0
Mar 7-16	+ 13	+ 5	0	+ 18	6	+ 18	0	0	6	0	0
Mar 17-27	+ 134	+ 38	+ 70	+ 242	6	+ 46	+ 196	+ 326	6	+ 51	+ 275
Mar 28 - Apr 6	+ 45	+ 1	+ 12	+ 58	9	+ 33	+ 25	+ 1	9	+ 1	0
Apr 7-16	+ 8	+ 2	+ 1	+ 11	9	+ 11	0	- 4	9	- 4	0
Apr 17-26	+ 16	+ 2	+ 2	+ 20	9	+ 20	0	- 2	9	- 2	0
Apr 27 - May 6	+ 10	+ 2	+ 2	+ 14	15	+ 14	0	- 1	15	- 1	0
May 7-16	- 1	0	+ 2	+ 1	15	+ 1	0	+ 3	15	+ 3	0
May 17-27	- 2	0	- 14	- 16	15	- 16	0	+ 6	15	+ 6	0
May 28 - Jun 6	+ 2	0	- 1	+ 1	24	+ 1	0	+ 4	24	+ 4	0
Jun 7-16	+ 1	- 1	- 3	- 3	24	- 3	0	+ 4	24	+ 4	0
Jun 17-26	+ 3	- 2	- 16	- 15	24	- 15	0	+ 5	24	+ 5	0
Jun 27 - Jul 6	0	+ 1	- 1	0	24	0	0	- 2	24	- 2	0
Jul 7-16	- 1	0	- 1	- 2	24	- 2	0	- 2	24	- 2	0
Jul 17-27	- 3	+ 1	- 13	- 15	24	- 15	0	- 32	24	- 32	0
Jul 28 - Aug 6	+ 1	0	+ 1	+ 2	24	+ 2	0	- 5	24	- 5	0
Aug 7-16	+ 3	+ 1	+ 1	+ 5	24	+ 5	0	- 2	24	- 2	0
Aug 17-27	+ 4	+ 1	+ 2	+ 7	24	+ 7	0	- 1	24	- 1	0
Aug 28 - Sep 6	+ 3	+ 1	+ 1	+ 5	15	+ 5	0	- 2	15	- 2	0
Sep 7-16	- 48	0	+ 1	- 47	15	- 33	- 14	- 53	15	- 33	- 20
Sep 17-26	0	0	- 1	- 1	15	- 1	0	+ 1	15	+ 1	0
Sep 27 - Oct 6	+ 1	0	0	+ 1	9	+ 1	0	+ 1	9	+ 1	0
Oct 7-16	+ 1	- 34	+ 43	+ 10	9	+ 10	0	+ 3	9	+ 3	0
Oct 17-27	- 1	0	+ 1	0	9	0	0	- 2	9	- 2	0
Total CFS Days	+ 193	+ 18	+ 89	+ 300		+ 93	+ 207	+ 246		- 9	+ 255
Total Acre-Feet	+ 383	+ 36	+ 176	+ 595		+ 184	+ 411	+ 488		- 18	+ 506

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Table No. 16-1

COMPUTATION OF NATURAL FLOW OF LODGE CREEK AT INTERNATIONAL BOUNDARY

	10	11		12	13	14		15		16	17		18
Period	Cressda, Reservoir	Channel Loss to International Boundary,		Net Depletion Cressda,	Mitchell Reservoir	Channel Loss to International Boundary,		Net Depletion Mitchell	Period	Jaydot Reservoir	Channel Loss to International Boundary,		Net Depletion Jaydot
	Observed	Computed		10-11	Observed	Computed		13-14		Observed	Computed		16-17
		2 cfs per day + 2% of remainder				2 cfs per day + 2% of remainder					1 cfs per day + 2% of remainder		
Feb 26 - Mar 7	0	4	0	0	0	4	0	0	Feb 27 - Mar 8	0	2	0	0
Mar 8-17	+8	4	+8	0	+21	4	+20	+1	Mar 9-18	+9	2	+9	0
Mar 18-28	+151	4	+27	+124	+266	4	+32	+234	Mar 19-29	+77	2	+12	+65
Mar 29 - Apr 7	-7	6	-7	0	+61	6	+22	+39	Mar 30 - Apr 8	-4	3	-4	0
Apr 8-17	-3	6	-3	0	-17	6	-17	0	Apr 9-18	0	3	0	0
Apr 18-27	+2	6	+2	0	-11	6	-11	0	Apr 19-28	+1	3	+1	0
Apr 28 - May 7	-1	10	-1	0	-10	10	-10	0	Apr 29 - May 8	0	5	0	0
May 8-17	+5	10	+5	0	+1	10	+1	0	May 9-18	+3	5	+3	0
May 18-28	+2	10	+2	0	0	10	0	0	May 19-29	0	5	0	0
May 29 - Jun 7	0	16	0	0	+1	16	+1	0	May 30 - Jun 8	+4	8	+4	0
Jun 8-17	+2	16	+2	0	+7	16	+7	0	Jun 9-18	+3	8	+3	0
Jun 18-27	0	16	0	0	+2	16	+2	0	Jun 19-28	+36	8	+12	+24
Jun 28 - Jul 7	+4	16	+4	0	+3	16	+3	0	Jun 29 - Jul 8	+4	8	+4	0
Jul 8-17	+1	16	+1	0	+1	16	+1	0	Jul 9-18	+1	8	+1	0
Jul 18-28	-1	16	-1	0	-2	16	-2	0	Jul 19-29	-1	8	-1	0
Jul 29 - Aug 7	+3	16	+3	0	0	16	0	0	Jul 30 - Aug 8	+1	8	+1	0
Aug 8-17	+8	16	+8	0	+1	16	+1	0	Aug 9-18	+4	8	+4	0
Aug 18-28	+9	16	+9	0	+2	16	+2	0	Aug 19-29	+5	8	+5	0
Aug 29 - Sep 7	+4	10	+4	0	-2	10	-2	0	Aug 30 - Sep 8	+4	5	+4	0
Sep 8-17	0	10	0	0	-4	10	-4	0	Sep 9-18	+2	5	+2	0
Sep 18-27	-3	10	-3	0	-7	10	-7	0	Sep 19-28	-1	5	-1	0
Sep 28 - Oct 7	0	6	0	0	-5	6	-5	0	Sep 29 - Oct 8	0	3	0	0
Oct 8-17	0	6	0	0	-2	6	-2	0	Oct 9-18	-2	3	-2	0
Oct 18-28	-2	6	-2	0	-4	6	-4	0	Oct 19-29	-2	3	-2	0
Total CFS Days	+182		+58	+124	+302		+28	+274		+144		+55	+89
Total Acre-Feet	+361		+115	+246	+599		+56	+543		+286		+109	+177

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Table No. 16-2

COMPUTATION OF NATURAL FLOW OF LODGE CREEK AT INTERNATIONAL BOUNDARY

Period Middle Creek Reservoir	19	20	21	22	23	24	25	26	27		28
	Middle Creek Reservoir			Middle Creek Outlet	Bedford Outlet	Flood Spillway	Return Flow from Irrigation	Gross Depletion	Channel Loss to International Boundary		Net Depletion Middle Creek
	Stored – Release –	Evaporation	Corrected for Evaporation								
	Observed	Computed	19-20	Observed	Observed	Observed	Observed	21-22-23-24-25	Computed		26-27
									2 cfs per day + x% of remainder		
Feb 26 - Mar 7	0		0	0	0	0	0	0	4	0	0
Mar 8-17	+213		+213	0	0	0	0	+213	4	+28	+185
Mar 18-28	+1420		+1420	0	0	0	0	+1420	4	+78	+1342
Mar 29 - Apr 7	+18	13	+31	0	0	0	0	+31	6	+21	+10
Apr 8-17	+6	61	+67	0	0	0	0	+67	6	+23	+44
Apr 18-27	-42	100	+58	0	0	0	0	+58	6	+22	+36
Apr 28 - May 7	-60	75	+15	0	0	0	0	+15	10	+15	0
May 8-17	-42	108	+66	0	0	0	0	+66	10	+25	+41
May 18-28	+12	106	+118	0	0	0	0	+118	10	+32	+86
May 29 - Jun 7	-66	100	+34	0	0	0	0	+34	16	+22	+12
Jun 8-17	-132	144	+12	0	0	0	0	+12	16	+12	0
Jun 18-27	-207	114	-93	193	0	0	98	+2	16	+2	0
Jun 28 - Jul 7	-94	132	+38	0	0	0	2	+36	16	+23	+13
Jul 8-17	-81	106	+25	0	0	0	0	+25	16	+21	+4
Jul 18-28	-6	87	+81	0	0	0	0	+81	16	+31	+50
Jul 29 - Aug 7	-105	112	+7	0	0	0	0	+7	16	+7	0
Aug 8-17	-29	143	+114	0	0	0	0	+114	16	+35	+79
Aug 18-28	-114	168	+54	0	27	0	0	+81	16	+31	+50
Aug 29 - Sep 7	-330	115	-215	0	176	0	0	-39	10	-22	-17
Sep 8-17	-44	66	+22	0	0	0	0	+22	10	+20	+2
Sep 18-27	+17	27	+44	0	0	0	0	+44	10	+22	+22
Sep 28 - Oct 7	-22	31	+9	0	0	0	0	+9	6	+9	0
Oct 8-17	-44	30	-14	0	0	0	0	-14	6	-14	0
Oct 18-28	-44	—	-44	23	0	0	0	-21	6	-21	0
Total CFS Days	+224	1838	+2062	216	203	0	100	+2381		+422	+1959
Total Acre-Feet	+444	3646	+4090	428	403	0	198	+4723		+837	+3886

Computed by	W. F. Clarke	Date	27 Jan. 73	Approved	For Canada	G. D. Davis	Page 3
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Table No. 16-3

COMPUTATION OF NATURAL FLOW OF LODGE CREEK AT INTERNATIONAL BOUNDARY

Period Altawan Reservoir	29	30	31	32	33	34	35	36		37
	Altawan Reservoir			Spangler Ditch	Return Flow from Spangler	Return Flow from Bedford	Gross Depletion	Channel Loss to International Boundary		Net Depletion Altawan
	Stored – Release –	Evaporation	Corrected for Evaporation							
	Observed	Computed	29 - 30	Observed	Observed	Observed	31-32-33-34	Computed		35-36
								1 cfs per day + 2% of remainder		
Feb 27 - Mar 8	0	–	0	0	0	0	0	2	0	0
Mar 9-18	+2483	-	+2483	0	0	0	+2483	2	+ 59	+2424
Mar 19-29	– 388		– 388	0	0	1	– 389	2	– 19	– 370
Mar 30 - Apr 8	– 211	6	– 205	210	0	3	+ 2	3	+ 2	0
Apr 9-18	– 24	20	– 4	51	75	0	– 28	3	– 11	– 17
Apr 19-28	– 160	35	– 125	0	5	0	– 130	3	– 14	– 116
Apr 29 - May 8	– 55	22	– 33	0	0	0	– 33	5	– 11	– 22
May 9-18	– 190	37	– 153	141	0	0	– 12	5	– 10	– 2
May 19-29	– 401	31	– 370	363	57	5	– 69	5	– 14	– 55
May 30 - Jun 8	– 24	39	+ 15	20	4	4	+ 27	8	+ 11	+ 16
Jun 9-18	– 50	40	– 10	1	0	0	– 9	8	– 9	0
Jun 19-28	– 225	34	– 191	369	0	0	+ 178	8	+ 23	+ 155
Jun 29 - Jul 8	– 59	34	– 25	27	9	0	– 7	8	– 7	0
Jul 9-18	– 77	27	– 50	53	0	0	+ 3	8	+ 3	0
Jul 19-29	– 420	21	– 399	412	9	0	+ 4	8	+ 4	0
Jul 30 - Aug 8	– 198	20	– 178	207	39	0	– 10	8	– 10	0
Aug 9-18	+ 2	24	+ 26	0	4	0	+ 22	8	+ 11	+ 11
Aug 19-29	– 12	28	+ 16	0	0	0	+ 16	8	+ 11	+ 5
Aug 30 - Sep 8	– 19	18	– 1	0	0	0	– 1	5	– 1	0
Sep 9-18	– 10	11	+ 1	0	0	0	+ 1	5	+ 1	0
Sep 19-28	– 1	3	+ 2	0	0	0	+ 2	5	+ 2	0
Sep 29 - Oct 8	– 3	6	+ 3	0	0	0	+ 3	3	+ 3	0
Oct 9-18	– 6	4	– 2	0	0	0	– 2	3	– 2	0
Oct 19-29	– 4	–	– 4	0	0	17	– 21	3	– 11	– 10
Total CFS Days	– 52	460	+ 408	1854	202	30	+2030		+ 11	+2019
Total Acre-Feet	– 103	912	+ 809	3677	400	59	+4027		+ 22	+4005

Computed by	K. F. Clarke	Date	27 Jan 73	Approved	For Canada	D. A. Davis	Page 4
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Table No. 16-4

COMPUTATION OF NATURAL FLOW OF LODGE CREEK AT INTERNATIONAL BOUNDARY

	38	39	40	41	42	43	44
Period at International Boundary	Net Depletion in Canada	Minor Irrigation Diversions	Lodge Creek at International Boundary	Natural Flow of Lodge Creek	U.S.A. Share Natural Flow	Excess Flow to U.S.A.	Total Excess Flows to date
	[illegible]	Estimated	Observed	38-39-40	50% of 41	40-42	Σ Col. 43
Mar 1-10	0	0	0	0	0	0	
Mar 11-20	+2610	349	2679	5638	2819	-140	
Mar 21-31	+1866	224	1533	3623	1812	-279	
Apr 1-10	+74	19	223	316	158	65	
Apr 11-20	+27	9	109	145	72	37	
Apr 21-30	-80	8	202	130	65	137	
May 1-10	-22	2	47	27	14	33	
May 11-20	+39	4	21	64	32	-11	
May 21-31	+31	7	71	109	55	16	
Jun 1-10	+28	9	104	141	70	34	
Jun 11-20	0	5	77	82	41	36	
Jun 21-30	+179	33	321	533	267	54	
Jul 1-10	+13	8	115	136	68	47	
Jul 11-20	+4	0	5	9	5	0	
Jul 21-31	+50	0	7	57	28	-21	
Aug 1-10	0	0	27	27	13	14	
Aug 11-20	+90	0	8	98	49	-41	
Aug 21-31	+55	0	2	57	28	-26	
Sep 1-10	-17	0	0	(-17) 0	0	0	
Sep 11-20	-32	0	0	(-32) 0	0	0	
Sep 21-30	+22	0	0	(+22) 0	0	0	
Oct 1-10	0	0	0	0	0	0	
Oct 11-20	0	0	0	0	0	0	
Oct 21-31	-10	0	0	(-10) 0	0	0	
Total CFS Days	+4927	677	5551	(11155) 11192	5596	-45	
Total Acre-Feet	+9773	1343	11010	(22126) 22199	11099	-89	

Computed by	R.G. Clarke	Date	27 Jan 73	Approved	For Canada	G.D. Davis	Page 5
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Table No. 16-5

TABLE NO. 17

LODGE CREEK BASIN

HISTORICAL SUMMARY OF MARCH TO OCTOBER DIVISION OF NATURAL RUNOFF

ACRE FEET

Year	Computed Natural Runoff	Canadian and U.S.A. Shares	Recorded Runoff	Excess (+) or Deficit (-) delivery to the U. S. A.
1950	14,510	7,255	13,460	+ 6,205
1951	51,040	25,520	40,700	+ 15,180
1952	130,800	65,400	119,300	+ 53,900
1953	31,000	15,500	22,080	+ 6,580
1954	10,580	5,290	6,180	+ 890
1955	78,700	39,350	61,120	+ 21,770
1956	17,170	8,585	12,750	+ 4,165
1957	26,560	13,280	19,860	+ 6,580
1958	39,060	19,530	34,120	+ 14,590
1959	17,200	8,600	11,590	+ 2,990
1960	32,100	16,050	23,920	+ 7,870
1961	1,790	895	830	— 65
1962	20,780	10,390	15,280	+ 4,890
1963	11,560	5,780	6,080	+ 300
1964	7,940	3,970	4,160	+ 190
1965	77,350	38,675	55,180	+ 16,505
1966	35,860	17,930	24,470	+ 6,540
1967	73,270	36,635	59,390	+ 22,755
1968	3,980	1,990	2,150	+ 160
1969	29,920	14,960	16,920	+ 1,960
1970	23,560	11,780	13,080	+ 1,300
1971	21,320	10,660	10,600	— 60
Totals	756,050	378,025	573,220	+ 195, 195
Average 22 Years	34,366	17,183	26,055	+ 8,872

COMPUTATION OF NATURAL FLOW OF BATTLE CREEK AT INTERNATIONAL BOUNDARY

	1		2	3	4	5		6	7	8	9	10
Period Reesor Lake	Reesor Lake Storage	Period Adams Lake	Adams Lake Storage	Total Storage Upper Battle Creek	Channel Loss to International Boundary	Net Depletion Upper Battle Creek	Period Gaff Ditch	Gaff Ditch	Return Flow	Gross Depletion Gaff Ditch	Channel Loss to International Boundary	Net Depletion Gaff Ditch
	Observed		Observed	1+2	Computed	3 – 4		Measured	Computed	6 – 7	Computed	8 – 9
					6 cfs. per day						4 cfs per day	
Feb. 23 - Mar 8	0	Feb 24 - Mar 9	0	0	0	0	Feb 25-Mar 10	0	0	0	0	0
Mar 9 - 19	+ 1	Mar 10 - 20	+ 44	45	45	0	Mar 11 - 21	16	3	13	13	0
Mar 20 - 29	+ 3	Mar 21 - 30	+ 132	135	60	+ 75	Mar 22 - 31	61	12	49	40	9
Mar 30 - Apr 8	+ 4	Mar 31 - Apr 9	+ 16	20	20	0	Apr 1 - 10	57	11	46	40	6
Apr 9 - 18	+ 9	Apr 10 - 19	+ 13	22	22	0	Apr 11 - 20	93	19	74	40	34
Apr 19 - 28	+ 14	Apr 20 - 29	+ 19	33	33	0	Apr 21 - 30	149	30	119	40	79
Apr 29 - May 8	+ 9	Apr 30 - May 9	+ 14	23	23	0	May 1 - 10	176	35	141	40	101
May 9 - 19	+ 16	May 10 - 20	+ 22	38	38	0	May 11 - 21	174	35	139	44	95
May 20 - 29	+ 13	May 21 - 30	+ 18	31	31	0	May 22 - 31	166	33	133	40	93
May 30 - Jun 8	+ 19	May 31 - Jun 9	+ 17	36	36	0	Jun 1 - 10	130	26	104	40	64
Jun 9 - 18	+ 21	Jun 10 - 19	- 135	- 114	- 60	- 54	Jun 11 - 20	65	13	52	40	12
Jun 19 -28	+ 17	Jun 20 - 29	+ 3	20	20	0	Jun 21 - 30	5	1	4	4	0
Jun 29 - Jul 8	+ 13	Jun 30 - Jul 9	+ 3	16	16	0	Jul 1 - 10	0	0	0	0	0
Jul 9 - 19	+ 11	Jul 10 - 20	0	11	11	0	Jul 11 - 21	0	0	0	0	0
Jul 20 - 29	+ 7	Jul 21 - 30	0	7	7	0	Jul 22 - 31	0	0	0	0	0
Jul 30 - Aug 8	+ 9	Jul 31 - Aug 9	+ 6	15	15	0	Aug 1 - 10	0	0	0	0	0
Aug 9 - 19	+ 12	Aug 10 - 20	+ 12	24	24	0	Aug 11 - 21	0	0	0	0	0
Aug 20 - 29	+ 11	Aug 21 - 30	+ 12	23	23	0	Aug 22 - 31	0	0	0	0	0
Aug 30 - Sep 8	+ 9	Aug 31 - Sep 9	+ 6	15	15	0	Sep 1 - 10	0	0	0	0	0
Sep 9 - 18	+ 5	Sep 10 - 19	+ 4	9	9	0	Sep 11 - 20	8	2	6	6	0
Sep 19 - 28	0	Sep 20 - 29	- 2	- 2	- 2	0	Sep 21 - 30	87	17	70	40	30
Sep 29 - Oct 8	+ 4	Sep 30 - Oct 9	+ 1	5	5	0	Oct 1 - 10	0	0	0	0	0
Oct 9 - 19	+ 4	Oct 10 - 20	0	4	4	0	Oct 11 - 21	0	0	0	0	0
Oct 20 - 25	+ 1	Oct 21 - 26	- 3	- 2	- 2	0	Oct 22 - 27	0	0	0	0	0
Total CFS Days	212		202	414	393	21		1187	237	950	427	523
Total Acre-Feet	420		401	821	779	42		2354	470	1884	847	1037

Computed by	L.T. Hesch	Date	Jan 26, 1973	Approved	For Canada	D.A. Davis	Page 1
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Table No. 18-1

COMPUTATION OF NATURAL FLOW OF BATTLE CREEK AT INTERNATIONAL BOUNDARY

	11	12	13	14	15	16	17	18	19	20
Period Cypress Lake Area	West Inflow Canal	West Outflow Canal	West Inflow Canal Drain	Total Release from Cypress Lake	Net Diversion to Cypress Lake	Vidora Ditch	Return Flow	Gross Depletion Cypress Lake	Channel Loss to International Boundary	Net Depletion Cypress Lake
	Measured	Measured	Measured	12+13	11−14	Measured	Computed	15+16−17	Computed	18−19
									3 cfs per day	
Feb 26 - Mar 11	0	0	0	0	0	0	0	0	0	0
Mar 12 - 22	2,466	129	0	129	2337	0	0	2337	33	2304
Mar 23 - Apr 1	5	46	0	46	−41	0	0	−41	−30	−11
Apr 2 - 11	5	5	0	5	0	0	0	0	0	0
Apr 12 - 21	1	2	0	2	−1	0	0	−1	−1	0
Apr 22 - May 1	0	0	0	0	0	0	0	0	0	0
May 2 - 11	1	260	0	260	−259	30	0	−229	−30	−199
May 12 - 22	0	1,793	0	1,793	−1,793	699	94	−1188	−33	−1155
May 23 - Jun 1	46	275	0	275	−229	257	103	−75	−30	−45
Jun 2 - 11	48	82	0	82	−34	0	0	−34	−30	−4
Jun 12 - 21	88	10	0	10	78	0	0	78	30	48
Jun 22 - Jul 1	726	6	18	24	702	0	0	702	30	672
Jul 2 - 11	136	38	76	114	22	0	0	22	22	0
Jul 12 - 22	52	711	50	761	−709	102	0	−607	−33	−574
Jul 23 - Aug 1	0	1,172	0	1,172	−1,172	439	71	−804	−30	−774
Aug 2 - 11	0	323	0	323	−323	319	89	−93	−30	−63
Aug 12 - 22	67	0	61	61	6	0	12	−6	−6	0
Aug 23 - Sep 1	45	0	46	46	−1	0	0	−1	−1	0
Sep 2 - 11	23	0	23	23	0	0	0	0	0	0
Sep 12 - 21	0	0	0	0	0	0	0	0	0	0
Sep 22 - Oct 1	0	1	0	1	−1	0	0	−1	−1	0
Oct 2 - 11	0	0	0	0	0	0	0	0	0	0
Oct 12 - 22	0	0	0	0	0	0	0	0	0	0
Oct 23 - 28	0	0	0	0	0	0	0	0	0	0
Total CFS Days	3,709	4,853	274	5,127	−1,418	1846	369	59	−140	199
Total Acre-Feet	7,357	9,626	543	10,169	−2,812	3661	732	117	−278	395

Computed by	K. J. Clarke	Date	24 Jan. 73	Approved	For Canada	D. A. Davis	Page 2
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Table No. 18-2

COMPUTATION OF NATURAL FLOW OF BATTLE CREEK AT INTERNATIONAL BOUNDARY

	21	22	23	24	25	26		27	28	29	30	31
Period Consul Area	Richardson Ditch	McKinnon Ditch	Return Flow	Gross Depletion at Consul	Channel Loss to International Boundary	Net Depletion at Consul	Period at Nashlyn	Nashlyn Canal	Return Flow	Gross Depletion at Nashlyn	Channel Loss to International Boundary	Net Depletion at Nashlyn
	Measured	Measured	Computed	21+22-23	Computed	24 – 25		Measured	Computed	27 – 28	Computed	29 – 30
					2 cfs per day						1 cfs per day	
Feb 27 - Mar 12	0	0	0	0	0	0	Feb 28 - Mar 13	0	0	0	0	0
Mar 13 - 23	0	0	0	0	0	0	Mar 14 - 24	72	4	68	11	57
Mar 24 - Apr 2	0	0	0	0	0	0	Mar 25 - Apr 3	306	60	246	10	236
Apr 3 - 12	0	0	0	0	0	0	Apr 4 - 13	256	54	202	10	192
Apr 13 - 22	0	0	0	0	0	0	Apr 14 - 23	56	20	36	10	26
Apr 23 - May 2	0	0	0	0	0	0	Apr 24 - May 3	0	0	0	0	0
May 3 - 12	146	55	8	+ 193	+ 20	+ 173	May 4 - 13	27	0	27	10	17
May 13 - 23	485	487	203	+ 769	+ 22	+ 747	May 14 - 24	157	37	120	11	109
May 24 - Jun 2	4	48	34	+ 18	+ 18	0	May 25 - Jun 3	0	0	0	0	0
Jun 3 - 12	0	1	0	+ 1	+ 1	0	Jun 4 - 13	0	0	0	0	0
Jun 13 - 22	0	0	0	0	0	0	Jun 14 - 23	0	0	0	0	0
Jun 23 - Jul 2	0	0	0	0	0	0	Jun 24 - Jul 3	0	0	0	0	0
Jul 3 - 12	0	0	0	0	0	0	Jul 4 - 13	67	7	60	10	50
Jul 13 - 23	302	227	64	+ 465	+ 22	+ 443	Jul 14 - 24	116	29	87	11	76
Jul 24 - Aug 2	410	399	194	+ 615	+ 20	+ 595	Jul 25 - Aug 3	0	0	0	0	0
Aug 3 - 12	0	0	10	- 10	- 10	0	Aug 4 - 13	0	0	0	0	0
Aug 13 - 23	0	0	0	0	0	0	Aug 14 - 24	0	0	0	0	0
Aug 24 - Sep 2	1	0	0	+ 1	+ 1	0	Aug 25 - Sep 3	0	0	0	0	0
Sep 3 - 12	0	1	0	+ 1	+ 1	0	Sep 4 - 13	0	0	0	0	0
Sep 13 - 22	0	0	0	0	0	0	Sep 14 - 23	0	0	0	0	0
Sep 23 - Oct 2	0	0	0	0	0	0	Sep 24 - Oct 3	0	0	0	0	0
Oct 3 - 12	0	0	0	0	0	0	Oct 4 - 13	0	0	0	0	0
Oct 13 - 23	0	0	0	0	0	0	Oct 14 - 24	0	0	0	0	0
Oct 24 - 29	0	0	0	0	0	0	Oct 25 - 30	0	0	0	0	0
Total CFS Days	1348	1218	513	2053	95	1958		1057	211	846	83	763
Total Acre-Feet	2673	2416	1017	4072	188	3884		2097	419	1678	165	1513

Computed by	L.T. Hesch	Date	Jan 25, 1973	Approved	For Canada	D.A. Davis	Page 3
Checked by	T.M. O'Neill	Date	1-30-73		For U.S.A.	Geo. Wilke	Year 1972

Table No. 18-3

COMPUTATION OF NATURAL FLOW OF BATTLE CREEK AT INTERNATIONAL BOUNDARY

	32	33	34	35	36	37	38	39
Period at International Boundary	Net Depletion in Canada	Battle Creek at International Boundary	Apparent Natural Flow of Battle Creek	Adjustment for Minor Diversions	Natural Flow of Battle Creek	U.S.A. Share Natural Flow	Excess Flow to the U.S.A.	Total Excess Flows to Date
	5+10+20+26+31	Measured	32+33	6.69% of 34	34+35	50% of 36	33−37	Σ Col. 38
Mar 1 - 14	0	20	20	1	21	10+	10	
Mar 15 - 25	2361	1607	3968	266	4234	2117	- 510	
Mar 26 - Apr 4	309	396	705	47	752	376	20	
Apr 5 - 14	198	312	510	34	544	272	40	
Apr 15 - 24	60	249	309	21	330	165	84	
Apr 25 - May 4	79	174	253	17	270	135	39	
May 5 - 14	92	143	235	16	251	125+	18	
May 15 - 25	- 204	185	-10 0	0	0	0	185	
May 26 - Jun 4	48	426	474	32	506	253	173	
Jun 5 - 14	60	1731	1791	120	1911	956+	775	
Jun 15 - 24	6	542	548	37	585	293-	249	
Jun 25 - Jul 4	672	109	781	52	833	417-	- 308	
Jul 5 - 14	50	31	81	5	86	43-	- 12	
Jul 15 - 25	- 55	115	60	4	64	32	83	
Jul 26 - Aug 4	- 179	381	202	13	215	108-	273	
Aug 5 - 14	- 63	213	150	10	160	80	133	
Aug 15 - 25	0	71	71	5	76	38	33	
Aug 26 - Sep 4	0	16	16	1	17	8+	8	
Sep 5 - 14	0	2	2	0	2	1	1	
Sep 15 - 24	0	0	0	0	0	0	0	
Sep 25 - Oct 4	30	58	88	6	94	47	11	
Oct 5 - 14	0	95	95	6	101	51-	44	
Oct 15 - 25	0	94	94	6	100	50	44	
Oct 26 - 31	0	63	63	4	67	33+	30	
Total CFS Days	3464	7033	10516	703	11219	5610	1423	
Total Acre-Feet	6871	13950	20858	1395	22253	11127	2823	

Computed by	L.T. Hesch	Date	Jan 26, 1973	Approved	For Canada	D.A. Davis	Page 4
Checked by	E.M. O'Neill	Date	1-30-73		For U.S.A.	Geo. Pike	Year 1972

Table No. 18-4

TABLE NO. 19

BATTLE CREEK BASIN

HISTORICAL SUMMARY OF MARCH TO OCTOBER DIVISION OF NATURAL RUNOFF

ACRE FEET

Year	Computed Natural Runoff	Canadian and U.S.A. Shares	Recorded Runoff	Excess (+) or Deficit (-) delivery to the U. S. A.
1940	36,510	18,255	26,020	+ 7,765
1941	25,360	12,680	16,910	+ 4,230
1942	22,300	11,150	10,940	— 210
1943	33,000	16,500	22,670	+ 6,170
1944	10,540	5,270	7,670	+ 2,400
1945	8,920	4,460	8,080	+ 3,620
1946	10,390	5,195	6,960	+ 1,765
1947	11,260	5,630	6,920	+ 1,290
1948	18,730	9,365	7,840	— 1,525
1949	1,340	670	1,750	+ 1,080
1950	19,290	9,645	10,320	+ 675
1951	29,110	14,550	16,570	+ 2,020
1952	112,240	56,120	103,600	+ 47,480
1953	37,760	18,880	28,180	+ 9,300
1954	33,180	16,590	25,550	+ 8,960
1955	89,730	44,865	95,360	+ 50,495
1956	25,610	12,805	20,180	+ 7,375
1957	27,490	13,745	18,640	+ 4,895
1958	27,800	13,900	20,300	+ 6,400
1959	18,120	9,060	11,900	+ 2,840
1960	27,990	13,995	15,690	+ 1,695
1961	5,650	2,825	4,460	+ 1,635
1962	7,370	3,685	4,870	+ 1,185
1963	8,040	4,020	4,700	+ 680
1964	10,620	5,310	5,410	+ 100
1965	54,610	27,310	27,520	+ 210
1966	37,180	18,590	20,150	+ 1,560
1967	65,230	32,615	54,860	+ 22,245
1968	16,290	8,145	10,390	+ 2,245
1969	28,740	14,370	17,520	+ 3,150
1970	31,030	15,515	18,300	+ 2,785
1971	19,280	9,640	12,500	+ 2,860
Totals	910,710	455,355	662,730	+ 207,375
Average 32 Years	28,460	14,230	20,710	+ 6,480

COMPUTATION OF NATURAL FLOW OF FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY

	1	2	3	4	5	6	7
Period Cypress Lake Area	Belanger Cr Diversion to Cypress Lake	Cypress Lake East Outflow Canal	Net Diversion From Frenchman R.	Cypress Lake Natural Overflow	Gross Depletion at Cypress Lake	Channel Loss to International Boundary	Net Depletion at Cypress Lake
	Measured	Measured	1-2	Computed	3-4	Computed	5-6
						6cfs per day + x% of remainder	
Feb 22-Mar 1	0	5E	- 5	0	- 5	12 - 5	0
Mar 2-11	0	7	- 7	0	- 7	12 - 7	0
Mar 12-22	1352	38	+ 1314	0	+ 1314	12 + 216	+ 1098
Mar 23-Apr 1	8	41	- 33	0	- 33	12 - 33	0
Apr 2-11	3	612	- 609	0	- 609	18 - 159	- 450
Apr 12-21	3	1780	- 1777	0	- 1777	18 - 369	- 1408
Apr 22-May 1	0	866	- 866	0	- 866	18 - 205	- 661
May 2-11	0	34	- 34	0	- 34	30 - 34	0
May 12-22	0	41	- 41	0	- 41	30 - 41	0
May 23-Jun 1	4	54	- 50	0	- 50	30 - 50	0
Jun 2-11	86	407	- 321	0	- 321	48 - 185	- 136
Jun 12-21	78	118	- 40	0	- 40	48 - 40	0
Jun 22-Jul 1	87	36	+ 51	0	+ 51	48 + 51	0
Jul 2-11	14	20	- 6	0	- 6	48 - 6	0
Jul 12-22	0	15	- 15	0	- 15	48 - 15	0
Jul 23-Aug 1	0	8	- 8	0	- 8	48 - 8	0
Aug 2-11	0	113	- 113	0	- 113	48 - 85	- 28
Aug 12-22	0	4	- 4	0	- 4	48 - 4	0
Aug 23-Sep 1	0	3	- 3	0	- 3	48 - 3	0
Sep 2-11	0	4	- 4	0	- 4	30 - 4	0
Sep 12-21	0	4	- 4	0	- 4	30 - 4	0
Sep 22-Oct 1	0	12	- 12	0	- 12	30 - 12	0
Oct 2-11	0	13	- 13	0	- 13	18 - 13	0
Oct 12-22	0	14	- 14	0	- 14	18 - 14	0
Total CFS Days	1,635	4,249	- 2,614	0	- 2,614	- 1,029	- 1,585
Total Acre-Feet	3,243	8,428	- 5,185	0	- 5,185	- 2,041	- 3,144

Computed by	L. T. Hesch	Date	Jan 25, 1973	Approved	For Canada	D. A. Davis	Page 1
Checked by	O. J. Folsom	Date	Jan 30, 1973		For U.S.A.	Geo. Erbe	Year 1972

Table No. 20-1

COMPUTATION OF NATURAL FLOW OF FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY

Period Eastend Area	8	9	10	11	12	13	14		15
	Eastend Reservoir			Eastend Canal	Return Flow from Eastend Canal	Gross Depletion at Eastend	Channel Loss to International Boundary		Net Depletion at Eastend
	Stored + Released −	Evaporation	Corrected for Evaporation						
	Observed	Computed	8+9	Measured	Computed	10+11+12	Computed		13-14
							5 cfs per day plus	x% of remainder	
Feb 25-Mar 3	− 6	0	− 6	0	0	− 6	10	− 6	0
Mar 4-13	− 19	0	− 19	0	0	− 19	10	− 19	0
Mar 14-24	+ 62	0	+ 62	0	0	+ 62	10	+ 56	+ 6
Mar 25-Apr 3	− 33	0	− 33	0	0	− 33	10	− 33	0
Apr 4-13	+ 31	3	+ 34	0	0	+ 34	15	+ 34	0
Apr 14-23	+ 714	2	+ 716	0	0	+ 716	15	+ 150	+ 566
Apr 24-May 3	+ 347	24	+ 371	0	0	+ 371	15	+ 98	+ 273
May 4-13	− 51	24	− 27	149	30	+ 92	25	+ 61	+ 31
May 14-24	− 427	31	− 396	701	140	+ 165	25	+ 83	+ 82
May 25-Jun 3	+ 224	29	+ 253	465	93	+ 625	25	+ 194	+ 431
Jun 4-13	+ 5	36	+ 41	58	12	+ 87	40	+ 65	+ 22
Jun 14-23	+ 188	29	+ 217	0	0	+ 217	40	+ 117	+ 100
Jun 25-Jul 3	+ 26	42	+ 68	0	0	+ 68	40	+ 57	+ 11
Jul 4-13	− 34	40	+ 6	31	6	+ 31	40	+ 31	0
Jul 14-24	− 491	22	− 469	575	115	− 9	40	− 9	0
Jul 25-Aug 3	− 401	18	− 383	482	96	+ 3	40	+ 3	0
Aug 4-13	− 114	9	− 105	257	51	+ 101	40	+ 70	+ 31
Aug 14-24	+ 73	7	+ 80	7	2	+ 85	40	+ 67	+ 18
Aug 25-Sep 3	− 11	9	− 2	0	0	− 2	40	− 2	0
Sep 4-13	− 13	5	− 8	0	0	− 8	25	− 8	0
Sep 14-23	+ 13	5	+ 18	0	0	+ 18	25	+ 18	0
Sep 24-Oct 3	+ 69	5	+ 74	0	0	+ 74	25	+ 56	+ 18
Oct 4-13	− 77	2	− 75	0	0	− 75	15	− 54	− 21
Oct 14-24	− 79	0	− 79	0	0	− 79	15	− 59	− 20
Total CFS Days	− 4	+ 342	+ 338	+ 2725	545	+ 2518	970		1548
Total Acre-Feet	− 8	678	670	5405	1081	4994	1924		3070

Computed by	L.T. Hesch	Date	Jan 24, 73	Approved	For Canada	D.A. Davies	Page 2
Checked by	O.J. Folsom	Date	Jan 30, 73		For U.S.A.	[illegible]	Year 1972

Table No. 20-2

COMPUTATION OF NATURAL FLOW OF FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY

Period Val Marie Area	16	17	18	19	20	21	22
	Val Marie West Reservoir			Val Marie Reservoir			Total change in reservoir contents
	Stored - Released-	Evaporation	Corrected for Evaporation	Stored - Released-	Evaporation	Corrected for Evaporation	
	Observed	Computed	16 - 17	Observed	Computed	19 - 20	18 - 21
Feb 28 - Mar 7	0	0	0	0	0	0	0
Mar 8-17	+ 716	0	+ 716	+ 214	0	+ 214	+ 930
Mar 18-28	+ 1123	0	+ 1123	+ 4819	0	+ 4819	+ 5942
Mar 29 - Apr 7	- 3	5	+ 2	- 215	15	- 200	- 198
Apr 8-17	+ 92	17	+ 109	- 281	48	- 233	- 124
Apr 18-27	- 297	8	- 289	- 50	23	- 27	- 316
Apr 28 - May 7	+ 87	26	+ 113	+ 301	68	+ 369	+ 482
May 8-17	+ 85	44	+ 129	- 45	120	+ 75	+ 204
May 18-28	- 249	38	- 211	- 263	104	- 159	- 370
May 29 - Jun 7	- 106	60	- 46	- 943	152	- 791	- 837
Jun 8-17	+ 416	42	+ 458	- 646	87	- 559	- 101
Jun 18-27	- 88	50	- 38	- 32	97	+ 65	+ 27
Jun 28 - Jul 7	- 60	42	- 18	- 129	78	- 51	- 69
Jul 8-17	- 463	48	- 415	- 606	88	- 518	- 933
Jul 18-28	- 343	39	- 304	- 636	73	- 563	- 867
Jul 29 - Aug 7	- 152	40	- 112	- 367	70	- 297	- 409
Aug 8-17	- 48	32	- 16	- 151	55	- 96	- 112
Aug 18-28	+ 6	36	+ 42	- 78	58	- 20	+ 22
Aug 29 - Sep 7	- 32	28	- 4	- 68	45	- 23	- 27
Sep 8-17	- 29	21	- 8	- 42	32	- 10	- 18
Sep 18-27	+ 55	14	+ 69	- 17	22	+ 5	+ 74
Sep 28 - Oct 7	+ 84	15	+ 99	- 35	22	- 13	+ 86
Oct 8-17	+ 134	3	+ 137	- 46	4	- 42	+ 95
Oct 18-28	+ 192	0	+ 192	- 43	0	- 43	+ 149
Total CFS Days	1120	608	1728	641	1261	1902	3630
Total Acre-Feet	2221	1206	3427	1272	2501	3773	7200

Computed by	L. T. Hesch	Date	Jan 24, 1973	Approved	For Canada	D. A. Davis	Page 3
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Table No. 20-3

COMPUTATION OF NATURAL FLOW OF FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY

	23	24	25	26	27	28	29	30	31		32
Period Val Marie Area	West Gravity Canal	West Pumping Canal	Electric Pumps No. 1	Electric Pumps No. 2	Main Canal	Total Canal Diversion	Return Flow Val Marie Canals	Gross Depletion at Val Marie	Channel Loss to International Boundary		Net Depletion at Val Marie
	Measured	Measured	Measured		Measured	Σ 23 to 27	Computed	22 - 25 - 29	Computed		30 - 31
									2 cfs per day + x% of remainder		
Feb 28 - Mar 7	0	0	0	0	0	0	0	0	4	0	0
Mar 8-17	0	0	0	0	0	0	0	+ 930	4	+ 56	+ 874
Mar 18-28	0	0	0	0	0	0	0	+ 5942	4	+ 259	+ 5683
Mar 29 - Apr 7	0	0	0	0	0	0	0	- 198	6	- 31	- 167
Apr 8-17	0	0	0	0	0	0	0	- 124	6	- 26	- 98
Apr 18-27	0	0	0	0	0	0	0	- 316	6	- 38	- 278
Apr 28 - May 7	0	0	0	0	0	0	0	+ 482	10	+ 66	+ 416
May 8-17	0	49	15	0	0	64	13	+ 255	10	+ 44	+ 211
May 18-28	290	219	32	0	459	1000	200	+ 430	10	+ 63	+ 367
May 29 - Jun 7	105	197	43	0	933	1278	256	+ 185	16	+ 46	+ 139
Jun 8-17	0	9	4	7	716	736	147	+ 488	16	+ 95	+ 393
Jun 18-27	0	0	0	0	59	59	12	+ 74	16	+ 29	+ 45
Jun 28 - Jul 7	0	0	5	1	13	19	4	- 54	16	- 25	- 29
Jul 8-17	312	130	42	7	646	1137	227	- 23	16	- 20	- 3
Jul 18-28	267	199	13	1	758	1238	248	+ 123	16	+ 38	+ 85
Jul 29 - Aug 7	6	196	14	0	334	550	110	+ 31	16	+ 22	+ 9
Aug 8-17	0	95	0	0	92	187	37	+ 38	16	+ 23	+ 15
Aug 18-28	0	0	0	0	3	3	0	+ 25	16	+ 22	+ 3
Aug 29 - Sep 7	0	0	0	0	0	0	0	- 27	10	- 21	- 6
Sep 8-17	0	9	0	0	0	9	2	- 11	10	- 11	0
Sep 18-27	0	0	0	0	0	0	0	+ 74	10	+ 25	+ 49
Sep 28 - Oct 7	0	0	0	0	0	0	0	+ 86	6	+ 24	+ 62
Oct 8-17	0	0	0	0	0	0	0	+ 95	6	+ 25	+ 70
Oct 18-28	0	0	0	0	0	0	0	+ 149	6	+ 30	+ 119
Total CFS Days	980	1103	168	16	4013	6280	1256	8654		695	7959
Total Acre-Feet	1944	2188	333	32	7959	12456	2491	17165		1378	15787

Computed by	L. T. Hesseth	Date	Jan 25, 1973	Approved	For Canada	D. J. Davis	Page 4
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Table No. 20-4

COMPUTATION OF NATURAL FLOW OF FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY

Period at International Boundary	33 Net Depletion in Canada	34 Frenchman River at International Boundary	35 Apparent Natural Flow of Frenchman River	36 Adjustment for Minor Diversions	37 Natural Flow of Frenchman River	38 U.S.A. Share Natural Flow	39 Excess Flow to the U.S.A.	40 Total Excess Flows to Date
	7 - 15 - 32	Measured	33 - 34	3.46% of 35	35 - 36	50% of 37	34 - 38	Σ Col. 39.
Mar 1-10	0	18	+ 18	1	19	10	+ 8	
Mar 11-20	+ 874	1343	+ 2217	77	2294	1147	+ 196	
Mar 21-31	+ 6787	1335	+ 8122	281	8403	4202	- 2867	
Apr 1-10	- 167	1417	+ 1250	43	1293	646	+ 771	
Apr 11-20	- 548	1431	+ 883	31	914	457	+ 974	
Apr 21-30	- 1120	1478	+ 358	12	370	185	+ 1293	
May 1-10	+ 28	338	+ 366	13	379	189	+ 149	
May 11-20	+ 242	179	+ 421	14	435	218	- 39	
May 21-31	+ 449	336	+ 785	27	812	406	- 70	
Jun 1-10	+ 570	553	+ 1123	39	1162	581	- 28	
Jun 11-20	+ 279	465	+ 744	26	770	385	+ 80	
Jun 21-30	+ 145	210	+ 355	12	367	183	+ 27	
Jul 1-10	- 18	122	+ 104	4	108	54	+ 68	
Jul 11-20	- 3	217	+ 214	7	221	110	+ 107	
Jul 21-31	+ 85	427	+ 512	18	530	265	+ 162	
Aug 1-10	+ 9	164	+ 173	6	179	90	+ 74	
Aug 11-20	+ 18	55	+ 73	2	75	37	+ 18	
Aug 21-31	+ 21	36	+ 57	2	59	30	+ 6	
Sep 1-10	- 6	4	0	0	0	0	+ 4	
Sep 11-20	0	0	0	0	0	0	0	
Sep 21-30	+ 49	1	+ 50	2	52	26	- 25	
Oct 1-10	+ 80	5	+ 85	3	88	44	- 39	
Oct 11-20	+ 49	1	+ 50	2	52	26	- 25	
Oct 21-31	+ 99	79	+ 178	6	184	92	- 13	
Total CFS Days	7922	10214	18138	628	18766	9383	+ 831	
Total Acre-Feet	15713	20259	35977	1245	37222	18611	1648	

Computed by	L. T. Hesch	Date	Jan 25, 1973	Approved	For Canada	[illegible]	Page 5
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Table No. 20-5

TABLE NO. 21

FRENCHMAN RIVER BASIN

HISTORICAL SUMMARY OF MARCH TO OCTOBER DIVISION OF NATURAL RUNOFF

ACRE FEET

Year	Computed Natural Runoff	Canadian and U.S.A. Shares	Recorded Runoff	Excess (+) or Deficit (-) delivery to the U. S. A.
1940	82,230	41,115	68,190	+ 27,075
1941	57,650	28,825	46,670	+ 17,845
1942	58,520	29,260	42,330	+ 13,070
1943	133,530	66,765	119,200	+ 52,435
1944	56,450	28,225	40,990	+ 12,765
1945	34,560	17,280	23,060	+ 5,780
1946	32,260	16,130	21,460	+ 5,330
1947	52,770	26,385	35,010	+ 8,625
1948	39,690	19,845	25,130	+ 5,285
1949	14,340	7,170	6,490	— 680
1950	75,620	37,810	59,660	+ 21,850
1951	111,460	55,730	89,890	+ 34,160
1952	360,960	180,480	351,460	+ 170,980
1953	74,870	37,435	58,360	+ 20,925
1954	88,950	44,475	74,980	+ 30,505
1955	186,690	93,345	170,490	+ 77,145
1956	48,360	24,180	34,010	+ 9,830
1957	38,950	19,475	26,520	+ 7,045
1958	64,360	32,180	52,110	+ 19,930
1959	51,910	25,955	33,420	+ 7,465
1960	75,410	37,705	61,160	+ 23,455
1961	18,700	9,350	9,310	— 40
1962	63,310	31,655	39,110	+ 7,455
1963	46,800	23,400	33,880	+ 10,480
1964	20,320	10,160	10,780	+ 620
1965	107,140	53,570	77,070	+ 23,500
1966	73,930	36,965	53,890	+ 16,925
1967	106,100	53,050	87,750	+ 34,700
1968	40,320	20,160	21,950	+ 1,790
1969	79,390	39,695	57,980	+ 18,285
1970	108,130	54,065	83,060	+ 28,995
1971	46,320	23,160	31,910	+ 8,750
Totals	2,450,000	1,225,000	1,947,280	+ 722,280
Average 32 Years	76,562	38,281	60,852	+ 22,571

EASTERN TRIBUTARIES OF MILK RIVER

HISTORICAL SUMMARY OF MARCH TO OCTOBER RUNOFF

ACRE FEET

Date	Lodge	McRae	Battle	Woodpile	East Fork Battle	Lyons	White-water	French-man	Rock	Horse	McEachern	Total Ac-Ft.
1927	82,170	3,900	97,850	8,860	6,860	10,220	14,090	200,000	25,810	10,090	28,900	488,750
1928	38,960	1,150	48,880	2,450	3,660	2,950	14,720	107,500	14,740	5,390	13,040	253,440
1929	16,840	0	23,710	148	524	239	250	34,230	2,080	373	991	79,385
1930	16,330	1,830	31,410	3,560	4,860	4,190	2,540	75,830	12,140	3,890	9,050	165,630
1931	490	86	2,450	3	133	0	372	11,540	1,140	141	358	16,713
1932	9,910	41	11,760	203	741	114	290	43,360	3,550	712	1,280	71,961
1933	12,630	14	14,450	92	26	0	149	32,770	5,460	1,050	2,880	69,521
1934	12,500	605	12,110	1,150	641	636	263	20,140	8,300	2,800	3,670	62,815
1935	16,700	945	20,020	3,240	1,810	1,850	668	38,950	5,170	1,080	1,080	91,513
1936	12,440	1,120	15,210	3,080	2,760	1,570	1,160	40,570	5,550	2,110	3,020	88,590
1937	15,640	821	4,910	1,560	1,270	768	179	5,120	2,820	367	357	33,812
1938	22,170	901	9,360	2,430	1,530	1,620	1,110	30,030	13,130	3,900	7,330	93,511
1939	28,930	1,140	12,080	4,260	4,410	2,540	8,060	105,500	25,710	10,030	23,620	226,280
1940	44,620	2,680	26,020	5,080	4,290	3,330	3,110	68,180	6,090	1,720	7,340	172,460
1941	17,490	1,880	16,910	4,930	3,350	2,270	1,950	46,660	9,450	2,510	3,340	110,740
1942	10,360	167	10,940	1,620	2,820	1,210	288	42,340	8,690	2,140	3,970	84,545
1943	36,110	4,420	22,670	8,350	2,960	1,510	9,250	119,200	26,630	8,420	18,910	258,430
1944	2,680	764	7,670	2,580	851	250	908	40,980	6,820	1,490	2,930	67,923
1945	7,930	528	8.080	1,720	403	90	74	23,060	8,880	1,980	1,360	54,105
1946	9,350	356	6,960	1,400	1,450	1,140	480	21,460	5,090	1,350	3,080	52,116
1947	19,290	1,460	6,920	2,620	622	715	730	35,010	15,750	4,400	7,640	95,157
1948	19,100	0	7,840	0	0	0	72	25,140	10,620	2,320	3,840	68,932
1949	354	0	1,750	0	0	0	75	6,480	3,430	725	813	13,627
1950	11,680	1,780	10,320	3,150	4,380	4,090	9,090	59,660	19,540	5,270	12,930	141,890
1951	39,530	1,170	16,570	1,290	1,680	1,220	1,860	89,890	17,450	3,980	11,710	186,350
1952	119,300	Included	103,600	9,810	12,220	11,670	41,050	351,400	33,550	11,520	32,890	727,010
1953	22,080	in	28,180	2	175	0	1,060	58,360	10,500	2,680	6,300	129,337
1954	6,180	Lodge	25,550	801	3,780	1,990	4,450	74,970	22,720	4,870	13,080	158,391
1955	61,120	Creek	95,360	7,250	11,510	10,060	6,480	170,500	19,600	5,330	11,040	398,250
1956	12,750	from	20,180	259	300	264	125	34,000	8,880	1,100	1,740	79,598
1957	19,860	1952	18,650	1,270	966	1,000	133	26,520	3,490	327	51	72,267
1958	34,120		20,220	3,150	2,470	1,860	2,350	52,120	7,090	1,990	4,550	129,920
1959	11,590		11,890	1,880	1,330	855	2,170	33,430	5,430	1,500	3,610	73,685

TABLE NO. 22-1

ORIGINAL

EASTERN TRIBUTARIES OF MILK RIVER

HISTORICAL SUMMARY OF MARCH TO OCTOBER RUNOFF

ACRE FEET

Date	Lodge	McRae	Battle	Woodpile	East Fork Battle	Lyons	White-water	French-man	Rock	Horse	McEachern	Total Ac-Ft.
1960	23,920		15,690	2,590	4,530	2,680	4,010	61,170	15,570	4,940	10,470	145,570
1961	833		4,530	427	411	725	4,300	9,310	1,690	51	2	22,279
1962	15,270	Included	4,870	733	1,720	1,200	8,010	39,100	12,550	Included	5,460	88,913
1963	6,090	in	4,610	9	261	41	222	33,880	16,560	in	5,040	66,713
1964	4,151	Lodge	5,412	0	0	0	63	10,781	2,443	Rock	5	22,855
1965	55,175	Creek	27,529	3,105	1,934	2,249	414	77,066	14,742	Creek	9,237	191,451
1966	24,471	since	20,130	1,031	2,021	977	4,319	53,906	8,830	since	2,632	118,317
1967	59,393	1952	54,738	3,903	4,920	4,799	4,716	87,260	29,057	1962	15,400	264,186
1968	2,146		10,192	0	0	0	71	21,939	15,164		2,749	52,261
1969	16,921		17,515	3,240	3,405	2,395	984	57,962	31,872		17,123	151,417
1970	13,087		18,295	0	0	0	668	83,120	23,180		9,506	147,856
1971	10,601		12,509	81	31	3	316	31,913	9,358		3,722	68,534
										45 Year	Average..	.136,822

TABLE NO. 22-2